UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

November 8, 2006

Mr. David Crosby
New York State Department of Environmental Conservation
625 Broadway - 11th Floor
Albany, NY 12233-7014

Re: U.S. EPA Removal Action Report
Johnny Cake Road Site
Danube, Herkimer County, NY

Dear Mr. Crosby:

Enclosed please find the final Removal Action Report (RAR) prepared by the United States Environmental Protection (EPA) which documents the activities conducted at the Johnny Cake Road Site located in Danube, Herkimer County, NY.

Should you or a member of your staff have any questions or require additional information relating to this Site, please feel free to contact me at (732) 906-6827.

Yours truly,

Andrew L. Confortini,
On-Scene Coordinator
USEPA

cc: Mr. Peter S. Ouderkirk, NYSDEC (complete report)
Mr. Richard Fedigan, NYSDOH (complete report)
Mr. Peter R. Taylor, NYSDEC (report without Attachment G)
Mr. Robert Schick, NYSDEC (report without Attachment G)
Mr. Jerry Rider, NYSDEC (report without Attachment G)
Ms. Marla Wieder, EPA-ORC (report without Attachment G)
Mr. William Snider, USMS (report without Attachment G)

REMOVAL ACTION REPORT

JOHNNY CAKE ROAD SITE
Danube Township
Herkimer County, New York

Site ID# 6M

Prepared for:

The United States Environmental Protection Agency
2890 Woodbridge Avenue
Edison, New Jersey 08837

Prepared by:

The United States Environmental Protection Agency
2890 Woodbridge Avenue
Edison, New Jersey 08837

November 2006

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1.0 INTRODUCTION

1.1 Project Objectives

The following removal action report (RAR) has been prepared to document the source removal/soil remediation activities at the Johnny Cake Road (JCR) Site and the conclusions and recommendations for each area of concern addressed.

On March 16, 2005, the United States Environmental Protection Agency (EPA) prepared and submitted to New York State Department of Environmental Conservation (DEC) a soil removal action work plan (RAW) for this Site. On April 28, 2005, the DEC approved the RAW, which incorporated their comments made in letter dated April 8, 2005.

The objectives of the remediation were to remove contaminated soil or "source materials" in known area(s) of concern (AOC's), identification of additional AOC's and the evaluation of potential exposure pathways. A copy of the RAW, with associated DEC correspondence, is included as Attachment A. Excavation activities began on June 30, 2005 and were subsequently completed on July 11, 2005.

In addition to describing the soil remediation activities, this document also includes the results of EPA's 12-month groundwater monitoring program, as outlined during the August 25, 2004 meeting with DEC.

1.2 Site Background/Physical Setting

The Johnny Cake Road Site (JCR) property formerly consisted of approximately 377 acres of farmland along the northern and southern side of Johnny Cake Road in Danube Township, Herkimer County, New York (see Figure 1 in Attachment B). In the late 1980's, the U.S. Marshal's Service seized the property as a result of a drug investigation. After the illegal drugs were recovered from the manufacturing area and throughout the farmhouse, evidence of drug-related solvent dumping was identified at the property . Subsequent investigations have determined the actual extent of the affected area to be confined to <3-acres within the southern portion of the property (Figure 2 in Attachment B).

The area surrounding the JCR Site consists of residential dwellings and farmlands. The JCR site slopes moderately downward from the southern boundary of the property south of the two bay garage, to the north across Johnny Cake Road and further downward to a tributary of Nowadaga Creek. This stream is approximately 500 feet north of the former farm house and is topographically down-gradient from the identified spill areas. The area around the site generally consists of a gently rolling topography with a well-defined drainage valley along the northern boundary of the JCR property and a steep upwardly sloping hill toward the southern boundary. The Site formerly consisted of a two-story farmhouse, a livestock stable/stall barn, a two-bay garage building and a dairy barn. Volatile organic solvents were stored in drums inside the garage building which were then used in the cocaine manufacturing/refining process being conducted in the farmhouse basement. Waste solvents generated as a result of this operation were reportedly dumped onto the unpaved garage floor, the house basement floor, driveway surface, into the farm house septic tank or into the in-ground swimming pool.

1.3 Previous Removal Actions

On April 19 and 20, 1989, C. T. Male Associates, P. C. performed an initial phase of a subsurface contamination investigation. Soil samples from the garage floor indicated the presence of trace concentrations of methylene chloride, trichloroethene (TCE), tetrachloroethene (PCE). However, during the same investigation soil samples collected just below the water table identified trichloroethene (TCE), tetrachloroethene (PCE), toluene, acetone, and methylene chloride at slightly higher concentrations.

On August 8, 1989, the U.S. Environmental Protection Agency (EPA) Region II Removal Action Branch (RAB) received a request from the U.S. Marshal's and U.S. Attorney's Offices to conduct a removal assessment at the Johnny Cake Road Site. As a result of this request, on August 27, 1990, an Action Memorandum was approved to perform a removal action and included, the transfer of contents of the septic tank and a 55-gallon drum into secure on-site containers. Subsequently, the U.S. Attorney's Office, the U.S. Marshal's Office and the EPA began the process of formally entering into an Interagency Agreement (I.A.G.) for the reimbursement of funds for actions performed by the EPA and to conduct further evaluation of the site.

In September and November of 1990, the U.S. EPA Environmental Response Team (ERT) and its Response Engineering and Analytical Contractor (REAC) contractor, at the request of the U.S. EPA Region II RAB, conducted an extent of contamination investigation by soil gas methods and analyses of groundwater. A seismic refraction survey was also conducted to identify potential pathways for both lateral and vertical migration of contaminants into the bedrock aquifer.

On March 8, 1991, verbal authorization was granted for a removal action restart to complete off-site disposal of the stabilized material transferred from the septic tank and 55-gallon on-site drum.

In May of 1991, ERT/REAC returned to the site to ascertain the specific area of soil contamination for removal purposes, and to determine whether contamination is migrating beyond those areas identified in previous investigations.

The analytical results of this investigation confirmed previous sampling results as to the location of the spill areas at the site, the septic tank, in front of the two-bay garage, the driveway and the west side of the livestock stable/stall barn.

In April of 1993, ERT/REAC returned to the site to perform an ecological assessment. The objectives of the study were to evaluate stream quality based on benthic community structure. Information generated from this assessment indicated that the creek was a possible receptor for the groundwater contamination and recommended corrective actions to avoid or reduce the threats to the creek and the associated ecological resources.

In October 25 -26, 1993, EPA and its Technical Assistance Team (TAT) returned to the Site to resample monitoring and residential wells in order to update the location of the groundwater plume and to identify source areas for remediation. During this investigation, 42 soil borings, 20 aqueous samples from 7 monitoring wells, 4 residential wells, the on-site swimming pool, 2 down gradient surface water stream samples, and 4 quality assurance samples (trip, field and cleaning blanks) were analyzed for volatile organic compounds under the Quick Turnaround Method (QTM) program.

The analytical results of this investigation further defined the location of the spill areas at the site. This investigation confirmed that the septic tank, area adjacent to the two-bay garage, the driveway and the west side of the livestock stable/stall barn represented areas of concern.

In May and June 1995, as a precautionary measure, EPA returned to the Site to monitor the installation of five (5) deep-aquifer drinking water wells for nearby residents. At each residence, a shallow-tray air stripping unit was installed and groundwater monitored. In each case, both the untreated and treated water was found to be free of site-related contaminants.

In April 2000, EPA returned to the Site to resample eight monitoring wells and four residential wells to determine whether plume migration had expanded. Based upon the data obtained from this sampling event, the plume had remained relatively unchanged. No evidence of impact on the residential wells was identified.

During the last 3-months of 2003, EPA and its contractors returned the Site to conduct additional soil and groundwater investigations. The investigation involved the installation of five (5) additional monitoring wells and 27 soil borings. The objective of this work was to determine the nature and extent of subsurface soil and groundwater contamination as well as determine plume migration. The results of this investigation indicated that the groundwater plume had not changed, however, the extent of soil contamination had migrated deeper since previous investigations.

Since 2003, EPA has periodically conducted on-site groundwater sampling for the purpose of developing the removal action work plan (RAW) for this property. A complete copy of the RAW has been included as Attachment A.

2.0 SITE SPECIFIC REMEDIATION OBJECTIVES/GOALS

The objectives of the remediation were to remove contaminated soil or “source materials” in known area(s) of concern (AOC's), identification of additional AOC's and the evaluation of potential exposure pathways.

The Site Specific Remediation Objectives or Goals for this Site which were used to demonstrate the effectiveness of remediation activities were provided as an appendix in the RAW, DEC's Technical and Administrative Guidance Memorandum #4046 (TAGM).

3.0 SCOPE OF WORK

The following sections describe each area of concern, composition of contamination and the removal activities taken to remediate these areas. The location of each area is depicted on Figure 2 in Attachment B. The areas of concern are as follows:

Area 1 - Former Farmhouse Septic Tank;
Area 2 - Former Garage/Storage Building;
Area 3 - Former Livestock Stable/Stall Barn; and
Area 4 - Additional Soil Investigations:
- -Drainage Swale;
- -Roadside Drainage Ditch.

During soil remediation activities, all post-excavation and investigatory samples collected were submitted for TCL VOA analysis and followed EPA/ERT Soil Sampling SOP No. 2012 and No. 2006 (Sampling Equipment Decontamination Procedures). Sampling was performed in accordance with the DEC Analytical Services Protocol (ASP). Throughout the soil excavation program, both the work zone and soil screening samples were monitored for the presence of organic vapors using a calibrated combination photo-ionization detector (PID) and flame ionization detector (FID). Use of this instrument assisted in determining the horizontal and vertical extent of excavation activities. During soil removal activities, a screening level of 5 parts per million (ppm) above background was used as a guide to direct excavation work. Excavated material generated during the removal action was placed onto 6-mil polyethylene sheeting and covered with a tarpaulin.

The sections below describe the remediation within each area of concern.

3.1 Area 1 - Former Farmhouse Septic Tank

Area 1 was the location of the former septic tank which was used for the disposal of both sanitary and chemical wastes generated during the drug manufacturing/refining. The 4-foot wide by 6-feet long tank was located approximately 8-feet east of the former farmhouse foundation wall (see Figure 2 in Attachment B). No septic system leach field was identified during subsurface investigations of this area. The contents of the tank were removed in the early 1990's, however, the removal of elevated concentrations of volatile organic compounds surrounding the tank was postponed until sufficient information regarding the extent of the contamination could be determined.

On June 30, 2005, excavation activities began and were subsequently completed on July 6, 2005. The final excavation dimensions were approximately 23-feet wide by 23-feet long, having a maximum depth of 17-feet below grade. No groundwater was encountered during the excavation activities within this portion of the Site. However, wet soils were encountered at 8-foot below grade along the eastern side of the excavation where it was closest to the drainage swale.

The excavation activities in this area resulted in approximately 150-cubic yards of material being stockpiled for later evaluation and the complete removal of MW-6.

This area of contamination was considered to be a subsurface spill or discharge and sampled accordingly. In order to determine the effectiveness of the remediation, a total of nine (9) post-excavation soil samples were collected and submitted to O'Brien & Gere Laboratories, Inc. of East Syracuse, NY (State Certification #10155) for TCL-VOA analysis. Samples collected from the septic tank excavation were given the designation of ST and are illustrated on Figure 3.1 in Attachment B. Samples ST-01, ST-02, ST-03, ST-04 and ST-05 were collected from the depth corresponding to the excavation base, 17.0 to 17.5-feet below grade. Samples ST-06, ST-07, ST-08 and ST-09 were collected along the excavation sidewall at the depth corresponding to the base of the former septic tank, ranging between 6 and 8-feet below grade. The analytical results obtained from these soil samples have been summarized on Table 1. During post-excavation sampling activities, duplicate samples were collected for screening purposes. Screening results ranged from 0.5 parts per million (ppm), ST-04 and ST-07, to 10 ppm (ST-01) above background. Further investigation within this excavation identified the presence of narrow lenses or layers of soil (<3-inches) which contain a higher sand content. These lenses contained the highest PID/FID readings from this area.

As shown on Table 1, concentrations of cis-1,2-dichloroethene, vinyl chloride, trichloroethene, trans-1,2-dichloroethene and toluene exceed the respective TAGM guidelines at three (3) sampling locations. The locations included ST-05, ST-08 and ST-09. The most elevated concentrations being located within the northwest portion of the excavation base (ST-05) at a depth of 17-17.5-feet below grade. The complete analytical results package is provided in Attachment C. The location of each sample location is illustrated on Figure 3.1 in Attachment B. The excavation was subsequently restored to grade.

3.2 Area 2 - Former Garage/Storage Building

Area 2 was located approximately 40-feet south of the former farmhouse location (see Figure 2 in Attachment B). The former steel building was utilized for chemical storage and dumping of spent solvents used in the manufacturing and refining of illegal drugs. As discussed in Section 1.3 above, EPA has conducted several subsurface soil investigations within this area which have confirmed the presence of elevated concentrations of volatile organic compounds.

On July 6, 2005, excavation activities began and were subsequently completed on July 7, 2005. The initial excavation in this area was approximately 25-feet wide by 32-feet long, having an average depth of 6.0-feet below grade. However, based upon field screening results prior to sampling, the excavation was extended to 16.0-feet below grade within the center portion. As a result, this excavation was sampled at varying depths. No groundwater was encountered during the excavation activities within this portion of the Site. However, moist soils were encountered at 16-foot below grade. The excavation activities in this area resulted in approximately 175-cubic yards of material being stockpiled for later evaluation and the complete removal of MW-2.

This area of contamination was considered a surface spill or discharge and sampled accordingly. In order to determine the effectiveness of the remediation, a total of nine (9) post-excavation soil samples were collected and submitted to O'Brien & Gere Laboratories, Inc. of East Syracuse, NY (State Certification #10155) for TCL-VOA analysis. Samples collected from garage excavation were given the designation of GAR and illustrated on Figure 3.2 in Attachment B. Samples GAR-01, GAR-02, GAR-03 and GAR-04 were collected along the excavation perimeter from a depth of 1.5 to 2.0-feet below grade. Samples GAR-05, GAR-06, GAR-07 and GAR-08 were collected from the 5.5-6.0-foot interval in the main portion of the excavation. Sample GAR-09 was collected immediately below the former location of MW-2. The analytical results obtained from these soil samples have been summarized on Table 2. Table 2 also provides the sample depth and date of collection.

As shown on Table 2, the concentration of tetrachloroethene (1.9ppb) exceeded the DEC-TAGM guideline of 1.4ppb at sampling location GAR-02. This sample was collected along the western sidewall from a depth of 1.5 to 2.0-feet below grade. The complete analytical results package is provided in Attachment C. The location of each sample location is illustrated on Figure 3.2 in Attachment B. The excavation was subsequently restored to grade.

3.3 Area 3 - Former Livestock Stable/Stall Barn

Area 3 was located approximately 10-feet north of Johnny Cake Road and directly down gradient of the former farmhouse location (see Figure 2 in Attachment B). The now demolished building was reportedly also utilized for the storage of solvents used in the manufacturing/refining of illegal drugs. In the early 1990's, EPA personnel directed the sampling and removal of all 55-gallon drums and other containers from within this building. Many of these drums and containers were empty or contained only residual amounts of chemical product.

As discussed in Section 1.3 above, EPA has conducted several subsurface soil investigations within this area which have confirmed the presence of slightly elevated concentrations of volatile organic compounds.

Excavation activities within Area 3 were completed on July 11, 2005. The objective of this investigation was two-fold:

> -to located MW-4, which was formerly located within this area; and
> -to determine if significant concentrations of VOC contamination could be identified within this area.

Currently, this area consists of a small foundation or gravel-covered parking area approximately 35-feet long by 25-feet wide. This well was believed to have been destroyed during snowplowing activities several winters prior. Initial activities in this area involved of removal of 6-inches of surface material from the entire area to locate the well as a reference point. No evidence of the former well was unearthed. Based upon information generated during previous investigations, the excavation of an area approximately 8-feet wide by 15-feet wide and to a depth of 16.0-feet below grade was conducted. During the excavation activities, soil screening samples were collected at 2.0-foot intervals to determine the presence of volatile organic compounds. No screening results above background concentrations were identified. Initially, no groundwater was encountered. However, as the excavation remained open, groundwater was observed entering the excavation at a depth of 12.5-feet below grade along the southern, or up gradient sidewall. No soils or post-excavation samples were removed or collected from this area. The location of this excavation is illustrated on Figure 3.3 in Attachment B. The excavation was subsequently restored to grade.

3.4 Area 4 - Additional Soil Investigations

Concurrent to soil remediation activities, EPA initiated additional soil investigations within the following areas:

: along the roadside drainage ditch; and
: along the drainage swale located (just east of the former septic system).

Previous investigations in each of these areas have identified low concentrations of volatile organic compounds. The objective of each investigation was to determine whether soil remediation was warranted in these portions of the Site, and, if identified, whether the concentrations represent a significant threat to public health or the environment.

The evaluation of the surface soils within the roadside drainage ditch involved the inspection of this area for seepage points or soil discoloration. Due to recent rain events, evidence of seepage points were prevalent throughout the entire length of the ditch. In order to evaluate the soils within this area, samples were collected every 50-linear feet. The location of each sampling location is illustrated on Figure 3.4 in Attachment B. Sampling depths ranged from 0.0 to 1.25-feet below grade.

Sampling activities were completed on July 12, 2005 and involved the collection of samples from six (6) locations (RSD-01 through RSD-06). At each location, samples were collected from the 0.0 to 0.5-foot depth increment. At locations RSD-02, RSD-04 and RSD-06, additional samples were collected from the 1.0 to 1.25-feet depth increment. All samples were submitted to O'Brien & Gere Laboratories, Inc. of East Syracuse, NY (State Certification #10155) for TCL VOA analysis. Throughout the sampling activities, soil screening samples were collected to determine the presence of volatile organic compounds. No screening results above background concentrations were identified. The results obtained during this investigation are provided on Table 3.

The evaluation of the drainage swale east of the former septic tank involved the review and evaluation of previous investigations within this area. The most recent sampling events occurred in September/October 2003 and August 2000. A copy of each report is provided as Appendix 1. Initially, the objective was to obtain additional soil samples to determine whether septic tank-related contaminants had migrated into this area. However, based upon PID/FID readings, the remediation of Area 1 was expanded into the drainage swale. Post-excavation sample location ST-07 was chosen to provide both post-remediation information and to determine the conditions beneath the drainage swale. The analytical results obtained from this sample and RSD-01 were utilized to evaluate this area. The distance between the excavation perimeter and the nearest roadside drainage ditch sample was 38-feet.

4.0 GROUNDWATER MANAGEMENT

Prior to beginning excavation activities, EPA directed the installation of a surface water intercept system up gradient from the anticipated work areas. The system involved excavation of trench to an average depth of 7.0-feet below grade, installation of 4-inch perforated PVC piping and backfilling with clean crushed bluestone. At the down gradient end, a 24-inch diameter PVC collection pipe was installed as a pumping point. Prior to discharge to the roadside drainage ditch, a grab sample was collected and screened for the volatile organic vapors. Once the discharge began, grab samples were obtained every 30-minutes. Based upon the field screening instrumentation, no evidence of VOC contaminants were detected. During the completion of the soil remediation activities, no standing groundwater was encountered within each area of excavation, thus no de-watering was required. Following the completion of soil excavation activities, the perforated pipe within the intercept trench was removed. Along the length of the trench, at 30-foot increments, all bluestone was removed and replaced with site soils.

4.1 Monitoring Well Installation

Following the backfilling and grading of Areas 1 and 2, replacement monitoring wells were installed by Subsurface Drilling Solutions of Canastota, New York. Copies of the monitoring well construction diagrams are provided in Attachment D. In Area 1, monitoring well MW-6R was installed within the northeast portion of the excavation to a final depth of 23.0-feet below grade. In Area 2, two monitoring wells (MW-2R and MW-2RR) were installed. MW-2R (23.0-feet deep) was installed within the center portion of the excavation while MW-2RR (24.5-feet deep) was located approximately 14.0-feet north of MW-2R and 6.0-feet down gradient of the excavation perimeter.

After backfilling and grading of Area 3, MW-4R was installed northeast of the area excavated during the investigation of this area. This well was installed to a depth of 23.5-feet below grade.

On September 15, 2005 a property boundary and monitoring well survey was completed by Thew Associates, PLLC of Utica, NY (Licensed Land Surveyor #050226). A copy of this survey is provided in Attachment E.

5.0 OFF-SITE DISPOSAL OF HAZARDOUS WASTE

No hazardous waste was generated during the soil remediation at the Site. Following the excavation and staging of approximately 325-cubic yards of soil removed from Areas 1 and 2, a composite waste classification sample was collected. The sample was submitted to O'Brien & Gere Laboratories, Inc. of East Syracuse, NY (State Certification #10155) for TCLP analysis, which included VOCs, metals, mercury, Semi VOCs, ignitability, reactive sulfide and reactive cyanide. The complete analytical results summary pages for this sample are attached as Attachment F. Based upon the analytical results, the material generated did not meet the criteria cited under the Resource Conservation and Recovery Act (RCRA-40 CFR Part 260 et. Seq.) and the Toxic Substances Control Act (TSCA-40 CFR Part 761 et. Seq.).

For the purpose of evaluating disposal alternatives, EPA reviewed both the waste classification sample results and the concentrations identified in the post-excavation samples and decided to utilize this material for on-site grading purposes.

6.0 SITE RESTORATION

Backfilling of Areas 1 and 2 was completed utilizing the soils generated during the excavation and installation of the groundwater intercept trench. Backfilling to grade was accomplished through a series of lifts to allow for proper compaction and minimal settling. Since completing excavation activities in July 2005, EPA has returned to the property on several occasions to monitor the settling in disturbed areas as well as obtain groundwater monitoring well samples. Final grading of all areas was completed on June 7, 2006.

7.0 STATE AND LOCAL AGENCY INVOLVEMENT

Throughout the implementation of Site remediation activities, both the State DEC and DOH visited the Site. In addition, EPA prepared a Site-specific Fact Sheet and update documents (POLREP's) which were forwarded to the appropriate government officials.

8.0 WORKZONE AND COMMUNITY AIR MONITORING

8.1 Fugitive VOC Emissions

During soil excavation activities, on-site personnel monitored the air quality within the work zone and at the property boundary. Direct-reading instrumentation was used to insure that personnel within the work zone were being properly protected from the contaminants present. To insure that no significant levels of fugitive VOC emissions are escaping the work zone and into the local community, additional air-monitoring occurred along the property boundary. A Community Air Monitoring Plan (CAMP) was provided as Appendix C in the RAW. A daily log of the boundary readings is available electronically upon request for interested parties. All boundary readings were within acceptable levels.

8.2 Dust Control

Dust control measures were utilized to prevent the generation of dust during excavation and handling operations. Dust control measures consisted of watering down on-site access roads and/or spraying a fine mist over areas being excavated.

9.0 GROUNDWATER MONITORING PROGRAM

Following the completion of the soil excavation phase of work, a total of four (4) monitoring wells were installed. In Area 1, one monitoring well (MW-6R) was installed within the area of excavation and biased towards the down gradient side of the excavation. In Area 2, two (2) monitoring wells (MW-2R and MW-2RR) were installed. MW-2R was installed within the center portion of the excavation while MW-2RR was installed approximately 6-feet down gradient of the northern excavation perimeter. Following the investigation in Area 3, MW-4R was installed immediately adjacent to this area. The surveyed location of each site monitoring well can be found in Attachment E. As noted in Section 4.1 above, monitoring well construction diagram for the four (4) new wells can be found in Attachment D.

Based on discussions with NYSDEC, it was agreed upon that following the field excavation activities, EPA would conduct quarterly groundwater monitoring for a period of one year. The monitoring program focused on those wells which previously documented the presence of VOCs as well as those on the periphery which would demonstrate plume migration. The wells sampled during each sampling event included:

> :MW-1, MW-2R, MW-2RR, MW-3, MW-4R, MW-6R, MW-12A, MW-13, MW-14, MW-16, MW-17, MW-18, MW-19 and MW-20.

Table 4 provides a summary of the quarterly monitoring by sampling location. A complete copy of the quarterly monitoring results is provided in Attachment G, quarterly groundwater monitoring report (QGMR). Appendix G of the QGMR contains the well data sheets for each well sampled and includes depth to water, temperature, specific conductance, pH, dissolved oxygen and turbidity. Over the

12-month monitoring program, groundwater flow direction was consistently north-northeast and towards the Nowadaga Creek. No residential groundwater users or receptors are located directly down gradient of the Site. The results were evaluated in relation to Federal Drinking Water Standards (FDWS) and 6 NYCRR Part 703 Groundwater Standards (GWS). Concentrations above FDWS are depicted in red, while those above DWS are depicted in orange.

10.0 CONCLUSIONS/RECOMMENDATIONS

The analytical results obtained from post-excavation soil samples collected in Areas 1 and 2 are summarized on Tables 1 and 2, respectively. The analytical results obtained from post-excavation samples collected in Area 1 identified VOC concentrations above DEC-TAGM guidelines at three locations, ST-05, ST-08 and ST-09. At each sampling location, cis-1,2-dichloroethene represented highest contaminant concentration identified within this area. The analytical results obtained from post-excavation soil samples collected in Area 2 identified one sample (GAR-02) to contain a PCE concentration slightly above DEC-TAGM guidelines. In Area 3, no soil sampling activities were conducted. As shown on Table 3, samples collected during the Area 4 investigation did not identify VOC concentrations at any of the locations above DEC-TAGM guidelines.

Based upon the post-excavation analytical results, the excavation program conducted within Area 1 and Area 2 successfully removed contaminant source materials within each area. Residual contamination is expected to attenuate. The analytical results obtained from below the roadside drainage ditch did not identify contamination which would warrant a removal action.

As summarized on Table 4, the ground water within fourteen (14) monitoring well locations were included in the 12-month monitoring program. At four (4) monitoring locations, MW-2RR, MW-16, MW-17 and MW-19, contaminants of concern were not detected at any time over the 12-month period. At eight (8) monitoring locations, MW-1, MW-2R, MW-6R, MW-12A, MW-13, MW-14, MW-18 and MW-20, only slightly elevated concentrations of VOC contaminants were identified above either FDWS or GWS criteria. At the remaining two (2) monitoring locations, MW-3 and MW-4R, contaminant levels have consistently been above FDWS and/or GWS criteria.

Overall, the concentrations of contaminants of concern (TCE, PCE, Vinyl Chloride and cis-1,2-Dichloroethene) have decreased over the 12-month monitoring program following the excavation program. During the monitoring program, the March 2006 sampling event documented an increase in cis-1,2-dichloroethene and/or TCE concentrations at MW-3, MW-4R and MW-13 locations. However, the next quarterly sampling event documented substantial decreases in concentrations of contaminants at each location. As illustrated on the survey provided in Attachment E, MW-4R and MW-13 locations are located on the northern side of Johnny Cake Road and down gradient of remediation/investigated areas. It is believed that the sudden increases at these locations were attributable to the disturbance of Site soils and contaminants.

To further demonstrate the effectiveness of the excavation program, a historical comparison of groundwater results were compiled and provided as Appendix 4. Many of the groundwater results date back to 1990. The comparison or trends were plotted for MW-1, MW-2/2R, MW-3, MW-6/6R, MW-13, MW-14, MW-18 and MW-20.

In order to determine the migration potential and attenuation properties of Site contaminants, EPA requested an assessment of the fate and transport be completed. A copy of the Natural Attenuation of Site Contaminants Report (NASC) is included as Appendix 5 of this document. Based upon a review and evaluation of existing Site information (soil data, groundwater data and geological properties), the following conclusions were reached:

1) the contaminant plume could persist for at least another 10 years;
2) the contaminant plume may be migrating slowly northward;
3) concentrations above groundwater cleanup standards are not expected to reach Nowadaga Creek;
4) the soil remediation/source removal program should greatly assist in limiting the migration of Site contaminants;
5) the residual groundwater and soil contamination are expected to attenuate; and
6) the plume is stable and naturally attenuating.

Because residual low-level VOC contamination were documented within soils immediately adjacent to the excavation limits following the Area 1 and Area 2 remediation, EPA is recommending that future land use be restricted through an Environmental Easement being placed on this portion of the Site. A draft environmental easement is included as Appendix 2. The area affected by the easement will include all property south of Johnny Cake Road which formerly contained the farmhouse and garage building. This area is contained within tax parcel number 127.002-4-1 and consists of approximately 4.02-acres. In addition to the easement, EPA recommends that soil use restrictions be instituted at the Site. The restrictions which are believed warranted in this case are provided in Appendix 3, Soil Management Plan (SMP). Once the Environmental Easement has been placed on this property, EPA requests that the property be evaluated for possible de-listing from or reclassification on the NYSDEC In-active Hazardous Waste Site Registry.

EPA is recommending or concluding the following:

1) Develop a Soil Management Plan for residually contaminated soils in Areas 1 and 2;
2) Develop and file an Environmental Easement to prohibit the use of groundwater and restrict the development of the Site without written approval by the NYSDEC and the NYSDOH.

3) Re-define the Site to include only the known and potentially impacted areas;
4) Re-classify and/or de-list the Site from the NYSDEC In-active Hazardous Waste Site Registry;
5) Transfer responsibility for long-term monitoring to the NYSDEC, Division of Environmental Remediation from the U.S. EPA; and
6) Provide written notice to the U.S. Marshal Service that lands outside the newly defined Site description maybe disposed through proper avenues.

ATTACHMENT A

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 6
Dulles State Office Building, 317 Washington Street, Watertown, New York 13601-3787
Phone: (315) 785-2513 • **FAX:** (315) 785-2422
Vebsite: www.dec.state.ny.us

Denise M. Sheehan
Acting Commissioner

April 28, 2005

Mr. Andrew Confortini
USEPA Region 2 Office
2890 Woodbridge Avenue
Building 209
Edison, New Jersey 08837-3679

RE: JOHNNY CAKE ROAD SITE NO. 622016

Dear Mr. Confortini:

The Department has reviewed the revised Soil Removal Action Work Plan for the above referenced site dated April 2005, and finds that our previous comments have been addressed. Therefore, we accept the work plan for implementation. Please let me know when your schedule becomes set.

If you have any questions, please feel free to contact me.

Sincerely

Peter S. Ouderkirk, P.E.
Project Manager

PSO:kw

cc: Darrell M. Sweredoski
David Crosby
William Bennett
Greg Rys - NYSDOH - Herkimer
Mike Rivara - NYSDOH - Troy

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 6
Dulles State Office Building, 317 Washington Street, Watertown, New York 13601-3787
Phone: (315) 785-2513 • **FAX:** (315) 785-2422
Website: www.dec.state.ny.us

Denise M. Sheehan
Acting Commissioner

April 8, 2005

Mr. Andrew Confortini
USEPA Region 2
2890 Woodbridge Avenue
Building 209
Edison, New Jersey 08837-3679

RE: JOHNNY CAKE ROAD SITE NO. 622016

Dear Mr. Confortini:

The NYSDEC and the NYSDOH have reviewed the Removal Action Work Plan for the above referenced site and would like to offer the following suggested comments.

1. Section 1.0: The work plan should provide an introductory section which briefly describes how this project came to this point and the current status of funding and support.

2. Section 2.1: Please provide a figure denoting the components of the Construction Site Management Plan .

3. Section 4.0: In the first paragraph it would be helpful to list the three areas of concern, as an outline to the rest of the section.

4. Section 4.1-3: What is the basis for the proposed excavations? Will sheet piling be required? In reference to initial excavation, a "screening instrumentation" is mentioned, but not explained at all. Please define the sampling plan for both field screening methods and confirmation sampling.

5. Section 4.4: Please provide the sampling plan for the unnamed drainage swale and the roadside drainage ditch. Approximately how many, and to what depths, will samples be collected in these areas? Based on past sampling, is excavation of these areas planned?

6. Section 4.5: For soil dewatering, the discharge point into the unnamed drainage swale should be identified before mobilization to assure feasibility. The discharged water must meet the substantive requirements of a State Pollution Discharge Elimination System (SPDES) Permit. Please provide details concerning sampling, breakthrough analysis and operation of the proposed system. For more information on SPDES Permits please see: http://www.dec.state.ny.us/website/dcs/spdes/

7. Section 7.0 The project schedule should be on one page for clarity, possibly in a table format. Spacing is needed in between phases 02 and 03. On a whole, the schedule seems short and there is no contingency factored in.

8. Section 10.0: Is this RAW the extent of the EPA involvement in this project? Will NYSDEC be the exclusive agency on this project at the conclusion of the RAW? The RAW will likely not be the final remedial action at this site, there will at least be a groundwater monitoring program necessary. It was our understanding that the EPA would evaluate and implement a groundwater remedial action plan. The Department would consider conducting the O&M activities after implementation of the groundwater remedy.

9. At the completion of this RAW, a final report summarizing the work conducted, the remaining contamination and any future work must be provided.

10. The Department understands that deep aquifer drinking water wells have been installed for neighboring homes. Were the shallow wells previously serving these homes contaminated or determined to be potentially under the influence of surface water? If so, investigation of these additional properties may be warranted. Further, it should be noted whether the former wells were properly abandoned.

11. If the extent of groundwater contamination is known, plume maps should be provided. Depending on plume extent/locations, the vapor intrusion pathway may need to be characterized for future site use and neighboring homes.

If you have any questions, please feel free to contact me.

Sincerely

Peter S. Ouderkirk, P.E.
Project Manager

PSO:kw

cc: Darrell M. Sweredoski
David Crosby
William Bennett
Greg Rys - NYSDOH - Herkimer
Mike Rivara - NYSDOH - Troy

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Website: www.dec.state.ny.us

Denise M. Sheehan
Acting
Commissioner

March 18, 2005

DISTRIBUTION

RE: Removal Action Work Plan
Johnny Cake Road Site
Site No. 6-22-016

Dear Reviewers:

By now you should have received the above referenced work plan dated March 16, 2005 from the USEPA Region 2 Office. Please review the work plan and provide comments to me by April 5, 2005. I will correlate our comments back to EPA for consideration. If you have any questions, please feel free to contact me.

Sincerely,

Peter S. Ouderkirk, P.E.
Project Manger

PSO:ebt

DISTRIBUTION:
Darrell M. Sweredoski
Lincoln Fancher
David Crosby
Mike Rivara - NYSDOH - Troy
Greg Rys - NYSDOH - Herkimer
Andrew Confortini - USEPA Region 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
2890 WOODBRIDGE AVENUE
EDISON, NEW JERSEY 08837-3679

March 16, 2005

Mr. David Crosby
NY State Dept. of Environmental Conservation
Central Office - 11th Floor
625 Broadway
Albany, NY 12233-7014

Re: Removal Action Workplan
Johnny Cake Road Site
Danube, Herkimer County, NY

Dear Mr. Crosby:

Enclosed please find two copies of the draft Removal Action Workplan (RAW) prepared by the United States Environmental Protection Agency (EPA) which outlines the remediation measures to be taken to address the soil contamination at the Johnny Cake Road Site. The RAW has been developed based upon historical results and designed to provide a general overview of the proposed work.

At this time, EPA is anticipating beginning soil excavation activities/operations in May 2005. Before starting the work, EPA would like to provide the Department with an opportunity to review the proposed RAW and provide comments by April 15, 2005.

Any comments or questions should be directed to me via e-mail at confortini.andrew@epa.gov or telephone at (732) 906-6827.

Yours truly,

Andrew L. Confortini
On-Scene Coordinator
U.S. EPA

cc: Darrell M. Sweredowski, DEC - Watertown Office
Peter Ouderkirk, DEC - Watertown Office
Lincoln Fancher, DEC - Watertown Office
Gregory Rys, NYSDOH - Herkimer County
Michael F. Rivara, NYSDOH - Troy, NY
Marla Wieder, EPA - ORC
Joseph D. Rotola, EPA - ERRD-RAB

SOIL REMOVAL ACTION WORKPLAN

JOHNNY CAKE ROAD SITE
Danube Township
Herkimer County, New York

Site ID# 6M

Prepared for:

The United States Environmental Protection Agency
2890 Woodbridge Avenue
Edison, New Jersey 08837

Prepared by:

The United States Environmental Protection Agency
2890 Woodbridge Avenue
Edison, New Jersey 08837

April 2005

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Site Background/Physical Setting

The Johnny Cake Road Site (JCR) property formerly consisted of approximately 377 acres of farmland along the north and south side of Johnny Cake Road in Danube Township, Herkimer County, New York (see Figure 1 in Appendix A). In the late 1980's, the U.S. Marshal's Service seized the property during a drug investigation. After the illegal drugs were recovered from the manufacturing area and throughout the farmhouse, evidence of drug-related solvent dumping was identified in various locations at the property . Subsequent investigations have determined the actual extent of contamination to be confined to a small area (<3-acres) within the southeastern portion of the property (Figure 2 in Appendix A).

The area surrounding the JCR Site consists of residential dwellings and farms. The JCR site slopes moderately downward from the southern boundary of the property south of the two bay garage, to the north across Johnny Cake Road and further downward to a tributary of Nowadaga Creek. This stream is approximately 500 feet north of the farm house and is topographically down-gradient from the suspected spill areas. The area around the site generally consists of a gently rolling topography with a well-defined drainage valley along the northern boundary of the farm property and a steep upwardly sloping hill toward the southern boundary. The Site formerly consisted of a two-story farmhouse, a livestock stable/stall barn, a two-bay garage building and a dairy barn. Volatile organic solvents were stored in drums inside the garage building. These solvents were then used in the cocaine manufacturing/refining process being conducted in the farmhouse basement. Waste solvents generated as a result of this operation were reportedly dumped onto the unpaved garage floor, the house basement floor, driveway surface, and into the site septic tank.

1.2 Previous Removal Actions

On April 19 and 20, 1989, C. T. Male Associates, P. C. performed an initial phase of a subsurface contamination investigation. Soil samples from the garage floor indicated the presence of trace concentrations of methylene chloride, trichloroethene (TCE), tetrachloroethene (PCE). However, during the same investigation soil samples collected just below the water table identified trichloroethene (TCE), tetrachloroethene (PCE), toluene, acetone, and methylene chloride at slightly higher concentrations.

On August 8, 1989, the U.S. Environmental Protection Agency (EPA) Region II Removal Action Branch (RAB) received a request from the U.S. Marshal's and U.S. Attorney's Offices to conduct a removal assessment at the Johnny Cake Road Site. As a result of this request, on August 27, 1990, an Action Memorandum was approved to perform a removal action, which included, the transfer of contents of the septic tank and a 55-gallon drum into secure on-site containers. Subsequently, the U.S. Attorney's Office, the U.S. Marshal's Office and the EPA began the process of formally entering into an Interagency Agreement (I.G.) for the reimbursement of funds for actions performed by the EPA and to conduct further rededication of the site.

In April and May 1990, the U.S. Marshal's Office conducted additional site investigations in other portions of the property. The results indicated that toluene, TCE, and PCE were present in both the stream and in the pond area along the eastern property boundary. These contaminants (in the groundwater and surface water) exceeded the New York State Ambient Water Quality Standards and NYSDOH ground-water/drinking water standards and/or guidance value.

In September and November of 1990, the U.S. EPA Environmental Response Team (ERT) and its Response Engineering and Analytical Contractor (REAC) contractor, at the request of the U.S. EPA Region II RAB, conducted an extent of contamination investigation by soil gas methods and analyses of groundwater. A seismic refraction survey was also conducted to identify potential pathways for both lateral and vertical migration of contaminants into the bedrock aquifer.

On March 8, 1991, verbal authorization was granted for a removal action restart to complete off-site disposal of the stabilized material transferred from the septic tank and 55-gallon on-site drum.

In May of 1991, ERT/REAC returned to the site to ascertain the specific area of soil contamination for removal purposes, and to determine whether contamination is migrating beyond those areas identified in previous investigations.

The analytical results of this investigation confirmed previous sampling results as to the location of the spill areas at the site, the septic tank, in front of the two-bay garage, the driveway and the west side of the livestock stable/stall barn.

In April of 1993, ERT/REAC returned to the site to perform an ecological assessment. The objectives of the study were to evaluate stream quality based on benthic community structure. Information generated from this assessment indicated that the creek was a possible receptor for the groundwater contamination and recommended corrective actions to avoid or reduce the threats to the creek and the associated ecological resources.

In October 25 -26, 1993, EPA and its Technical Assistance Team (TAT) returned to the Site to resample monitoring and residential wells in order to update the location of the groundwater plume and to identify source areas for remediation. During this investigation, 42 soil borings (at depths of 3 and 6 feet), 20 aqueous samples from 7 monitoring wells, 4 residential wells, the on-site swimming pool, 2 down gradient surface water stream samples, and 4 quality assurance samples (trip, field and cleaning blanks) were analyzed for volatile organic compounds under the Quick Turnaround Method (QTM) program.

The analytical results of this investigation confirmed previous sampling results as to the location of the spill areas at the site, the septic tank, in front of the two-bay garage, the driveway and the west side of the livestock stable/stall barn.

In May and June 1995, as a precautionary measure, EPA returned to the Site to monitor the installation of five (5) deep-aquifer drinking water wells for nearby residents. At each residence, a shallow-tray air stripping unit was installed and groundwater monitored. In each case, both the untreated and treated water was found to be free of site-related contaminants.

In April 2000, EPA returned to the Site to resample eight monitoring wells and four residential wells to determine whether plume migration had expanded. Based upon the data obtained from this sampling event, the plume had remained relatively unchanged. No evidence of impact on the residential wells was identified.

During the last 3-months of 2003, EPA and its contractors returned the Site to conduct additional soil and groundwater investigations. The investigation involved the installation of five additional monitoring wells and 27 soil borings. The objective of this work was to determine the nature and extent of subsurface soil and groundwater contamination as well as determine plume migration. The results of this investigation indicated that the groundwater plume had not changed, however, the extent of soil contamination was deeper than previously identified.

1.3 Current Status

Following the demolition of the farmhouse, garage and several barns in the early 1990's, the Site has revegetated itself naturally. However, in various locations, evidence of concrete foundations and footings are visible. The most recent activities at the Site were conducted by EPA in February/March 2005 and involved the groundwater sampling of all on-site monitoring wells. The analytical results obtained from this event will be utilized to develop/refine the draft groundwater remedy for this Site.

At this time, the U.S. Marshal's Office has established a special account with the EPA to provide the necessary funding to address soil and groundwater remedy costs at this Site.

1.4 Site Geology/Soils

According to the U.S. Geological Survey, the area incorporating the Johnny Cake Road site consists of surficial deposits of lacustrine sand, kame moraine and ablation till and ground moraine at south and southwest of the site.

<u>Lacustrine Sand</u>: "Sand, well sorted, stratified, deposited into glacial lakes in a near shore, shallow-water environment. Variable thickness. Relatively permeable moderate."

<u>Kame Moraines</u>: "Ice-contact, poorly sorted to moderately well-sorted deposits of sand and gravel that may also contain considerable amounts of silt, clay and boulders. Relative permeability low to moderate but generally high in coarse, well-sorted beds."

Ablation Till: Ablation till is typically loose and uncompacted and, therefore, much more permeable that till moraine or ground moraine. Permeability is also enhanced by the general absence of the silt and clay fraction, which was carried off by meltwater.

Ground Moraine: "Ice-contact, unsorted, unstratified mixture of clay, silt, sand, gravel, and boulders deposits beneath advancing glacial ice. This formation is relatively impermeable with moderate to large clay content and tends to be sandy and thus, more permeable in areas underlain by igneous and metamorphic rock.

The area incorporating the Johnny Cake Road site typically contains soils denoted as the Lansing series, which have been described by the U.S. Soil Conservation Service, as follows:

"The Lansing series consists of deep, well-drained medium-texture soils that formed in calcareous glacial till derived mainly from shale, limestone, sandstone and siltstone. These soils are nearly level to steep and are on upland till plains. They are medium in lime.

In a representative profile the surface layer is dark grayish-brown silt loam about 9 inches thick. It is underlain by a leached subsurface layer of dark yellowish brown, medium acid, very friable gravel silt loam that extends to a depth of about 16 inches. Between depths of 16 and 31 inches, the upper part of the subsoil is brown to dark-brown, medium acid friable gravelly silt loam. The lower part of the subsoil is mottled, brown to dark-brown gravelly very fine sandy loam about 11 inches thick that is friable and medium acid. The dense till substratum begins at a depth of about 42 inches. It consists of firm, mottled, brown to dark-brown gravelly silt loam to a depth of 50 or more inches, that is neutral to a depth of about 47 inches and calcareous below.

The water table in Lansing soils is normally at a depth of more than 30 inches, but in places it is perched on the slowly or very slowly permeable substratum and being within 24 to 30 inches of the surface in spring and during wet period."

2.0 SITE PREPARATION

Site preparation will include all activities necessary to prepare the Site for soil excavation work. This work will primarily involve site clearing, installing access roads and removal of debris/remains of former structures. All activities will be conducted in such a manner as to protect on-site monitoring wells.

2.1 Personnel Support and Hygiene Facilities

At the commencement of the project, the contractor will mobilize all personnel support and hygiene facilities as specified in the Health and Safety Plan (HASP), and OSHA 29 CFR Part 1910, as instructed by the OSC. Facilities to be established at the Site may include:

a. Personnel hygiene supplies/emergency medical supplies;
b. an EPA/contractor's field trailer; and
c. support/storage areas.

Any changes to the proposed facility plan must be approved by the EPA OSC before such changes are implemented.

2.2 Equipment Decontamination Facility

Equipment and transportation vehicles used during the remediation will be decontaminated prior to leaving the Site. An alternate approach for the loading of contaminated material may be developed based upon field limitations (i.e. roll off, loading in uncontaminated areas, etc.). All wash water generated as a result of decontamination will be containerized for on-site treatment. A high-pressure cleaner will be used to decontaminate equipment involved in the actual handling of contaminated soil prior to leaving the Site.

3.0 SITE SPECIFIC REMEDIATION OBJECTIVES/GOALS

The objective of this work in each area will be to remove contaminated soil, identification of additional areas of contamination and evaluate possible exposure pathways, both on and off-site, to residual contaminants.

The Site Specific Remediation Objectives for this Site which will be used to demonstrate the effectiveness of remediation activities are provided as Appendix B. In summary, during cleanup activities, EPA will utilize those remediation goals specified by the NYSDEC's Technical and Administrative Guidance Memorandum #4046 (TAGM).

Sampling will be performed in accordance with the NYSDEC Analytical Services Protocol (ASP).

4.0 SCOPE OF WORK

The following sections describe the areas of concern, composition of contamination and the removal activities which will be taken to remediate these areas. The location of each area is depicted on Figure 3 in Appendix A. The areas of concern are as follows:

Area 1 - Former Farmhouse Septic Tank;
Area 2 - Former Garage/Storage Building;
Area 3 - Former Livestock Stable/Stall Barn; and
Area 4 - Additional Soil Investigations:
-Drainage Swale;
-Roadside Drainage Ditch.

During cleanup activities, contractor personnel will adhere to the protocols recommended in the approved Health and Safety Plan (HASP) for this Site. A copy of the HASP will be maintained on-site at all times by the Health and Safety Officer (HSO). However, please note that the activities described below may not be conducted in the order outlined in the Workplan.

During soil remediation activities, all post-excavation samples collected for TCL VOA analysis will adhere to EPA/ERT Soil Sampling SOP No. 2012 and No. 2006 (Sampling Equipment Decontamination Procedures). Throughout the entire soil excavation program, organic vapors will be monitored within the work zone and soil samples screened utilizing a calibrated Photoionization Detector (PID) and Flame Ionization Detector (FID). Use of these instruments will assist in determining the horizontal and vertical extent of excavation activities. During soil removal activities, a screening level of 5 parts per million (ppm) above background will be used as a guide to direct excavation work. However, please note that use of this information will not preclude post-excavation sampling activities. Excavated material generated during the removal action will be placed onto and covered with 6-mil polyethylene sheeting. It is anticipated that the stockpiled materials will remain on-site pending laboratory results and disposal coordination for a period not to exceed 60-days.

The sections below outline the overall approach to addressing each area of concern. The dimensions of each excavation have been estimated and could change substantially based upon actual field conditions encountered at the time of excavation.

4.1 Area 1 - Former Farmhouse Septic Tank

Area 1 is the location of the former concrete septic tank which was used for the disposal of both sanitary and chemical wastes generated during the drug manufacturing/refining. The 4-foot wide by 6-feet deep tank is located approximately 8-feet east of the former farmhouse foundation wall (see Figure 2 in Appendix A). No septic system leach field was identified during subsurface investigations of this area. The contents of the tank were removed in the early 1990's, however, the removal of elevated concentrations of volatile organic compounds surrounding the tank was postponed until sufficient information regarding the extent of the contamination could be investigated.

Based upon historical analytical results from this area, the extent of the contamination is anticipated to have been confined to an area approximately 40-feet wide by 40-feet long and 10-feet in depth. The actual dimensions of this excavation will be field determined based upon screening instrumentation utilized during removal activities.

It should be noted that the extent of Area 1 excavation activities may also be limited by the presence of the former farmhouse foundation to the west, the drainage swale to the east and the filled in in-ground pool to the south.

4.2 Area 2 - Former Garage/Storage Building

Area 2 is located approximately 40-feet south of the former farmhouse location (see Figure 2 in Appendix A). The now demolished two-door steel building was utilized for the storage and disposal of solvents used in the manufacturing/refining of illegal drugs. In the early 1990's, EPA personnel directed the sampling and removal of all 55-gallon drums and other containers from within this building.

Since that time, EPA has conducted several subsurface soil investigations within this area which have confirmed the presence of significant concentrations of volatile organic compounds. Based upon the historical analytical results from this area, the extent of the contamination is anticipated to be confined to an area approximately 30-feet wide by 30-feet long and 10-feet in depth. The actual dimensions of this excavation will be field determined based upon screening instrumentation utilized during excavation activities.

It should be noted that the extent of Area 2 excavation activities may also be limited by the presence of the former farmhouse foundation to the north and may extend into the driveway portion of the Site. It may include an area within the footprint of the former farmhouse.

4.3 Area 3 - Former Livestock Stable/Stall Barn

Area 3 is located approximately 10-feet north of Johnny Cake Road and directly down gradient of the former farmhouse location (see Figure 2 in Appendix A). The now demolished building was also utilized for the storage and disposal of solvents used in the manufacturing/refining of illegal drugs. In the early 1990's, EPA personnel directed the sampling and removal of all 55-gallon drums and other containers from within this building.

Since that time, EPA has conducted several subsurface soil investigations within this area which have confirmed the presence of significant concentrations of volatile organic compounds. Based upon the historical analytical results from this area, the extent of the contamination is anticipated to be confined to an area approximately 30-feet wide by 30-feet long and 10-feet in depth. The actual dimensions of this excavation will be field determined based upon screening instrumentation utilized during excavation activities.

4.4 Area 4 - Additional Soil Investigations

Concurrent to Site remediation activities, EPA will initiate a subsurface soil investigation within the following areas:

: along the drainage swale located (just east of the former septic system); and
: along the roadside drainage ditch.

The objective of this investigation will be to determine whether soil remediation is warranted in these portions of the Site, and if identified, whether the concentrations represent a significant threat to public health or the environment. Sampling locations will be field determined based upon observed runoff seepage points, soil discoloration and previous analytical data from this area. Because both the swale and drainage ditch receive continuous runoff, samples will be collected at the following depths: 0.0 to 0.5-feet below grade, 1.5 to 2.0-feet below grade and 3.5 to 4.0-feet below grade (or refusal). The analytical results obtained will also be utilized in the development of the groundwater remedy plan. Previous investigations in each of these areas have revealed low concentrations of volatile organic compounds.

4.5 Groundwater Management

During the completion of the soil remediation activities, it is anticipated that daily excavation dewatering will be necessary. The extent of dewatering will is dependent upon seasonal fluctuations and the actual start date of activities. In order to minimize the amount of surficial groundwater entering into the work area, EPA anticipates the installation of an up gradient intercept trench to divert groundwater into the unnamed drainage ditch.

The water generated during dewatering operations will be treated prior to discharge into the unnamed drainage swale along the eastern property boundary. The water will first pass through a sediment removal filter, then through the granular activated carbon treatment units and into a temporary holding tank where it will be screened for the presence of volatile organic compounds. Depending upon the volume of water generated, periodic sampling may be necessary.

From the holding tank, the water will gravity drain into the unnamed swale. The exact discharge point will be determined based upon conditions encountered in the field, but is anticipated to be at the invert where it meets Johnny Cake Road.

5.0 OFF-SITE DISPOSAL OF HAZARDOUS WASTE

The transportation and off-site disposal of hazardous waste will be accomplished by the contractor(s) three bid selection process as specified by the ERRS Contract requirement. Waste materials generated during the excavation activities will be evaluated based on the criteria cited under the Resource Conservation and Recovery Act (40 CFR Part 260 et. Seq.) and the Toxic Substances Control Act (40 CFR Part 761 et. Seq.). Off-site disposal will comply with the CERCLA Off-site Policy. Land Disposal Restrictions (LDR's), if required, will be thoroughly reviewed in connection with all off-site disposal activities.

All disposal activities from analysis review, waste profile submittals, selection, to final acceptance will be subjected to review by EPA personnel prior to final disposition of the waste.

Pre-remediation soil volume estimates indicated that 1,260 cubic yards of soil will be generated. Actual disposal volumes will depend upon waste classification samples results and field screening results. In some cases, non-contaminated overburden materials may be used as backfill. Excavated material generated during the removal action will be placed onto and covered with 6-mil polyethylene sheeting. It is anticipated that the stockpiled materials will remain on-site pending laboratory results and disposal coordination for a period not to exceed 60-days.

6.0 SITE RESTORATION

Based upon receipt of post-excavation sampling results demonstrating the effectiveness of the removal, the excavation will be backfilled. Backfilling to grade will be accomplished through a series of lifts to allow for proper compaction. Following the compaction, final grading of the disturbed areas and allowing sufficient time for any settling, flora consistent with the surrounding area will be planted. If significant settling is observed prior to planting, additional backfill materials will be installed in these areas.

7.0 ANTICIPATED PROJECT SCHEDULE

Completion of the soil removal activities at the Johnny Cake Road Site is anticipated to be completed within 45 calendar days. The schedule provided below includes the task number, task description and duration of the activity:

01	Site Mobilization -personnel, equip., support facilities, site clearing/prep	Week 1
02	Soil Excavation - Areas 1& 2, Soil Investigation Sampling	Week 2
	Soil Excavation - Area 3, Soil Investigation Sampling - Excavation Backfilling/Grading	Week 3-4
03	Soil Disposal - Loading and manifesting for off-site disposal - Excavation Backfilling/Grading	Week 4-5
04	Site Restoration - Final Grading and Planting	Week 5-6
05	Miscellaneous Tasks - Site Security Measures, Mapping	Week 6

8.0 STATE AND LOCAL AGENCY INVOLVEMENT

Throughout the implementation of Site remediation activities, both the State and local entities will be welcomed to visit the Site. In addition, EPA will prepare a Site-specific Fact Sheet and bi-weekly update documents (POLREP's) which will be forwarded to both State and local government officials. In order to keep the public informed of Site activities, an Administrative Index will be prepared for Site. This document will be maintained at the local library.

In addition, representatives from the NYSDEC were involved in the preparation of this document. Specific comments and clarifications have been addressed and incorporated into the sections above.

9.0 WORKZONE AND COMMUNITY AIR MONITORING

9.1 Fugitive VOC Emissions

During soil excavation activities, on-site personnel will monitor the air quality within the workzone and at the property boundary. Direct-reading instrumentation will be used to insure that personnel within the workzone are being properly protected from the contaminants present. To insure that no significant levels of fugitive VOC emissions are escaping the workzone and into the local community, additional air-monitoring will occur along the property boundary. A Community Air Monitoring Plan (CAMP) is provided as Appendix C. A daily log of the boundary readings will be available for interested parties. However, should boundary readings exceed the acceptable level, ALL excavation activities are to STOP immediately in order to allow the emission to dissipate. Should this problem persist, the use of vapor suppressing foams maybe incorporated into the excavation program.

9.2 Dust Control

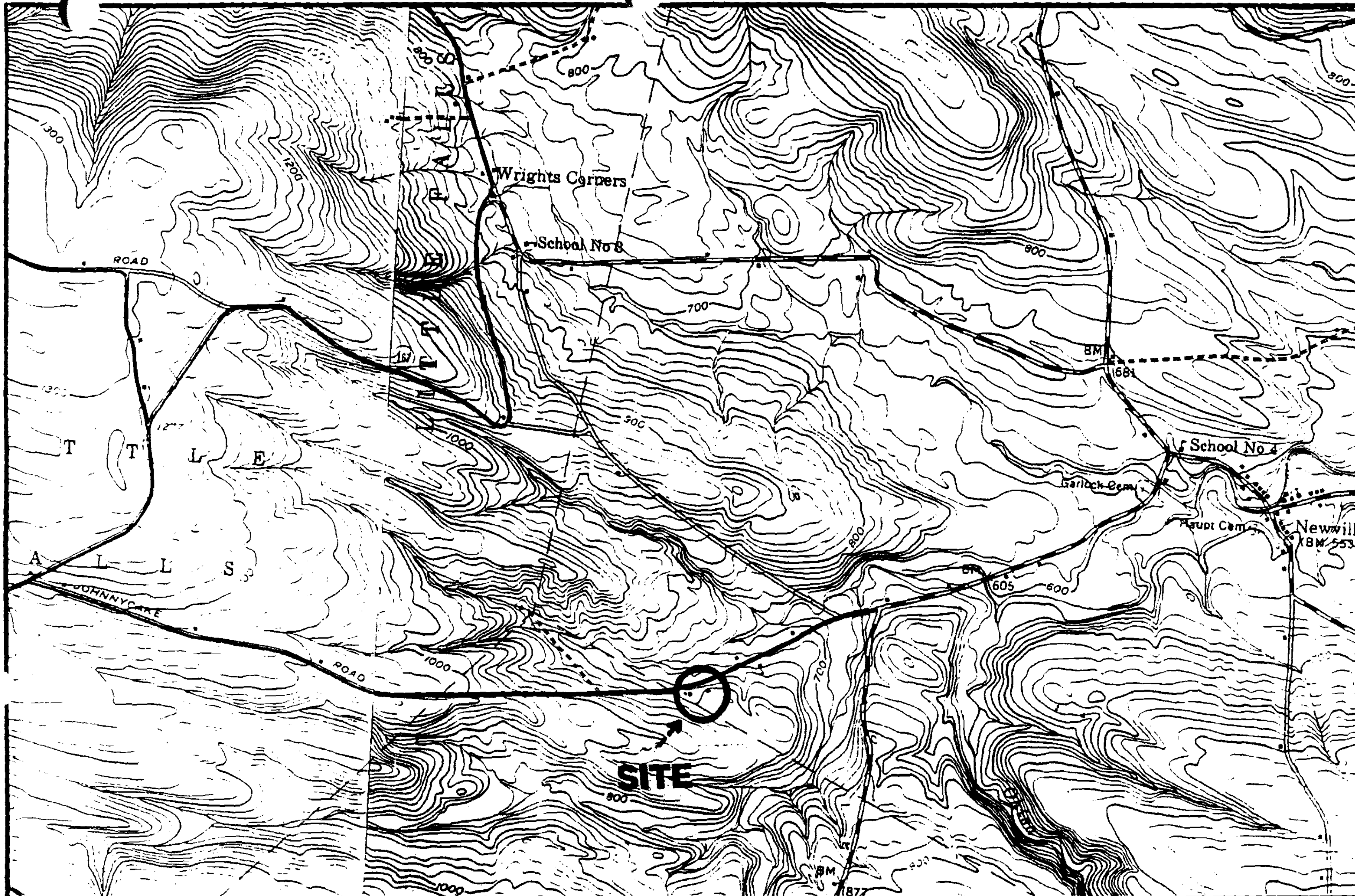
Dust control measures will be implemented as required to prevent the generation of dust during excavation and handling operations. If necessary, non-potable grade water will be used for dust control, when required. Dust control measures consist of watering down on-site access roads and/or spraying a fine mist over areas being excavated.

10.0 REMOVAL ACTION REPORT

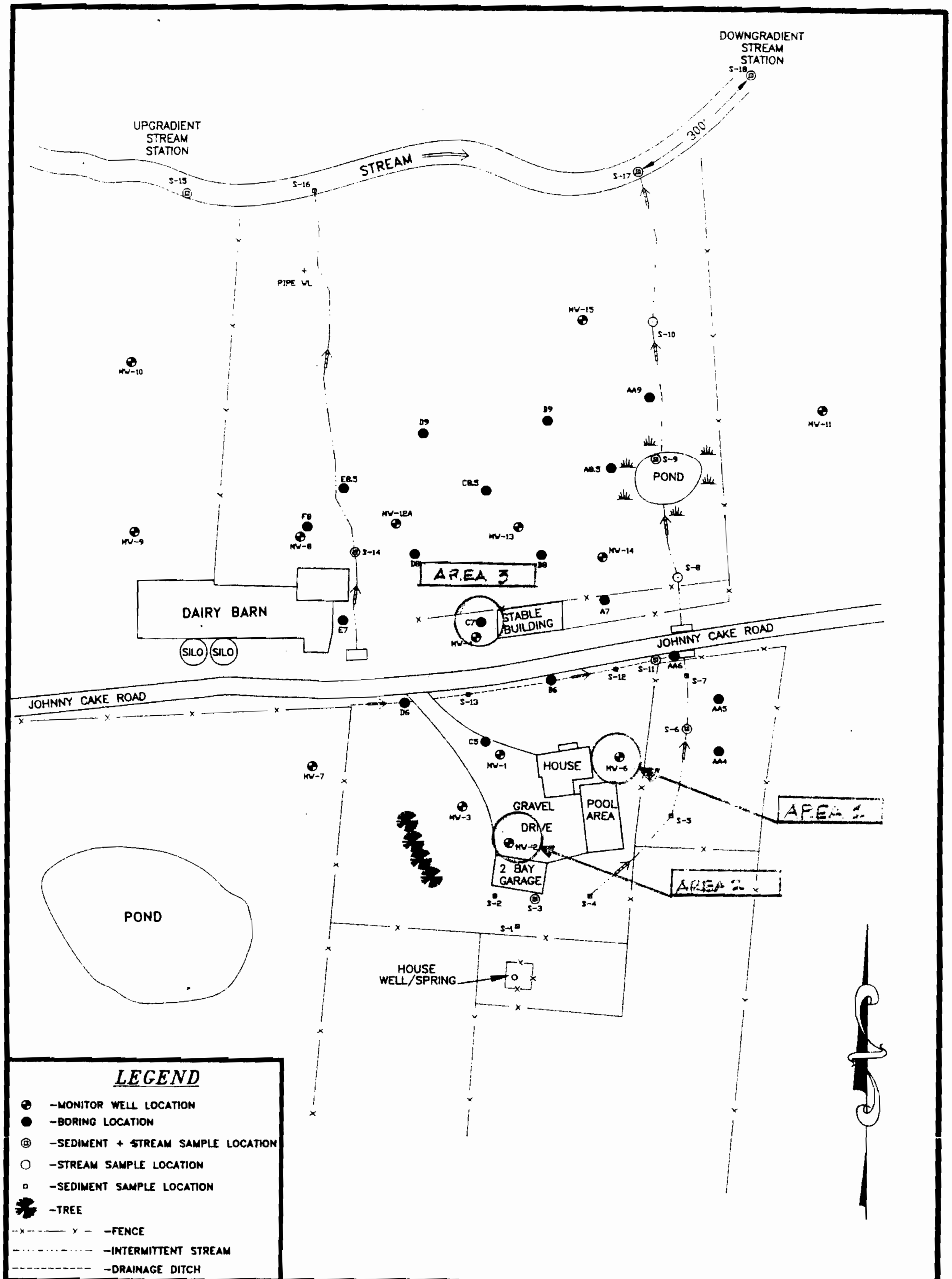
Following the completion of the activities described in this document, a Removal Action Report (RAR) will be prepared. The RAR will include all information pertinent to the completion of the RAW, including laboratory results, field screening results, photographs, maps, field notes and disposal documentation.

The analytical results generated as a result of this removal action will be utilized in the preparation/development of a Proposed Remedial Action Plan (PRAP) by the NYSDEC.

APPENDIX A



WESTON Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM L. DiGuardia	Johnny Cake Road Site
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOU… APPLICATIONS, INC. AND R.E. SARRIERA … IATES	TAT PM B. Lin	FIGURE 1



GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 75 ft.

US EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-03-3482
W.O.# 3347-31-01-4431

FIGURE 2
WELL AND SAMPLE LOCATION MAP
JOHNNY CAKE ROAD SITE
DANUBE, HERKIMER COUNTY, NY

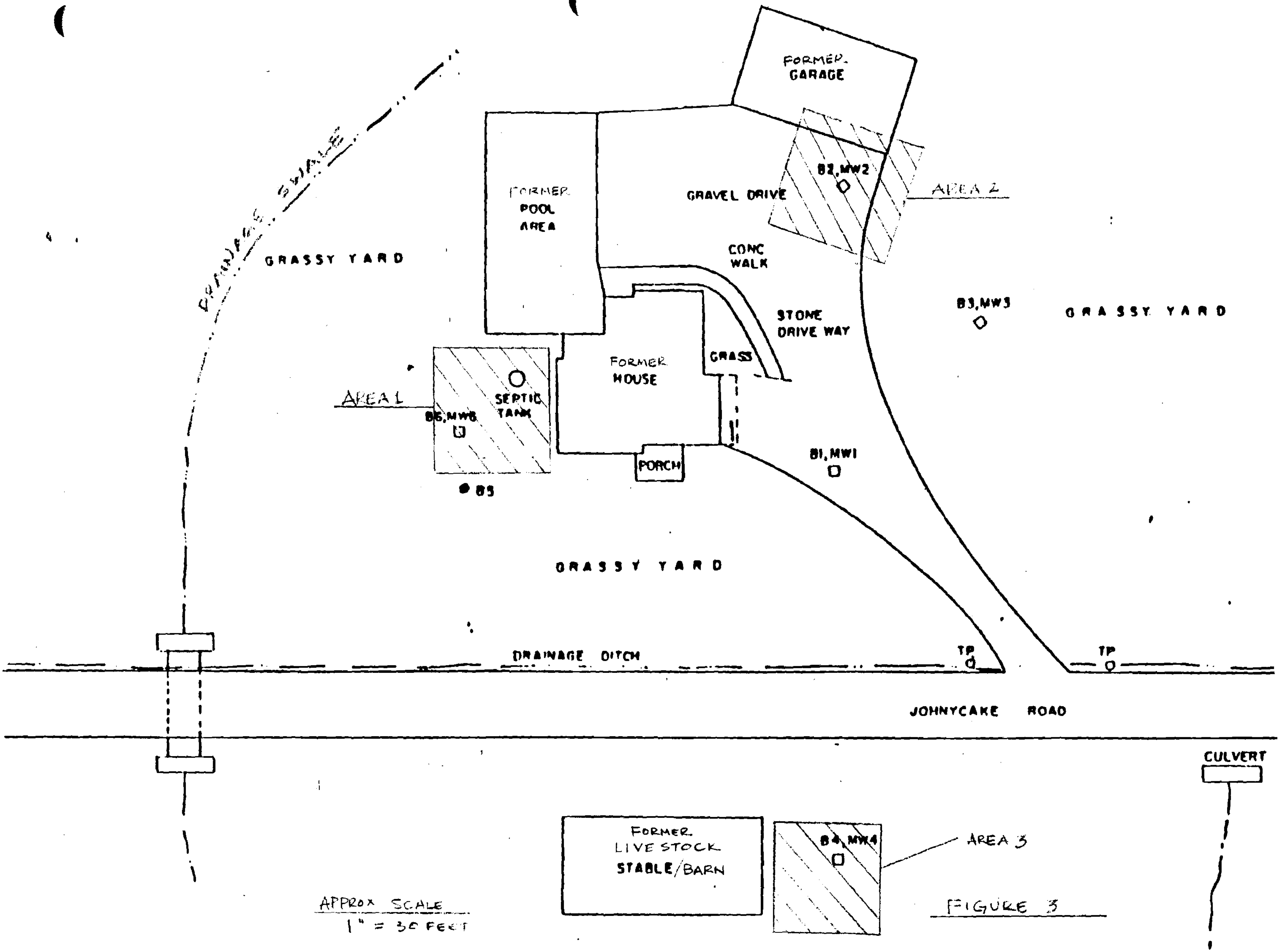

FORMER GARAGE
FORMER POOL AREA
GRAVEL DRIVE
B2,MW2
AREA 2
CONC WALK
STONE DRIVE WAY
B3,MW3
GRASSY YARD
GRASSY YARD
DRAINAGE SWALE
GRASS
FORMER HOUSE
SEPTIC TANK
AREA 1
B6,MW6
PORCH
B1,MW1
B5
GRASSY YARD
DRAINAGE DITCH
TP
TP
JOHNYCAKE ROAD
CULVERT
FORMER LIVE STOCK STABLE/BARN
B4,MW4
AREA 3
APPROX SCALE
1" = 30 FEET

FIGURE 3

APPENDIX B

New York State Department of Environmental Conservation

TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM #4046

DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS

TO: Regional Haz. Waste Remediation Engineers, Bureau Directors, and Section Chiefs

FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation

SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM: DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS

DATE: JAN 24, 1994

Michael J. O'Toole, Jr. (signed)

The cleanup goal of the Department is to restore inactive hazardous waste sites to predisposal conditions, to the extent feasible and authorized by law. However, it is recognized that restoration to predisposal conditions will not always be feasible.

1. **INTRODUCTION:**

This TAGM provides a basis and procedure to determine soil cleanup levels at individual Federal Superfund, State Superfund, 1986 EQBA Title 3 and Responsible Party (RP) sites, when the Director of the DHWR determines that cleanup of a site to predisposal conditions is not possible or feasible.

The process starts with development of soil cleanup objectives by the Technology Section for the contaminants identified by the Project Managers. The Technology Section uses the procedure described in this TAGM to develop soil cleanup objectives. Attainment ofthese generic soil cleanup objectives will, at a minimum, eliminate all significant threats to human health and/or the environment posed by the inactive hazardous waste site. Project Managers should use these cleanup objectives in selecting alternatives in the Feasibility Study (FS). Based on the proposed selected remedial technology (outcome of FS), final site specific soil cleanup levels are established in the Record of Decision (ROD) for these sites.

It should be noted that even after soil cleanup levels are established in the ROD, these levels may prove to be unattainable when remedial construction begins. In that event, alternative remedial actions or institutional controls may be necessary to protect the environment.

2. BASIS FOR SOIL CLEANUP OBJECTIVES:

The following alternative bases are used to determine soil cleanup objectives:

a. Human health based levels that correspond to excess lifetime cancer risks of one in a million for Class A[1] and B[2] carcinogens, or one in 100,000 for Class C[3] carcinogens. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

b. Human health based levels for systemic toxicants, calculated from Reference Doses (RfDs). RfDs are an estimate of the daily exposure an individual (including sensitive individuals) can experience without appreciable risk of health effects during a lifetime. An average scenario of exposure in which children ages one to six (who exhibit the greatest tendency to ingest soil) is assumed. An intake rate of 0.2 gram/day for a five-year exposure period for a 16-kg child is assumed. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

c. Environmental concentrations which are protective of groundwater/drinking water quality; based on promulgated or proposed New York State Standards;

d. Background values for contaminants; and

e. Detection limits.

A recommendation on the appropriate cleanup objective is based on the criterion that produces the most stringent cleanup level using criteria a, b, and c for organic chemicals, and criteria a, b, and d for heavy metals. If criteria a and/or b are below criterion d for a contaminant, its background value should be used as the cleanup objective. However, cleanup objectives developed using this approach must be, at a minimum, above the method detection limit (MDL) and it is preferable to have the soil cleanup objectives above the Contract Required Quantitation Limit (CRQL) as defined by NYSDEC. If the cleanup objective of a compound is "non-detectable", it should mean that it is not detected at the MDL. Efforts should be made to obtain the best MDL detection possible when selecting a laboratory and analytical protocol.

3. DETERMINATION OF SOIL CLEANUP GOALS FOR ORGANICS IN SOIL FOR PROTECTION OF WATER QUALITY

The water/soil partitioning theory is used to determine soil cleanup objectives which would be protective of groundwater/drinking water quality for its best use. This theory is conservative in nature and assumes that contaminated soil and groundwater are in direct contact. This theory is based upon the ability of organic matter in soil to adsorb organic chemicals. The approach predicts the maximum amount of contamination that may remain in soil so that leachate from the contaminated soil will not violate groundwater and/or drinking water standards.

This approach is not used for heavy metals, which do not partition appreciably into soil organic matter. For heavy metals, eastern USA or New York State soil background values may be used as soil cleanup objectives. A list of values that have been tabulated is attached. Soil background data near the site, if available, is preferable and should be used as the cleanup objective for such metals. Background samples should be free from the influences of this site and any other source of contaminants. Ideal background samples may be obtained from uncontaminated upgradient and upwind locations.

Protection of water quality from contaminated soil is a two-part problem. The first is predicting the amount of contamination that will leave the contaminated media as leachate. The second part of the problem is to determine how much of that contamination will actually contribute to a violation of groundwater standards upon reaching and dispersing into groundwater. Some of the contamination which initially leaches out of soil will be absorbed by other soil before it reaches groundwater. Some portion will be reduced through natural attenuation or other mechanism.

PART A: PARTITION THEORY MODEL

There are many test and theoretical models which are used to predict leachate quality given a known value of soil contamination. The Water-Soil Equilibrium Partition Theory is used as a basis to determine soil standard or contamination limit for protection of water quality by most of the models currently in use. It is based on the ability of organic carbon in soil to adsorb contamination. Using a water quality value which may not be exceeded in leachate and the partition coefficient method, the equilibrium concentration (Cs) will be expressed in the same units as the water standards. The following expression is used:

Allowable Soil Concentration Cs = f x Koc x Cw . . . . (1)

Where: f = fraction of organic carbon of the natural soil medium.

Koc = partition coefficient between water and soil media. Koc can be estimated by the following equation:

$\log Koc = 3.64 - 0.55 \log S$

S = water solubility in ppm
Cw = appropriate water quality value from TOGS 1.1.1

Most Koc and S values are listed in the Exhibit A-1 of the USEPA Superfund Public Health Evaluation Manual (EPA/540/1-86/060). The Koc values listed in this manual should be used for the purpose. If the Koc value for a contaminant is not listed, it should be estimated using the above mentioned equation.

PART B: PROCEDURE FOR DETERMINATION OF SOIL CLEANUP OBJECTIVES

When the contaminated soil is in the unsaturated zone above the water table, many mechanisms are at work that prevent all of the contamination that would leave the contaminated soil from impacting groundwater. These mechanisms occur during transport and may work simultaneously. They include the following: (1) volatility, (2) sorption and desorption, (3) leaching and diffusion, (4) transformation and degradation, and (5) change in concentration of contaminants after reaching and/or mixing with the groundwater surface. To account for these mechanisms, a correction factor of 100 is used to establish soil cleanup objectives. This value of 100 for the correction is consistent with the logic used by EPA in its Dilution Attenuation Factor (DAF) approach for EP Toxicity and TCLP. (Federal Register/Vol. 55, No. 61, March 29, 1990/Pages 11826-27). Soil cleanup objectives are calculated by multiplying the allowable soil concentration by the correction factor. If the contaminated soil is very close (<3' - 5') to the groundwater table or in the groundwater, extreme caution should be exercised when using the correction factor of 100 (one hundred) as this may not give conservative cleanup objectives. For such situations the Technology Section should be consulted for site-specific cleanup objectives.

Soil cleanup objectives are limited to the following maximum values. These values are consistent with the approach promulgated by the States of Washington and Michigan.

1. Total VOCs ≤ 10 ppm.
2. Total Semi VOCs ≤ 500 ppm.
3. Individual Semi VOCs ≤ 50 ppm.
4. Total Pesticides ≤ 10 ppm.

One concern regarding the semi-volatile compounds is that some of these compounds are so insoluble that their Cs values are fairly large. Experience (Draft TOGS on Petroleum Contaminated Soil Guidance) has shown that soil containing some of these insoluble substances at high concentrations can exhibit a distinct odor even though the substance will not leach from the soil. Hence any time a soil exhibits a discernible odor nuisance, it shall not be considered clean even if it has met the numerical criteria.

4. <u>DETERMINATION OF FINAL CLEANUP LEVELS:</u>

Recommended soil cleanup objectives should be utilized in the development of final cleanup levels through the Feasibility Study (FS) process. During the FS, various alternative remedial actions developed during the Remedial Investigation (RI) are initially screened and narrowed down to the list of potential alternative remedial actions that will be evaluated in detail. These alternative remedial actions are evaluated using the criteria discussed in TAGM 4030, Selection of Remedial Actions at Inactive Hazardous Waste Sites, revised May 15, 1990, and the preferred remedial action will be selected. After the detailed evaluation of the preferred remedial action, the final cleanup levels which can be actually achieved using the preferred remedial action must be established. Remedy selection, which will include final cleanup levels, is the subject of TAGM 4030.

Recommended soil cleanup objectives that have been calculated by the Technology Section are presented in Appendix A. These objectives are based on a soil organic carbon content of 1% (0.01) and should be adjusted for the actual organic carbon content if it is known. For determining soil organic carbon content, use attached USEPA method (Appendix B). Please contact the Technology Section, Bureau of Program Management for soil cleanup objectives not included in Appendix A.

TAGM 4046 Footnotes:

1. Class A are proved human carcinogens
2. Class B are probable human carcinogens
3. Class C are possible human carcinogens

APPENDIX A

TABLE 1
Recommended soil cleanup objectives (mg/kg or ppm)
Volatile Organic Contaminants

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Acetone	2.2	50	0.0011	0.11	N/A	8,000	10	0.2
Benzene	83	0.7	0.0006	0.06	24	N/A	5	0.06
Benzoic Acid	54 *	50	0.027	2.7	N/A	300,000	5	2.7
2-Butanone	4.5 *	50	0.003	0.3	N/A	4,000	10	0.3
Carbon Disulfide	54 *	50	0.027	2.7	N/A	8,000	5	2.7
Carbon Tetrachloride	110 *	5	0.006	0.6	5.4	60	5	0.6
Chlorobenzene	330	5	0.017	1.7	N/A	2,000	5	1.7
Chloroethane	37 *	50	0.019	1.9	N/A	N/A	10	1.9
Chloroform	31	7	0.003	0.30	114	800	5	0.3
Dibromochloromethane	N/A	50	N/A	N/A	N/A	N/A	5	N/A
1,2-Dichlorobenzene	1,700	4.7	0.079	7.9	N/A	N/A	330	7.9
1,3-Dichlorobenzene	310 *	5	0.0155	1.55	N/A	N/A	330	1.6
1,4-Dichlorobenzene	1,700	5	0.085	8.5	N/A	N/A	330	8.5
1,1-Dichloroethane	30	5	0.002	0.2	N/A	N/A	5	0.2
1,2-Dichloroethane	14	5	0.001	0.1	7.7	N/A	5	0.1
1,1-Dichloroethene	65	5	0.004	0.4	12	700	5	0.4
1,2-Dichloroethene (trans)	59	5	0.003	0.3	N/A	2,000	5	0.3
1-3 dichloropropane	51	5	0.003	0.3	N/A	N/A	5	0.3
Ethylbenzene	1,100	5	0.055	5.5	N/A	8,000	5	5.5
113 Freon (1,1,2 Trichloro- 1,2,2 Trifluoroethane)	1,230 *	5	0.060	6.0	N/A	200,000	5	6.0
Methylene chloride	21	5	0.001	0.1	93	5,000	5	0.1
4-Methyl-2-Pentanone	19 *	50	0.01	1.0	N/A	N/A	10	1.0

TABLE 1 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	USEPA Health Based (ppm) Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Tetrachloroethene	277	5	0.014	1.4	14	800	5	1.4
1,1,1-Trichloroethane	152	5	0.0076	0.76	N/A	7,000	5	0.8
1,1,2,2-Tetrachloroethane	118	5	0.006	0.6	35	N/A	5	0.6
1,2,3-trichloropropane	68	5	0.0034	0.34	N/A	80	5	0.4
1,2,4-trichlorobenzene	670 *	5	0.034	3.4	N/A	N/A	330	3.4
Toluene	300	5	0.015	1.5	N/A	20,000	5	1.5
Trichloroethene	126	5	0.007	0.70	64	N/A	5	0.7
Vinyl chloride	57	2	0.0012	0.12	N/A	N/A	10	0.2
Xylenes	240	5	0.012	1.2	N/A	200,000	--	1.2

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
$\log Koc = -0.55 \log S + 3.64$, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 2
Recommended soil cleanup objectives (mg/kg or ppm)
Semi-Volatile Organic Contaminants

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	USEPA Health Based (ppm) Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Acenaphthene	4,600	20	0.9	90.0	N/A	5,000	330	50.0 ***
Acenaphthylene	2,056 *	20	0.41	41.0	N/A	N/A	330	41.0
Aniline	13.8	5	0.001	0.1	123	N/A	330	0.1
Anthracene	14,000	50	7.00	700.0	N/A	20,000	330	50.0 ***
Benzo(a)anthracene	1,380,000	0.002	0.03	3.0	0.224	N/A	330	0.224 or MDL
Benzo (a) pyrene	5,500,000	0.002 (ND)	0.110	11.0	0.0609	N/A	330	0.061 or MDL
Benzo (b) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
Benzo (g,h,i) perylene	1,600,000	5	8.0	800	N/A	N/A	330	50.0 ***
Benzo (k) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
bis(2-ethylhexyl)phthalate	8,706 *	50	4.35	435.0	50	2,000	330	50.0 ***
Butylbenzylphthlate	2,430	50	1.215	122.0	N/A	20,000	330	50.0 ***
Chrysene	200,000	0.002	0.004	0.4	N/A	N/A	330	0.4
4- Chloroaniline	43 ****	5	0.0022	0.22	200	300	330	0.220 or MDL
4-Chloro-3-methylphenol	47	5	0.0024	0.24	N/A	N/A	330	0.240 or MDL
2-Chlorophenol	15 *	50	0.008	0.8	N/A	400	330	0.8

TABLE 2 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	USEPA Health Based (ppm) Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Dibenzofuran	1,230 *	5	0.062	6.2	N/A	N/A	330	6.2
Dibenzo(a,h)anthracene	33,000,000	50	1,650	165,000	0.0143	N/A	330	0.014 or MDL
3,3'-Dichlorobenzidine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	380	1	0.004	0.4	N/A	200	330	0.4
2,4-Dinitrophenol	38	5	0.002	0.2	N/A	200	1,600	0.200 or MDL
2,6 Dinitrotoluene	198*	5	0.01	1.0	1.03	N/A	330	1.0
Diethylphthlate	142	50	0.071	7.1	N/A	60,000	330	7.1
Dimethylphthlate	40	50	0.020	2.0	N/A	80,000	330	2.0
Di-n-butyl phthalate	162*	50	0.081	8.1	N/A	8,000	330	8.1
Di-n-octyl phthlate	2,346 *	50	1.2	120.0	N/A	2,000	330	50.0 ***
Fluoranthene	38,000	50	19	1900.0	N/A	3,000	330	50.0 ***
Fluorene	7,300	50	3.5	350.0	N/A	3,000	330	50.0 ***
Hexachlorobenzene	3,900	0.35	0.014	1.4	0.41	60	330	0.41
Indeno (1,2,3-cd)pyrene	1,600,000	0.002	0.032	3.2	N/A	N/A	330	3.2
Isophorone	88.31 *	50	0.044	4.40	1,707	20,000	330	4.40
2-methylnaphthalene	727 *	50	0.364	36.4	N/A	N/A	330	36.4
2-Methylphenol	15	5	0.001	0.1	N/A	N/A	330	0.100 or MDL
4-Methylphenol	17	50	0.009	0.9	N/A	4,000	330	0.9
Naphthalene	1,300	10	0.130	13.0	N/A	300	330	13.0
Nitrobenzene	36	5	0.002	0.2	N/A	40	330	0.200 or MDL

TABLE 2 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
2-Nitroaniline	86	5	0.0043	0.43	N/A	N/A	1,600	0.430 or MDL
2-Nitrophenol	65	5	0.0033	0.33	N/A	N/A	330	0.330 or MDL
4-Nitrophenol	21	5	0.001	0.1	N/A	N/A	1,600	0.100 or MDL
3-Nitroaniline	93	5	0.005	0.5	N/A	N/A	1,600	0.500 or MDL
Pentachlorophenol	1,022	1	0.01	1.0	N/A	2,000	1,600	1.0 or MDL
Phenanthrene	4,365 *	50	2.20	220.0	N/A	N/A	330	50.0 ***
Phenol	27	1	0.0003	0.03	N/A	50,000	330	0.03 or MDL
Pyrene	13,295 *	50	6.65	665.0	N/A	2,000	330	50.0 ***
2,4,5-Trichlorophenol	89 *	1	0.001	0.1	N/A	8,000	330	0.1

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available
MDL is Method Detection Limit

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
Other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm., Total Semi- VOCs < 500ppm. and Individual Semi-VOCs < 50 ppm.

**** Koc is derived from the correlation Koc = 0.63 Kow (Determining Soil Response Action Levels...... EPA/540/2-89/057). Kow is obtained from the USEPA computer database 'MAIN'.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 3
Recommended soil cleanup objectives (mg/kg or ppm)
Organic Pesticides / Herbicides and PCBs

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Aldrin	96,000	ND (<0.01)	0.005	0.5	0.041	2	8	0.041
alpha- BHC	3,800	ND (<0.05)	0.002	0.2	0.111	N/A	8	0.11
beta - BHC	3,800	ND (<0.05)	0.002	0.2	3.89	N/A	8	0.2
delta - BHC	6,600	ND (<0.05)	0.003	0.3	N/A	N/A	8	0.3
Chlordane	21,305 *	0.1	0.02	2.0	0.54	50	80	0.54
2,4-D	104 *	4.4	0.005	0.5	N/A	800	800	0.5
4,4'- DDD	770,000 *	ND (<0.01)	0.077	7.7	2.9	N/A	16	2.9
4,4'-DDE	440,000 *	ND (<0.01)	0.0440	4.4	2.1	N/A	16	2.1
4,4'-DDT	243,000 *	ND (<0.01)	0.025	2.5	2.1	40	16	2.1
Dibenzo-P-dioxins (PCDD) 2,3,7,8 TCDD	1709800	0.000035	0.0006	0.06	N/A	N/A	N/A	N/A
Dieldrin	10,700 *	ND (< 0.01)	0.0010	0.1	0.044	4	16	0.044
Endosulfan I	8,168 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan II	8,031 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan Sulfate	10,038 *	0.1	0.01	1.0	N/A	N/A	16	1.0
Endrin	9,157 *	ND (<0.01)	0.001	0.1	N/A	20	8	0.10

TABLE 3 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Endrin keytone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
gamma - BHC (Lindane)	1,080	ND (<0.05)	0.0006	0.06	5.4	20	8	0.06
gamma - chlordane	140,000	0.1	0.14	14.0	0.54	5	80	0.54
Heptachlor	12,000	ND (<0.01)	0.0010	0.1	0.16	40	8	0.10
Heptachlor epoxide	220	ND (<0.01)	0.0002	0.02	0.077	0.8	8	0.02
Methoxychlor	25,637	35.0	9.0	900	N/A	400	80	***
Mitotane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parathion	760	1.5	0.012	1.2	N/A	500	8	1.2
PCBs	17,510 *	0.1	0.1	10.0	1.0	N/A	160	1.0 (Surface) 10 (sub-surf)
Polychlorinated dibenzo-furans (PCDF)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silvex	2,600	0.26	0.007	0.7	N/A	600	330	0.7
2,4,5-T	53	35	0.019	1.9	N/A	200	330	1.9

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
$\log Koc = -0.55 \log S + 3.64$, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1% (5% for PCBs as per PCB Guidance Document), and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 4
Recommended soil cleanup objectives (mg/kg or ppm)
Heavy Metals

Contaminants	Protect Water Quality (ppm)	Eastern USA Background (ppm)	* CRDL (mg/kg or ppm)	***** Rec. Soil Cleanup Objective (ppm)
Aluminum	N/A	33,000	2.0	SB
Antimony	N/A	N/A	0.6	SB
Arsenic	N/A	3-12 **	0.1	7.5 or SB
Barium	N/A	15-600	2.0	300 or SB
Beryllium	N/A	0-1.75	0.05	0.16 (HEAST) or SB
Cadmium	N/A	0.1-1	0.05	1 or SB
Calcium	N/A	130 - 35,000 ***	50.0	SB
Chromium	N/A	1.5 - 40 **	0.1	10 or SB
Cobalt	N/A	2.5 - 60 **	0.5	30 or SB
Copper	N/A	1 - 50	0.25	25 or SB
Cyanide	N/A	N/A	0.1	***
Iron	N/A	2,000 - 550,000	1.0	2,000 or SB
Lead	N/A	****	0.03	SB ****
Magnesium	N/A	100 - 5,000	50.0	SB
Manganese	N/A	50 - 5,000	0.15	SB
Mercury	N/A	0.001 - 0.2	0.002	0.1
Nickel	N/A	0.5 -25	0.4	13 or SB
Potassium	N/A	8,500 - 43,000 **	50.0	SB
Selenium	N/A	0.1 - 3.9	0.05	2 or SB
Silver	N/A	N/A	0.1	SB
Sodium	N/A	6,000 - 8,000	50.0	SB
Thallium	N/A	N/A	0.1	SB
Vanadium	N/A	1-300	0.5	150 or SB
Zinc	N/A	9-50	0.2	20 or SB

Note: Some forms of metal salts such as Aluminum Phosphide, Calcium Cyanide, Potassium Cyanide, Copper cyanide, Silver cyanide, Sodium cyanide, Zinc phosphide, Thallium salts, Vanadium pentoxide and Chromium (VI) compounds are more toxic in nature. Please refer to the USEPA HEASTs database to find cleanup objectives if such metals are present in soil.

SB is site background
N/A is not available

* CRDL is contract required detection limit which is approx. 10 times the CRDL for water.

** New York State background

*** Some forms of Cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective.

**** Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

***** Recommended soil cleanup objectives are average background concentrations as reported in a 1984 survey of reference material by E. Carol McGovern, NYSDEC.

APPENDIX B

TOTAL ORGANIC CARBON (TOC)

USE AND LIMITATIONS

Total organic carbon is a measure of the total amount of nonvolatile, volatile, partially volatile, and particulate organic compounds in a sample. Total organic carbon is independent of the oxidation state of the organic compounds and is not a measure of the organically bound and inorganic elements that can contribute to the biochemical and chemical oxygen demand tests.

Because inorganic carbon (e.g., carbonates, bicarbonates, free CO_2) will interfere with total organic carbon determinations, samples should be treated to remove inorganic carbon before being analyzed.

FIELD PROCEDURES

Collection

Samples can be collected in glass or plastic containers. A minimum sample size of 25 g is recommended. If unrepresentative material is to be removed from the sample, it should be removed in the field under the supervision of the chief scientist and noted on the field log sheet.

Processing

Samples should be stored frozen and can be held for up to 6 months under that condition. Excessive temperatures should not be used to thaw samples.

LABORATORY PROCEDURES

Analytical Procedures

- Equipment
    - Induction furnace
        e.g., Leco WR-12, Dohrmann DC-50, Coleman CH analyzer, Perkin Elmer 240 elemental analyzer, Carlo-Erba 1106
    - Analytical balance
        0.1 mg accuracy
    - Desiccator
    - Combustion boats
    - 10 percent hydrochloric acid (HCL)
    - Cupric oxide fines (or equivalent material)
    - Benzoic acid or other carbon source as a standard.

- Equipment preparation

- Clean combustion boats by placing them in the induction furnace at 950° C. After being cleaned, combustion boats should not be touched with bare hands.
- Cool boats to room temperature in a desiccator.
- Weigh each boat to the nearest 0.1 mg.

- Sample preparation
  - Allow frozen samples to warm to room temperature.
  - Homogenize each sample mechanically, incorporating any overlying water.
  - Transfer a representative aliquot (5-10 g) to a clean container.

- Analytical procedures
  - Dry samples to constant weight at 70 ± 2°C. The drying temperature is relatively low to minimize loss of volatile organic compounds.
  - Cool dried samples to room temperature in a desiccator.
  - Grind sample using a mortar and pestle to break up aggregates.
  - Transfer a representative aliquot (0.2-0.5 g) to a clean, preweighed combustion boat.
  - Determine sample weight to the nearest 0.1 mg.
  - Add several drops of HCL to the dried sample to remove carbonates. Wait until the effervescing is completed and add more acid. Continue this process until the incremental addition of acid causes no further effervescence. Do not add too much acid at one time as this may cause loss of sample due to frothing. Exposure of small samples (i.e., 1-10 mg) having less than 50 percent carbonate to an HCL atmosphere for 24-48 h has been shown to be an effective means of removing carbonates (Hedges and Stern 1984). If this method is used for sample sizes greater than 10 mg, its effectiveness should be demonstrated by the user.
  - Dry the HCL-treated sample to constant weight at 70 ± 2° C.
  - Cool to room temperature in a desiccator.
  - Add previously ashed cupric oxide fines or equivalent material (e.g., alumina oxide) to the sample in the combustion boat.
  - Combust the sample in an induction furnace at a minimum temperature of 950 ± 10° C.

- Calculations
  - If an ascarite-filled tube is used to capture CO_2, the carbon content of the sample can be calculated as follows:

$$\text{Percent carbon} = \frac{A\,(0.2729)\,(100)}{B}$$

Where:

A = the weight (g) of CO_2 determined by weighing the ascarite tube before and after combustion

B = dry weight (g) of the unacidified sample in the combustion boat

0.2729 = the ratio of the molecular weight of carbon to the molecular weight of carbon dioxide

A silica gel trap should be placed before the ascarite tube to catch any moisture driven off during sample combustion. Additional silica gel should be placed at the exit end of the ascarite tube to trap any water that might be formed by reaction of the trapped CO_2 with the NaOH in the ascarite.

- If an elemental analyzer is used, the amount of CO_2 will be measured by a thermal conductivity detector. The instrument should be calibrated daily using an empty boat blank as the zero point and at least two standards. Standards should bracket the expected range of carbon concentrations in the samples.

QA/QC Procedures

It is critical that each sample be thoroughly homogenized in the laboratory before a subsample is taken for analysis. Laboratory homogenization should be conducted even if samples were homogenized in the field.

Dried samples should be cooled in a desiccator and held there until they are weighed. If a desiccator is not used, the sediment will accumulate ambient moisture and the sample weight will be overestimated. A color-indicating desiccant is recommended so that spent desiccant can be detected easily. Also, the seal on the desiccator should be checked periodically and, if necessary, the ground glass rims should be greased or the "O" rings should be replaced.

It is recommended that triplicate analyses be conducted on one of every 20 samples, or on one sample per batch if less than 20 samples are analyzed. A method blank should be analyzed at the same frequency as the triplicate analyses. The analytical balance should be inspected daily and calibrated at least once per week. The carbon analyzer should be calibrated daily with freshly prepared standards. A standard reference material should be analyzed at least once for each major survey.

DATA REPORTING REQUIREMENTS

Total organic carbon should be reported as a percentage of the dry weight of the unacidified sample to the nearest 0.1 unit. The laboratory should report the results of all samples (including QA replicates, method blanks, and standard reference measurements) and should note any problems that may have influenced sample quality. The laboratory should also provide a summary of the calibration procedure and results (e.g., range covered, regression equation, coefficient of determination).

APPENDIX C

COMMUNITY AIR MONITORING PLAN

Johnny Cake Road Site
Danube Township
Herkimer County, New York

The United States Environmental Protection Agency (EPA) is currently implementing a Removal Action Workplan (RAW) at the Johnny Cake Road Site (JCR) located in Danube Township, Herkimer County, New York. Implementation of the RAW will involve the excavation and removal soil contaminated with volatile organic compounds (VOCs). The primary contaminants of concerns are tetrachloroethylene (PCE), trichloroethylene (TCE) and toluene. The VOC contamination is the result of illegal dumping of chemicals used during the manufacturing/refining of drugs.

The Community Air Monitoring Plan (CAMP) described below has been developed for the JCR Site and incorporates all activities being conducted at this location. The CAMP addresses two critical aspects of the work to be performed: 1) actual workzone safety (ie-worker health and safety) and 2) identifying and documenting releases into the surrounding community.

Workzone Air Monitoring

Workzone air monitoring for worker health and safety will be performed continuously during all ground intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the de-watering and treatment of excavation water. The monitoring results within this zone will be utilized by the on-site health and safety officer responsible for insuring that proper personal protective equipment (PPE) is used during such activities. This information will also be evaluated in order to take corrective measures to minimize potential fugitive emissions into the local community.

Perimeter Air Monitoring

Perimeter air monitoring (PAM) will consist of obtaining monitoring data from a circular path extending 75-feet from the active area of excavation, with the emphasis being in the downwind direction. During each monitoring event, the technican will log the time, wind direction and activities underway. PAM will also be conducted during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e. - the exclusion zone) on a continous basis. Upwind concentrations beyond the workzone will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be monitored using a TVA 1000 photoionization detector (PID)/flame ionization detector (FID). The equipment will be calibrated daily using the appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After taking corrective action, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

If the organic vapor level is above 25 ppm at the perimeter of the work area activities will be stopped.

All 15-minute readings will be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

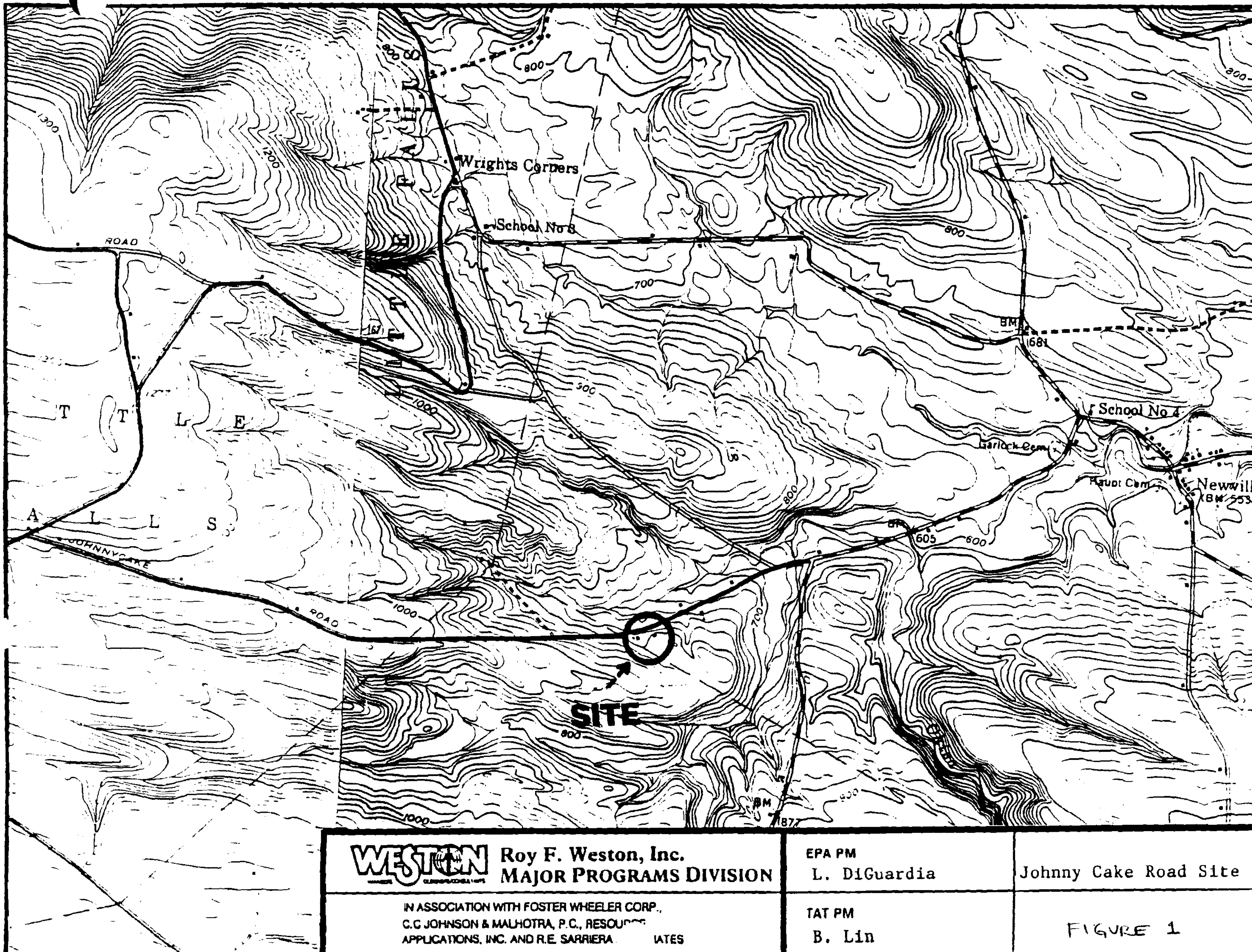
Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using DataRam real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. In addition, fugitive dust migration will be visually assessed during all work activities.

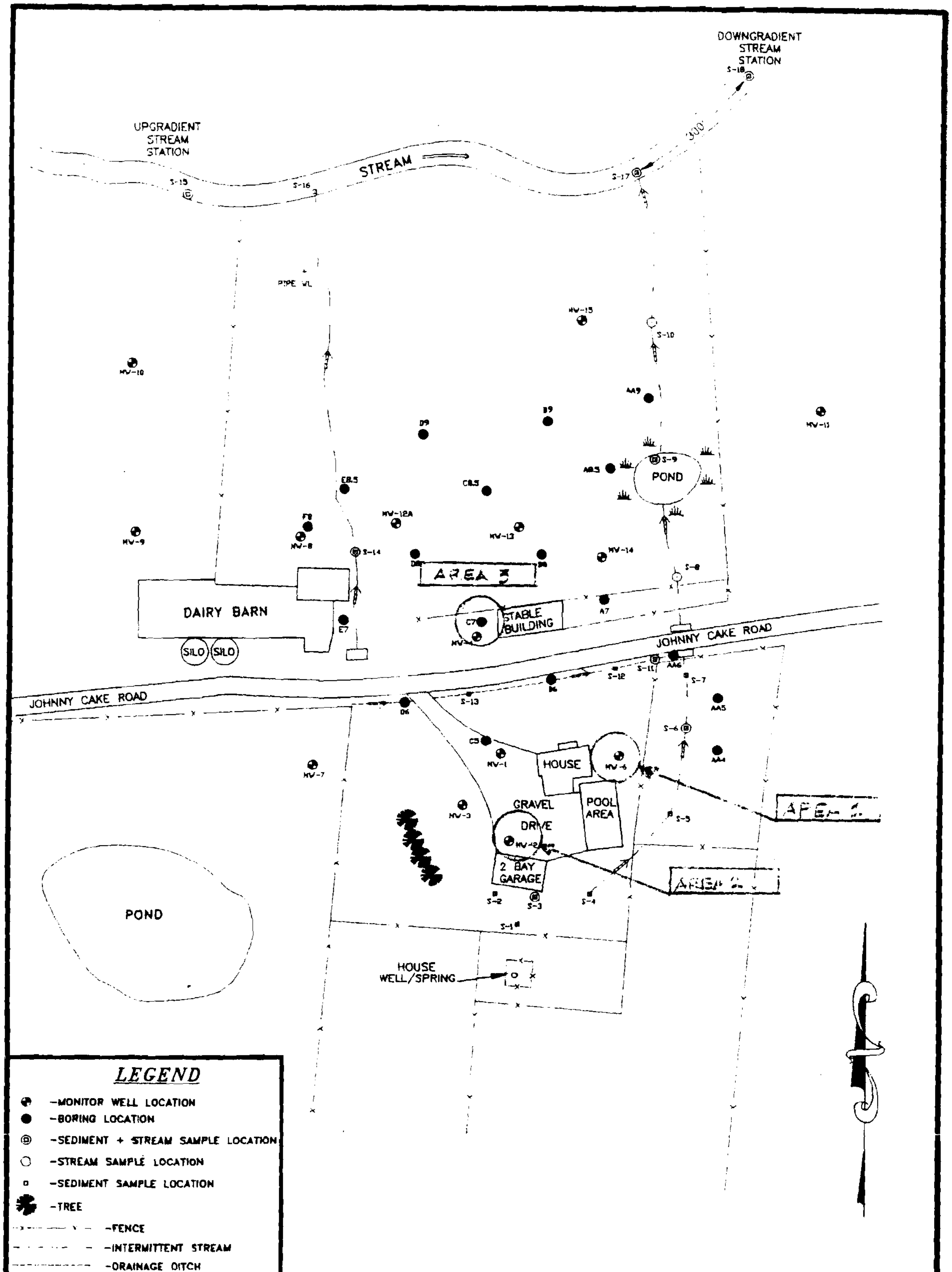
- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

* If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

ATTACHMENT B



Roy F. Weston, Inc. MAJOR PROGRAMS DIVISION	EPA PM L. DiGuardia	Johnny Cake Road Site
IN ASSOCIATION WITH FOSTER WHEELER CORP., C.C JOHNSON & MALHOTRA, P.C., RESOURCE APPLICATIONS, INC. AND R.E. SARRIERA ASSOCIATES	TAT PM B. Lin	FIGURE 1

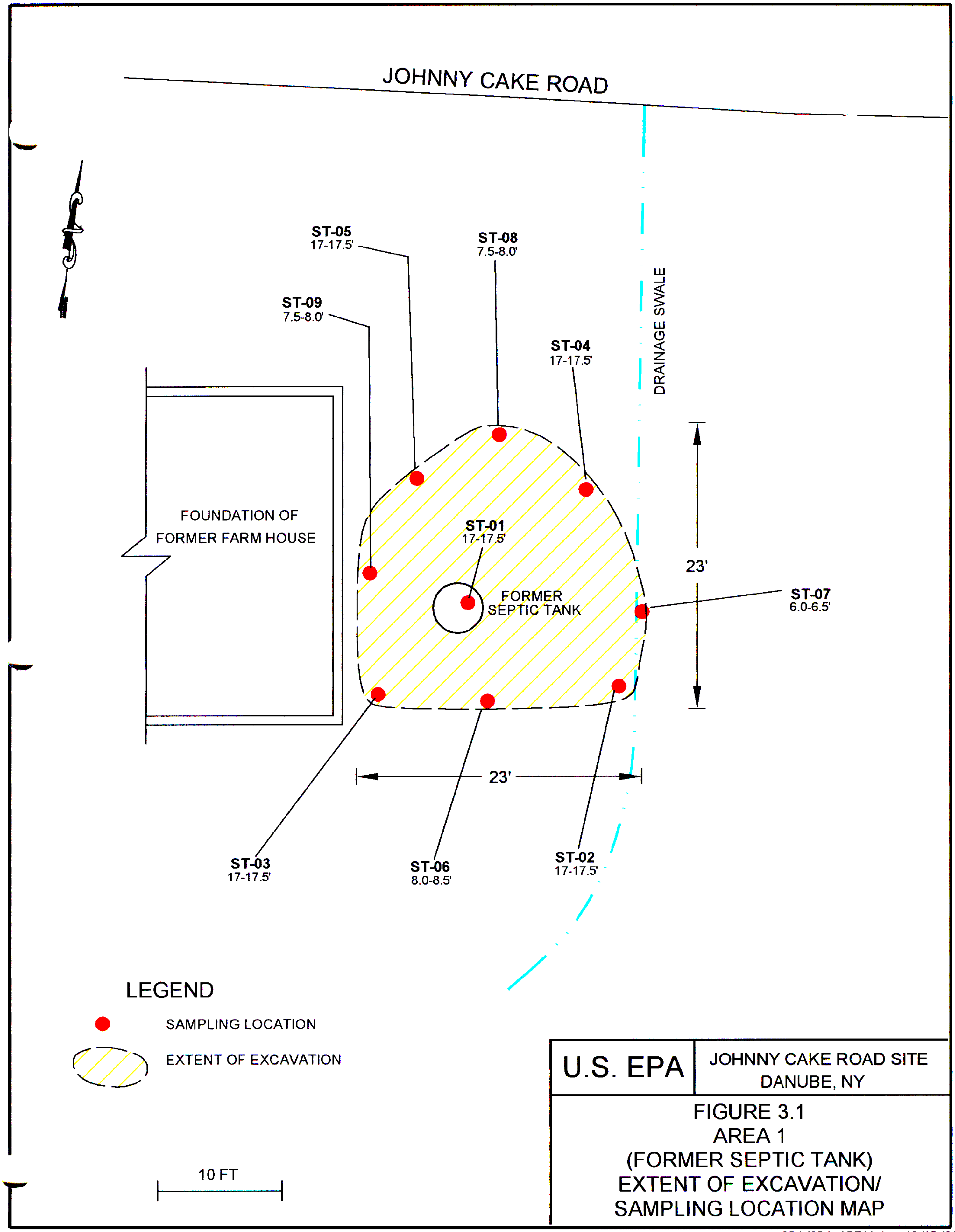


GRAPHIC SCALE

(IN FEET)
1 inch = 75 ft.

US EPA ENVIRONMENTAL RESPONSE TEAM
RESPONSE ENGINEERING AND ANALYTICAL CONTRACT
68-03-3482
W.O.# 3347-31-01-4431

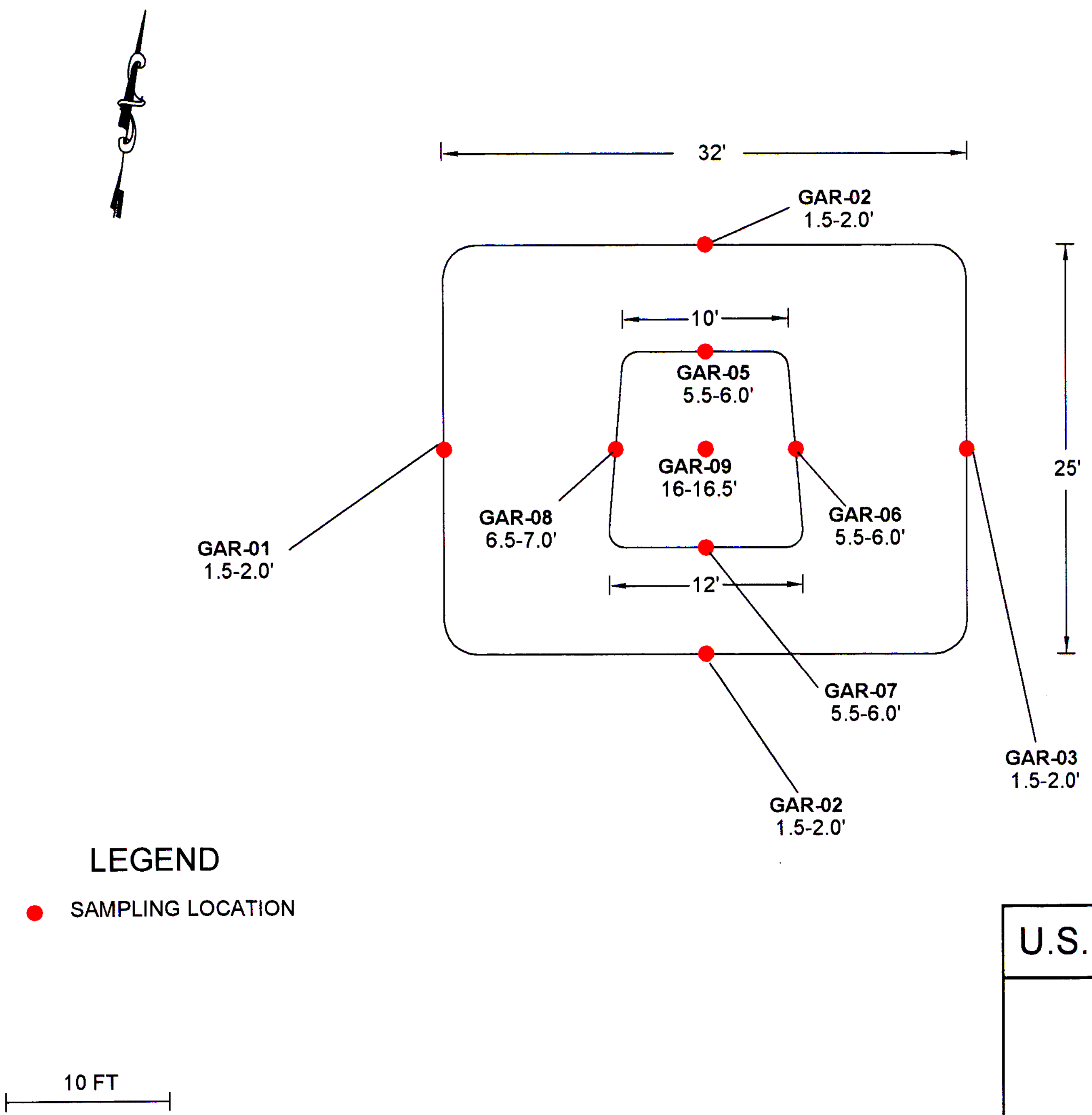
FIGURE 2
WELL AND SAMPLE LOCATION MAP
JOHNNY CAKE ROAD SITE
DANUBE, HERKIMER COUNTY, NY



U.S. EPA | JOHNNY CAKE ROAD SITE
DANUBE, NY

FIGURE 3.1
AREA 1
(FORMER SEPTIC TANK)
EXTENT OF EXCAVATION/
SAMPLING LOCATION MAP

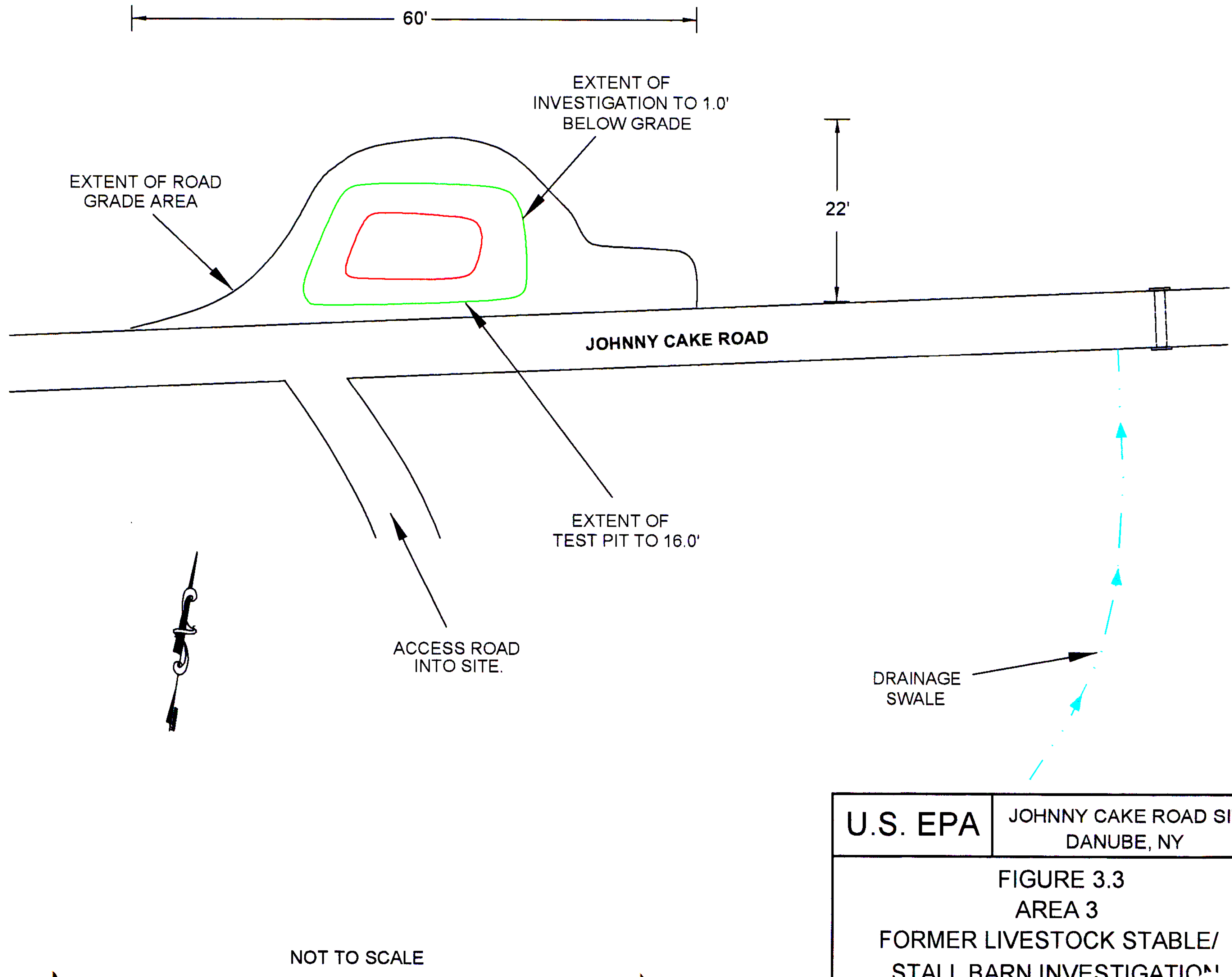
084/084_AREA1.dwg 10/12/06



U.S. EPA	JOHNNY CAKE ROAD SITE DANUBE, NY

FIGURE 3.2
AREA 2
(FORMER GARAGE)
EXTENT OF EXCAVATION/
SAMPLING LOCATION MAP

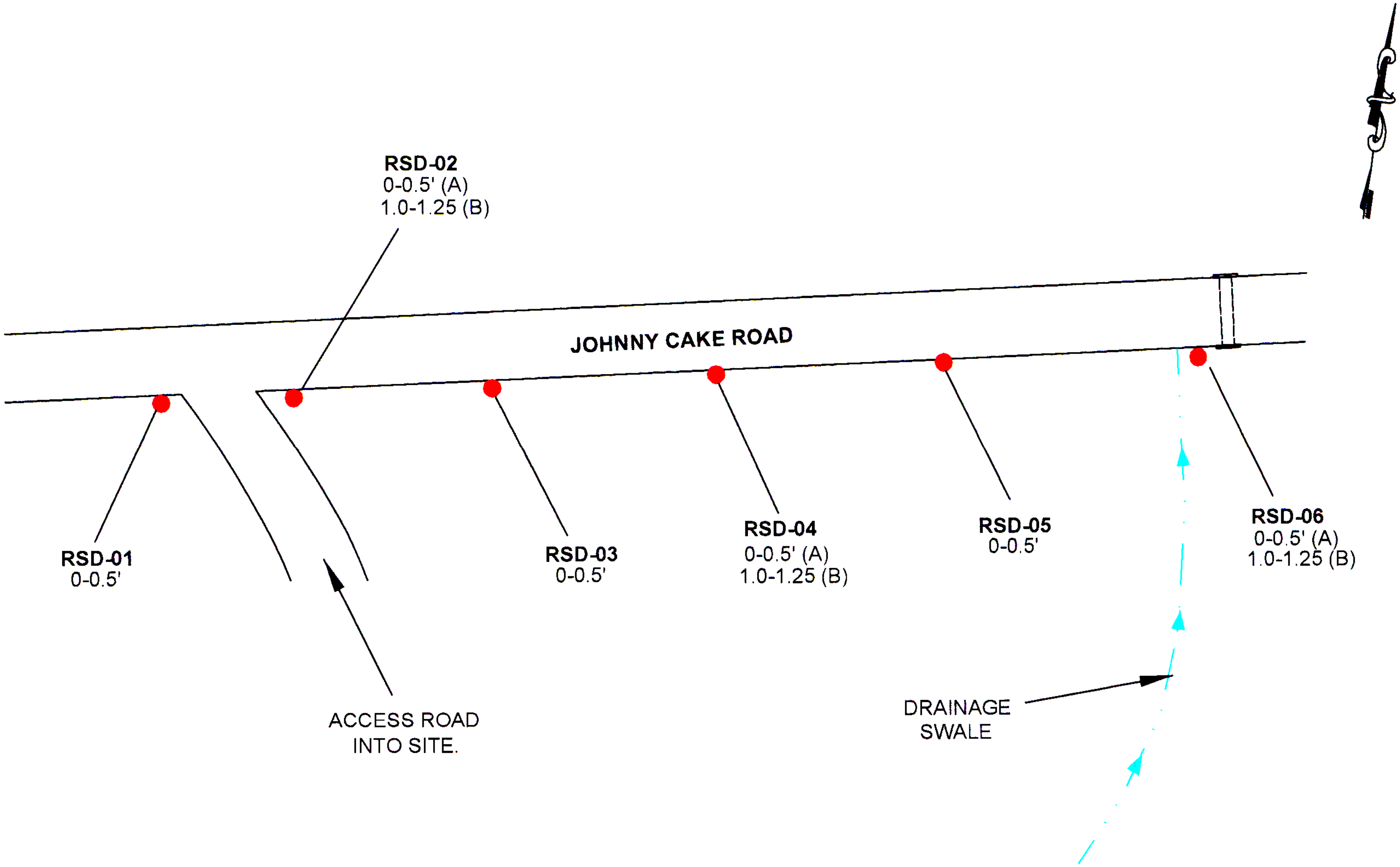
10/12/06
084/084_AREA2.dwg



U.S. EPA	JOHNNY CAKE ROAD SITE DANUBE, NY

FIGURE 3.3
AREA 3
FORMER LIVESTOCK STABLE/
STALL BARN INVESTIGATION

084/084_AREA3.dwg 10/13/06



LEGEND

● SAMPLE LOCATION

NOT TO SCALE

U.S. EPA	JOHNNY CAKE ROAD SITE DANUBE, NY
FIGURE 3.4 AREA 4 ROADSIDE DITCH SAMPLE LOCATION MAP	

10/13/06

084/084_AREA4.dwg

ATTACHMENT C

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-010A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-01
W Order:	0507031			**Collection Date:**	7/6/2005 4:20:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	5.07 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	17.6	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6162.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.12	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
1,1,2,2-Tetrachloroethane	ND		0.19	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
1,1,2-Trichloroethane	ND		0.13	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
1,1-Dichloroethane	ND		0.12	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
1,1-Dichloroethene	ND		0.17	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
1,2-Dichloroethane	ND		0.12	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
1,2-Dichloropropane	ND		0.10	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
2-Butanone	ND		0.17	12	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
2-Hexanone	ND		0.26	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
4-Methyl-2-pentanone	ND		0.29	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Acetone	5.2	J	0.47	12	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Benzene	ND		0.11	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Bromodichloromethane	ND		0.10	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Bromoform	ND		0.07	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Bromomethane	ND		0.36	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Carbon disulfide	ND		0.07	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Carbon tetrachloride	ND		0.13	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Chlorobenzene	ND		0.11	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Chloroethane	ND		0.35	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Chloroform	ND		0.05	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Chloromethane	ND		0.46	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
cis-1,2-Dichloroethene	0.80	J	0.13	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
cis-1,3-Dichloropropene	ND		0.11	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Dibromochloromethane	ND		0.16	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Ethylbenzene	ND		0.12	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Methylene chloride	ND		0.48	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Styrene	ND		0.12	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Tetrachloroethene	38		0.17	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Toluene	ND		0.14	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
trans-1,2-Dichloroethene	ND		0.12	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
trans-1,3-Dichloropropene	ND		0.11	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Trichloroethene	1.5	J	0.13	3.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Vinyl chloride	ND		0.10	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Xylenes (total)	ND		0.22	6.0	µg/Kg-dry	0.99	7/8/2005 2:44:00 PM
Surr: 1,2-Dichloroethane-d4	90.7		0.16	71-128	%REC	0.99	7/8/2005 2:44:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-010A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-01
W Order:	0507031			**Collection Date:**	7/6/2005 4:20:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	5.07 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	17.6	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6162.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	83.9		0.11	59-125	%REC	0.99	7/8/2005 2:44:00 PM
Surr: Dibromofluoromethane	91.8		0.22	40-156	%REC	0.99	7/8/2005 2:44:00 PM
Surr: Toluene-d8	97.3		0.14	75-125	%REC	0.99	7/8/2005 2:44:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-011A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-02
W Order:	0507031			**Collection Date:**	7/6/2005 4:25:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.93 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	13.5	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6163.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.12	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
1,1,2,2-Tetrachloroethane	ND		0.19	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
1,1,2-Trichloroethane	ND		0.13	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
1,1-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
1,1-Dichloroethene	ND		0.16	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
1,2-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
1,2-Dichloropropane	ND		0.09	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
2-Butanone	ND		0.16	12	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
2-Hexanone	ND		0.26	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
4-Methyl-2-pentanone	ND		0.28	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Acetone	6.6	J	0.46	12	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Benzene	ND		0.11	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Bromodichloromethane	ND		0.09	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Bromoform	ND		0.07	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Bromomethane	ND		0.35	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Carbon disulfide	ND		0.07	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Carbon tetrachloride	ND		0.13	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Chlorobenzene	ND		0.11	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Chloroethane	ND		0.34	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Chloroform	ND		0.05	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Chloromethane	ND		0.44	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
cis-1,2-Dichloroethene	7.5		0.13	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
cis-1,3-Dichloropropene	ND		0.11	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Dibromochloromethane	ND		0.15	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Ethylbenzene	ND		0.12	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Methylene chloride	ND		0.47	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Styrene	ND		0.12	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Tetrachloroethene	1000	E	0.16	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Toluene	ND		0.14	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
trans-1,2-Dichloroethene	ND		0.12	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
trans-1,3-Dichloropropene	ND		0.11	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Trichloroethene	85		0.13	2.9	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Vinyl chloride	ND		0.09	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Xylenes (total)	ND		0.21	5.8	µg/Kg-dry	1.01	7/8/2005 3:18:00 PM
Surr: 1,2-Dichloroethane-d4	91.5		0.15	71-128	%REC	1.01	7/8/2005 3:18:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-011A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-02
W Order:	0507031			**Collection Date:**	7/6/2005 4:25:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.93 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	13.5	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6163.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	86.0		0.11	59-125	%REC	1.01	7/8/2005 3:18:00 PM
Surr: Dibromofluoromethane	91.7		0.21	40-156	%REC	1.01	7/8/2005 3:18:00 PM
Surr: Toluene-d8	98.4		0.14	75-125	%REC	1.01	7/8/2005 3:18:00 PM

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.	**Lab ID:**	0507031-011A
Project:	Johnny Cake Road Site, New York	**Client Sample ID:**	GAR-02
W Order:	0507031	**Collection Date:**	7/6/2005 4:25:00 PM
Matrix:	SOIL	**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10 **Sample Size:** 0.49 g	**PrepDate:**	
ColumnID:	Rtx-VMS **%Moisture:** 13.5	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM **TestCode:** 8260S_TCL	**FileID:**	J6184.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		1.2	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
1,1,2,2-Tetrachloroethane	ND		1.9	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
1,1,2-Trichloroethane	ND		1.3	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
1,1-Dichloroethane	ND		1.2	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
1,1-Dichloroethene	ND		1.7	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
1,2-Dichloroethane	ND		1.2	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
1,2-Dichloropropane	ND		0.94	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
2-Butanone	ND		1.7	120	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
2-Hexanone	ND		2.6	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
4-Methyl-2-pentanone	ND		2.8	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Acetone	79	J	4.6	120	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Benzene	ND		1.1	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Bromodichloromethane	ND		0.94	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Bromoform	ND		0.71	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Bromomethane	ND		3.5	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Carbon disulfide	ND		0.71	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Carbon tetrachloride	ND		1.3	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Chlorobenzene	ND		1.1	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Chloroethane	ND		3.4	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Chloroform	ND		0.47	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Chloromethane	ND		4.5	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
cis-1,2-Dichloroethene	7.4	J	1.3	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
cis-1,3-Dichloropropene	ND		1.1	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Dibromochloromethane	ND		1.5	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Ethylbenzene	ND		1.2	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Methylene chloride	ND		4.7	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Styrene	ND		1.2	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Tetrachloroethene	1900		1.7	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Toluene	ND		1.4	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
trans-1,2-Dichloroethene	ND		1.2	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
trans-1,3-Dichloropropene	ND		1.1	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Trichloroethene	83		1.3	29	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Vinyl chloride	ND		0.94	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Xylenes (total)	ND		2.1	59	µg/Kg-dry	10.2	7/9/2005 4:34:00 PM
Surr: 1,2-Dichloroethane-d4	91.5		1.5	71-128	%REC	10.2	7/9/2005 4:34:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-011A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-02
W Order:	0507031			**Collection Date:**	7/6/2005 4:25:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.49 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	13.5	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6184.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	92.6		1.1	59-125	%REC	10.2	7/9/2005 4:34:00 PM
Surr: Dibromofluoromethane	92.1		2.1	40-156	%REC	10.2	7/9/2005 4:34:00 PM
Surr: Toluene-d8	99.2		1.4	75-125	%REC	10.2	7/9/2005 4:34:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.	**Lab ID:**	0507031-012A
Project:	Johnny Cake Road Site, New York	**Client Sample ID:**	GAR-03
W Order:	0507031	**Collection Date:**	7/6/2005 4:30:00 PM
Matrix:	SOIL	**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10 **Sample Size:** 4.94 g	**PrepDate:**	
ColumnID:	Rtx-VMS **% Moisture:** 20.2	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM **TestCode:** 8260S_TCL	**FileID:**	J6164.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.13	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
1,1,2,2-Tetrachloroethane	ND		0.20	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
1,1,2-Trichloroethane	ND		0.14	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
1,1-Dichloroethane	ND		0.13	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
1,1-Dichloroethene	ND		0.18	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
1,2-Dichloroethane	ND		0.13	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
1,2-Dichloropropane	ND		0.10	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
2-Butanone	ND		0.18	13	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
2-Hexanone	ND		0.28	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
4-Methyl-2-pentanone	ND		0.30	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Acetone	6.1	J	0.49	13	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Benzene	ND		0.11	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Bromodichloromethane	ND		0.10	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Bromoform	ND		0.08	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Bromomethane	ND		0.38	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Carbon disulfide	ND		0.08	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Carbon tetrachloride	ND		0.14	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Chlorobenzene	ND		0.11	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Chloroethane	ND		0.37	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Chloroform	ND		0.05	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Chloromethane	ND		0.48	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
cis-1,2-Dichloroethene	4.8		0.14	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
cis-1,3-Dichloropropene	ND		0.11	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Dibromochloromethane	ND		0.16	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Ethylbenzene	ND		0.13	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Methylene chloride	ND		0.51	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Styrene	ND		0.13	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Tetrachloroethene	200		0.18	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Toluene	ND		0.15	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
trans-1,2-Dichloroethene	ND		0.13	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
trans-1,3-Dichloropropene	ND		0.11	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Trichloroethene	110		0.14	3.2	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Vinyl chloride	ND		0.10	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Xylenes (total)	ND		0.23	6.3	µg/Kg-dry	1.01	7/8/2005 3:54:00 PM
Surr: 1,2-Dichloroethane-d4	90.5		0.16	71-128	%REC	1.01	7/8/2005 3:54:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-012A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-03
W Order:	0507031			**Collection Date:**	7/6/2005 4:30:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.94 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	20.2	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6164.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	88.8		0.11	59-125	%REC	1.01	7/8/2005 3:54:00 PM
Surr: Dibromofluoromethane	92.5		0.23	40-156	%REC	1.01	7/8/2005 3:54:00 PM
Surr: Toluene-d8	98.7		0.15	75-125	%REC	1.01	7/8/2005 3:54:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.		**Lab ID:**	0507031-013A
Project:	Johnny Cake Road Site, New York		**Client Sample ID:**	GAR-04
W Order:	0507031		**Collection Date:**	7/6/2005 4:35:00 PM
Matrix:	SOIL		**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:** 4.98 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:** 23.4	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:** 8260S_TCL	**FileID:**	J6165.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.13	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
1,1,2,2-Tetrachloroethane	ND		0.21	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
1,1,2-Trichloroethane	ND		0.14	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
1,1-Dichloroethane	ND		0.13	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
1,1-Dichloroethene	ND		0.18	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
1,2-Dichloroethane	ND		0.13	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
1,2-Dichloropropane	ND		0.10	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
2-Butanone	ND		0.18	13	µg/Kg-dry	1	7/8/2005 4:28:00 PM
2-Hexanone	ND		0.29	6.5	µg/Kg-dry	1	7/8/2005 4:28:00 PM
4-Methyl-2-pentanone	ND		0.31	6.5	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Acetone	5.8	J	0.51	13	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Benzene	ND		0.12	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Bromodichloromethane	ND		0.10	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Bromoform	ND		0.08	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Bromomethane	ND		0.39	6.5	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Carbon disulfide	ND		0.08	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Carbon tetrachloride	ND		0.14	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Chlorobenzene	ND		0.12	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Chloroethane	ND		0.38	6.5	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Chloroform	ND		0.05	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Chloromethane	ND		0.50	6.5	µg/Kg-dry	1	7/8/2005 4:28.00 PM
cis-1,2-Dichloroethene	2.7	J	0.14	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
cis-1,3-Dichloropropene	ND		0.12	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Dibromochloromethane	ND		0.17	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Ethylbenzene	ND		0.13	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Methylene chloride	ND		0.52	6.5	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Styrene	ND		0.13	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Tetrachloroethene	63		0.18	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Toluene	ND		0.16	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
trans-1,2-Dichloroethene	ND		0.13	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
trans-1,3-Dichloropropene	ND		0.12	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Trichloroethene	39		0.14	3.3	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Vinyl chloride	ND		0.10	6.5	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Xylenes (total)	ND		0.23	6.5	µg/Kg-dry	1	7/8/2005 4:28:00 PM
Surr: 1,2-Dichloroethane-d4	91.3		0.17	71-128	%REC	1	7/8/2005 4:28:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-013A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-04
W Order:	0507031			**Collection Date:**	7/6/2005 4:35:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.98 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	23.4	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6165.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	85.5		0.12	59-125	%REC	1	7/8/2005 4:28:00 PM
Surr: Dibromofluoromethane	92.4		0.23	40-156	%REC	1	7/8/2005 4:28:00 PM
Surr: Toluene-d8	97.7		0.16	75-125	%REC	1	7/8/2005 4:28:00 PM

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-014A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-05
W Order:	0507031			**Collection Date:**	7/6/2005 4:40:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.52 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	16.5	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6170.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		1.2	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
1,1,2,2-Tetrachloroethane	ND		1.8	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
1,1,2-Trichloroethane	ND		1.3	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
1,1-Dichloroethane	ND		1.2	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
1,1-Dichloroethene	ND		1.6	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
1,2-Dichloroethane	ND		1.2	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
1,2-Dichloropropane	ND		0.92	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
2-Butanone	ND		1.6	120	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
2-Hexanone	ND		2.5	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
4-Methyl-2-pentanone	ND		2.8	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Acetone	68	J	4.5	120	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Benzene	ND		1.0	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Bromodichloromethane	ND		0.92	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Bromoform	ND		0.69	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Bromomethane	ND		3.5	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Carbon disulfide	ND		0.69	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Carbon tetrachloride	ND		1.3	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Chlorobenzene	ND		1.0	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Chloroethane	ND		3.3	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Chloroform	ND		0.46	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Chloromethane	ND		4.4	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
cis-1,2-Dichloroethene	22	J	1.3	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
cis-1,3-Dichloropropene	ND		1.0	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Dibromochloromethane	ND		1.5	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Ethylbenzene	ND		1.2	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Methylene chloride	ND		4.6	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Styrene	ND		1.2	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Tetrachloroethene	610		1.6	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Toluene	ND		1.4	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
trans-1,2-Dichloroethene	ND		1.2	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
trans-1,3-Dichloropropene	ND		1.0	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Trichloroethene	380		1.3	29	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Vinyl chloride	ND		0.92	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Xylenes (total)	ND		2.1	58	µg/Kg-dry	9.61	7/8/2005 7:23:00 PM
Surr: 1,2-Dichloroethane-d4	92.0		1.5	71-128	%REC	9.61	7/8/2005 7:23:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-014A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-05
W Order:	0507031			**Collection Date:**	7/6/2005 4:40:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.52 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**% Moisture:**	16.5	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6170.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	94.7		1.0	59-125	%REC	9.61	7/8/2005 7:23:00 PM
Surr: Dibromofluoromethane	92.1		2.1	40-156	%REC	9.61	7/8/2005 7:23:00 PM
Surr: Toluene-d8	98.8		1.4	75-125	%REC	9.61	7/8/2005 7:23:00 PM

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Cont. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-015A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-06
W Order:	0507031			**Collection Date:**	7/6/2005 4:50:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.98 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	14.9	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6166.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
1,1,2,2-Tetrachloroethane	ND		0.19	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
1,1,2-Trichloroethane	ND		0.13	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
1,1-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
1,1-Dichloroethene	ND		0.16	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
1,2-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
1,2-Dichloropropane	ND		0.09	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
2-Butanone	ND		0.16	12	µg/Kg-dry	1	7/8/2005 5:03:00 PM
2-Hexanone	ND		0.26	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
4-Methyl-2-pentanone	ND		0.28	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Acetone	7.8	J	0.46	12	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Benzene	ND		0.11	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Bromodichloromethane	ND		0.09	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Bromoform	ND		0.07	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Bromomethane	ND		0.35	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Carbon disulfide	ND		0.07	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Carbon tetrachloride	ND		0.13	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Chlorobenzene	ND		0.11	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Chloroethane	ND		0.34	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Chloroform	ND		0.05	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Chloromethane	ND		0.45	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
cis-1,2-Dichloroethene	75		0.13	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
cis-1,3-Dichloropropene	ND		0.11	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Dibromochloromethane	ND		0.15	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Ethylbenzene	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Methylene chloride	0.60	J	0.47	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Styrene	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Tetrachloroethene	980	E	0.16	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Toluene	ND		0.14	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
trans-1,2-Dichloroethene	2.4	J	0.12	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
trans-1,3-Dichloropropene	ND		0.11	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Trichloroethene	500	E	0.13	2.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Vinyl chloride	ND		0.09	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Xylenes (total)	ND		0.21	5.9	µg/Kg-dry	1	7/8/2005 5:03:00 PM
Surr: 1,2-Dichloroethane-d4	88.9		0.15	71-128	%REC	1	7/8/2005 5:03:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-015A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-06
W Order:	0507031			**Collection Date:**	7/6/2005 4:50:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.98 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	14.9	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6166.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	89.3		0.11	59-125	%REC	1	7/8/2005 5:03:00 PM
Surr: Dibromofluoromethane	92.4		0.21	40-156	%REC	1	7/8/2005 5:03:00 PM
Surr: Toluene-d8	98.3		0.14	75-125	%REC	1	7/8/2005 5:03:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway

East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.	**Lab ID:**	0507031-015A
Project:	Johnny Cake Road Site, New York	**Client Sample ID:**	GAR-06
W Order:	0507031	**Collection Date:**	7/6/2005 4:50:00 PM
Matrix:	SOIL	**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10 **Sample Size:** 0.5 g	**PrepDate:**	
ColumnID:	Rtx-VMS **%Moisture:** 14.9	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM **TestCode:** 8260S_TCL	**FileID:**	J6185.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				SW8260B			
1,1,1-Trichloroethane	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
1,1,2,2-Tetrachloroethane	ND		1.9	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
1,1,2-Trichloroethane	ND		1.3	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
1,1-Dichloroethane	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
1,1-Dichloroethene	ND		1.6	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
1,2-Dichloroethane	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
1,2-Dichloropropane	ND		0.94	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
2-Butanone	ND		1.6	120	µg/Kg-dry	10	7/9/2005 5:09:00 PM
2-Hexanone	ND		2.6	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
4-Methyl-2-pentanone	ND		2.8	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Acetone	58	J	4.6	120	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Benzene	ND		1.1	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Bromodichloromethane	ND		0.94	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Bromoform	ND		0.70	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Bromomethane	ND		3.5	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Carbon disulfide	ND		0.70	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Carbon tetrachloride	ND		1.3	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Chlorobenzene	ND		1.1	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Chloroethane	ND		3.4	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Chloroform	ND		0.47	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Chloromethane	ND		4.5	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
cis-1,2-Dichloroethene	53		1.3	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
cis-1,3-Dichloropropene	ND		1.1	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Dibromochloromethane	ND		1.5	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Ethylbenzene	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Methylene chloride	ND		4.7	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Styrene	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Tetrachloroethene	1300		1.6	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Toluene	ND		1.4	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
trans-1,2-Dichloroethene	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
trans-1,3-Dichloropropene	ND		1.1	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Trichloroethene	480		1.3	29	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Vinyl chloride	ND		0.94	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Xylenes (total)	ND		2.1	59	µg/Kg-dry	10	7/9/2005 5:09:00 PM
Surr: 1,2-Dichloroethane-d4	91.3		1.5	71-128	%REC	10	7/9/2005 5:09:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-015A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-06
W Order:	0507031			**Collection Date:**	7/6/2005 4:50:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	14.9	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6185.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	94.0		1.1	59-125	%REC	10	7/9/2005 5:09:00 PM
Surr: Dibromofluoromethane	91.9		2.1	40-156	%REC	10	7/9/2005 5:09:00 PM
Surr: Toluene-d8	99.2		1.4	75-125	%REC	10	7/9/2005 5:09:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Cont. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-016A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-07
W Order:	0507031			**Collection Date:**	7/6/2005 5:00:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.94 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	14.0	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6181.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.12	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
1,1,2,2-Tetrachloroethane	ND		0.19	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
1,1,2-Trichloroethane	ND		0.13	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
1,1-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
1,1-Dichloroethene	ND		0.16	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
1,2-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
1,2-Dichloropropane	ND		0.09	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
2-Butanone	2.8	J	0.16	12	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
2-Hexanone	1.3	J	0.26	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
4-Methyl-2-pentanone	ND		0.28	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Acetone	14		0.46	12	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Benzene	ND		0.11	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Bromodichloromethane	ND		0.09	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Bromoform	ND		0.07	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Bromomethane	ND		0.35	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Carbon disulfide	ND		0.07	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Carbon tetrachloride	ND		0.13	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Chlorobenzene	ND		0.11	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Chloroethane	ND		0.34	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Chloroform	ND		0.05	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Chloromethane	ND		0.45	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
cis-1,2-Dichloroethene	3.4		0.13	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
cis-1,3-Dichloropropene	ND		0.11	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Dibromochloromethane	ND		0.15	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Ethylbenzene	ND		0.12	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Methylene chloride	ND		0.47	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Styrene	ND		0.12	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Tetrachloroethene	8.4		0.16	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Toluene	ND		0.14	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
trans-1,2-Dichloroethene	1.3	J	0.12	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
trans-1,3-Dichloropropene	ND		0.11	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Trichloroethene	63		0.13	2.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Vinyl chloride	ND		0.09	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Xylenes (total)	ND		0.21	5.9	µg/Kg-dry	1.01	7/9/2005 2:50:00 PM
Surr: 1,2-Dichloroethane-d4	91.9		0.15	71-128	%REC	1.01	7/9/2005 2:50:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
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- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-016A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-07
W Order:	0507031			**Collection Date:**	7/6/2005 5:00:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.94 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	14.0	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6181.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	87.3		0.11	59-125	%REC	1.01	7/9/2005 2:50:00 PM
Surr: Dibromofluoromethane	93.2		0.21	40-156	%REC	1.01	7/9/2005 2:50:00 PM
Surr: Toluene-d8	97.7		0.14	75-125	%REC	1.01	7/9/2005 2:50:00 PM

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-017A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-08
W Order:	0507031			**Collection Date:**	7/7/2005 7:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.99 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	13.8	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6168.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
1,1,2,2-Tetrachloroethane	ND		0.19	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
1,1,2-Trichloroethane	ND		0.13	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
1,1-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
1,1-Dichloroethene	ND		0.16	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
1,2-Dichloroethane	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
1,2-Dichloropropane	ND		0.09	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
2-Butanone	2.3	J	0.16	12	µg/Kg-dry	1	7/8/2005 6:13:00 PM
2-Hexanone	3.3	J	0.26	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
4-Methyl-2-pentanone	ND		0.28	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Acetone	11	J	0.45	12	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Benzene	ND		0.10	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Bromodichloromethane	ND		0.09	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Bromoform	ND		0.07	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Bromomethane	ND		0.35	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Carbon disulfide	85		0.07	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Carbon tetrachloride	ND		0.13	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Chlorobenzene	ND		0.10	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Chloroethane	ND		0.34	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Chloroform	ND		0.05	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Chloromethane	ND		0.44	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
cis-1,2-Dichloroethene	74		0.13	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
cis-1,3-Dichloropropene	ND		0.10	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Dibromochloromethane	ND		0.15	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Ethylbenzene	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Methylene chloride	ND		0.46	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Styrene	ND		0.12	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Tetrachloroethene	410	E	0.16	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Toluene	ND		0.14	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
trans-1,2-Dichloroethene	3.7		0.12	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
trans-1,3-Dichloropropene	ND		0.10	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Trichloroethene	610	E	0.13	2.9	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Vinyl chloride	ND		0.09	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Xylenes (total)	ND		0.21	5.8	µg/Kg-dry	1	7/8/2005 6:13:00 PM
Surr: 1,2-Dichloroethane-d4	91.9		0.15	71-128	%REC	1	7/8/2005 6:13:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
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Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-017A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-08
W Order:	0507031			**Collection Date:**	7/7/2005 7:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.99 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	13.8	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6168.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	93.2		0.10	59-125	%REC	1	7/8/2005 6:13:00 PM
Surr: Dibromofluoromethane	94.4		0.21	40-156	%REC	1	7/8/2005 6:13:00 PM
Surr: Toluene-d8	104		0.14	75-125	%REC	1	7/8/2005 6:13:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-017A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-08
W Order:	0507031			**Collection Date:**	7/7/2005 7:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	13.8	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6186.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				SW8260B			
1,1,1-Trichloroethane	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
1,1,2,2-Tetrachloroethane	ND		1.9	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
1,1,2-Trichloroethane	ND		1.3	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
1,1-Dichloroethane	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
1,1-Dichloroethene	ND		1.6	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
1,2-Dichloroethane	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
1,2-Dichloropropane	ND		0.93	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
2-Butanone	ND		1.6	120	µg/Kg-dry	10	7/9/2005 5:44:00 PM
2-Hexanone	ND		2.6	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
4-Methyl-2-pentanone	ND		2.8	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Acetone	66	J	4.5	120	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Benzene	ND		1.0	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Bromodichloromethane	ND		0.93	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Bromoform	ND		0.70	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Bromomethane	ND		3.5	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Carbon disulfide	ND		0.70	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Carbon tetrachloride	ND		1.3	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Chlorobenzene	ND		1.0	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Chloroethane	ND		3.4	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Chloroform	ND		0.46	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Chloromethane	ND		4.4	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
cis-1,2-Dichloroethene	18	J	1.3	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
cis-1,3-Dichloropropene	ND		1.0	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Dibromochloromethane	ND		1.5	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Ethylbenzene	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Methylene chloride	ND		4.6	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Styrene	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Tetrachloroethene	220		1.6	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Toluene	ND		1.4	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
trans-1,2-Dichloroethene	ND		1.2	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
trans-1,3-Dichloropropene	ND		1.0	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Trichloroethene	230		1.3	29	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Vinyl chloride	ND		0.93	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Xylenes (total)	ND		2.1	58	µg/Kg-dry	10	7/9/2005 5:44:00 PM
Surr: 1,2-Dichloroethane-d4	92.2		1.5	71-128	%REC	10	7/9/2005 5:44:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
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- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 **(315) 437-6100**

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-017A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-08
W Order:	0507031			**Collection Date:**	7/7/2005 7:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	13 8	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6186.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	93.9		1.0	59-125	%REC	10	7/9/2005 5:44:00 PM
Surr: Dibromofluoromethane	91.7		2.1	40-156	%REC	10	7/9/2005 5:44:00 PM
Surr: Toluene-d8	99.1		1.4	75-125	%REC	10	7/9/2005 5:44:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-018A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-09
W Order:	0507031			**Collection Date:**	7/6/2005 5:20:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	5.01 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	16.2	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6169.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.12	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
1,1,2,2-Tetrachloroethane	ND		0.19	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
1,1,2-Trichloroethane	ND		0.13	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
1,1-Dichloroethane	ND		0.12	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
1,1-Dichloroethene	ND		0.17	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
1,2-Dichloroethane	ND		0.12	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
1,2-Dichloropropane	ND		0.10	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
2-Butanone	ND		0.17	12	µg/Kg-dry	1	7/8/2005 6:48:00 PM
2-Hexanone	ND		0.26	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
4-Methyl-2-pentanone	ND		0.29	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Acetone	22		0.47	12	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Benzene	ND		0.11	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Bromodichloromethane	ND		0.10	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Bromoform	ND		0.07	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Bromomethane	ND		0.36	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Carbon disulfide	2.0	J	0.07	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Carbon tetrachloride	ND		0.13	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Chlorobenzene	ND		0.11	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Chloroethane	ND		0.35	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Chloroform	ND		0.05	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Chloromethane	ND		0.45	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
cis-1,2-Dichloroethene	3.2		0.13	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
cis-1,3-Dichloropropene	ND		0.11	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Dibromochloromethane	ND		0.16	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Ethylbenzene	ND		0.12	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Methylene chloride	1.3	J	0.48	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Styrene	ND		0.12	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Tetrachloroethene	1.9	J	0.17	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Toluene	ND		0.14	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
trans-1,2-Dichloroethene	ND		0.12	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
trans-1,3-Dichloropropene	ND		0.11	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Trichloroethene	1.0	J	0.13	3.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Vinyl chloride	2.2	J	0.10	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Xylenes (total)	ND		0.21	6.0	µg/Kg-dry	1	7/8/2005 6:48:00 PM
Surr: 1,2-Dichloroethane-d4	115		0.16	71-128	%REC	1	7/8/2005 6:48:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:44 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-018A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-09
W Order:	0507031			**Collection Date:**	7/6/2005 5:20:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	5.01 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	16.2	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6169.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	68.1		0.11	59-125	%REC	1	7/8/2005 6:48:00 PM
Surr: Dibromofluoromethane	134		0.21	40-156	%REC	1	7/8/2005 6:48:00 PM
Surr: Toluene-d8	71.3	S	0.14	75-125	%REC	1	7/8/2005 6:48:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-018A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-09
W Order:	0507031			**Collection Date:**	7/6/2005 5:20:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.1 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	16.2	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6182.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.54	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
1,1,2,2-Tetrachloroethane	ND		0.87	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
1,1,2-Trichloroethane	ND		0.60	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
1,1-Dichloroethane	ND		0.54	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
1,1-Dichloroethene	ND		0.76	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
1,2-Dichloroethane	ND		0.54	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
1,2-Dichloropropane	ND		0.43	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
2-Butanone	ND		0.76	54	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
2-Hexanone	ND		1.2	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
4-Methyl-2-pentanone	ND		1.3	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Acetone	61		2.1	54	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Benzene	ND		0.49	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Bromodichloromethane	ND		0.43	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Bromoform	ND		0.32	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Bromomethane	ND		1.6	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Carbon disulfide	5.8	J	0.32	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Carbon tetrachloride	ND		0.60	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Chlorobenzene	ND		0.49	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Chloroethane	ND		1.6	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Chloroform	ND		0.22	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Chloromethane	ND		2.1	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
cis-1,2-Dichloroethene	ND		0.60	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
cis-1,3-Dichloropropene	ND		0.49	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Dibromochloromethane	ND		0.70	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Ethylbenzene	ND		0.54	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Methylene chloride	4.7	J	2.2	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Styrene	ND		0.54	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Tetrachloroethene	ND		0.76	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Toluene	ND		0.65	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
trans-1,2-Dichloroethene	ND		0.54	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
trans-1,3-Dichloropropene	ND		0.49	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Trichloroethene	ND		0.60	14	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Vinyl chloride	ND		0.43	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Xylenes (total)	ND		0.97	27	µg/Kg-dry	4.54	7/9/2005 3:25:00 PM
Surr: 1,2-Dichloroethane-d4	124		0.70	71-128	%REC	4.54	7/9/2005 3:25:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:44 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-018A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	GAR-09
W Order:	0507031			**Collection Date:**	7/6/2005 5:20:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.1 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	16.2	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6182.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	66.3		0.49	59-125	%REC	4.54	7/9/2005 3:25:00 PM
Surr: Dibromofluoromethane	134		0.97	40-156	%REC	4.54	7/9/2005 3:25:00 PM
Surr: Toluene-d8	62.9	S	0.65	75-125	%REC	4.54	7/9/2005 3:25:00 PM

Qualifiers:
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- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
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O'Brien & Gere Laboratories, Inc. — Analytical Results

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East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-001A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-01
W Order:	0507031			**Collection Date:**	7/6/2005 8:55:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.92 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6144.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
1,1,2,2-Tetrachloroethane	ND		0.16	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
1,1,2-Trichloroethane	ND		0.11	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
1,1-Dichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
1,1-Dichloroethene	ND		0.14	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
1,2-Dichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
1,2-Dichloropropane	ND		0.08	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
2-Butanone	ND		0.14	10	µg/Kg	1.02	7/7/2005 5:57:00 PM
2-Hexanone	ND		0.22	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
4-Methyl-2-pentanone	ND		0.24	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
Acetone	32		0.40	10	µg/Kg	1.02	7/7/2005 5:57:00 PM
Benzene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Bromodichloromethane	ND		0.08	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Bromoform	ND		0.06	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Bromomethane	ND		0.31	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
Carbon disulfide	1.2	J	0.06	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Carbon tetrachloride	ND		0.11	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Chlorobenzene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Chloroethane	ND		0.30	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
Chloroform	ND		0.04	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Chloromethane	ND		0.39	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
cis-1,2-Dichloroethene	46		0.11	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
cis-1,3-Dichloropropene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Dibromochloromethane	ND		0.13	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Ethylbenzene	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Methylene chloride	0.87	J	0.41	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
Styrene	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Tetrachloroethene	ND		0.14	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Toluene	ND		0.12	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
trans-1,2-Dichloroethene	0.67	J	0.10	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
trans-1,3-Dichloropropene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Trichloroethene	ND		0.11	2.6	µg/Kg	1.02	7/7/2005 5:57:00 PM
Vinyl chloride	9.2		0.08	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
Xylenes (total)	ND		0.18	5.1	µg/Kg	1.02	7/7/2005 5:57:00 PM
Surr: 1,2-Dichloroethane-d4	138	S	0.13	71-128	%REC	1.02	7/7/2005 5:57:00 PM

Qualifiers:

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- S Spike Recovery outside accepted recovery limits
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Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-001A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-01
W Order:	0507031			**Collection Date:**	7/6/2005 8:55:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.92 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6144.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	55.3	S	0.09	59-125	%REC	1.02	7/7/2005 5:57:00 PM
Surr: Dibromofluoromethane	159	S	0.18	40-156	%REC	1.02	7/7/2005 5:57:00 PM
Surr: Toluene-d8	56.7	S	0.12	75-125	%REC	1.02	7/7/2005 5:57:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
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East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-001A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-01
W Order:	0507031			**Collection Date:**	7/6/2005 8:55:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.36 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.8	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6158.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.40	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
1,1,2,2-Tetrachloroethane	ND		0.65	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
1,1,2-Trichloroethane	ND		0.44	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
1,1-Dichloroethane	ND		0.40	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
1,1-Dichloroethene	ND		0.56	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
1,2-Dichloroethane	ND		0.40	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
1,2-Dichloropropane	ND		0.32	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
2-Butanone	ND		0.56	40	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
2-Hexanone	ND		0.89	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
4-Methyl-2-pentanone	ND		0.97	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Acetone	65		1.6	40	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Benzene	ND		0.36	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Bromodichloromethane	ND		0.32	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Bromoform	ND		0.24	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Bromomethane	ND		1.2	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Carbon disulfide	ND		0.24	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Carbon tetrachloride	ND		0.44	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Chlorobenzene	ND		0.36	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Chloroethane	ND		1.2	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Chloroform	ND		0.16	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Chloromethane	ND		1.5	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
cis-1,2-Dichloroethene	4.0	J	0.44	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
cis-1,3-Dichloropropene	ND		0.36	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Dibromochloromethane	ND		0.52	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Ethylbenzene	ND		0.40	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Methylene chloride	3.3	J	1.6	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Styrene	ND		0.40	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Tetrachloroethene	ND		0.56	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Toluene	ND		0.48	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
trans-1,2-Dichloroethene	ND		0.40	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
trans-1,3-Dichloropropene	ND		0.36	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Trichloroethene	ND		0.44	10	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Vinyl chloride	ND		0.32	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Xylenes (total)	ND		0.73	20	µg/Kg-dry	3.68	7/8/2005 12:24:00 PM
Surr: 1,2-Dichloroethane-d4	131	S	0.52	71-128	%REC	3.68	7/8/2005 12:24:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-001A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-01
W Order:	0507031			**Collection Date:**	7/6/2005 8:55:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.36 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.8	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6158.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	64.9		0.36	59-125	%REC	3.68	7/8/2005 12:24:00 PM
Surr: Dibromofluoromethane	146		0.73	40-156	%REC	3.68	7/8/2005 12:24:00 PM
Surr: Toluene-d8	58.9	S	0.48	75-125	%REC	3.68	7/8/2005 12:24:00 PM

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Cont. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-002A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-02
W Order:	0507031			**Collection Date:**	7/6/2005 9:05:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.97 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6145.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
1,1,2,2-Tetrachloroethane	ND		0.16	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
1,1,2-Trichloroethane	ND		0.11	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
1,1-Dichloroethane	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
1,1-Dichloroethene	ND		0.14	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
1,2-Dichloroethane	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
1,2-Dichloropropane	ND		0.08	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
2-Butanone	ND		0.14	10	µg/Kg	1.01	7/7/2005 6:32:00 PM
2-Hexanone	ND		0.22	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
4-Methyl-2-pentanone	ND		0.24	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
Acetone	22		0.39	10	µg/Kg	1.01	7/7/2005 6:32:00 PM
Benzene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Bromodichloromethane	ND		0.08	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Bromoform	ND		0.06	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Bromomethane	ND		0.30	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
Carbon disulfide	0.68	J	0.06	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Carbon tetrachloride	ND		0.11	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Chlorobenzene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Chloroethane	ND		0.29	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
Chloroform	ND		0.04	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Chloromethane	ND		0.38	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
cis-1,2-Dichloroethene	ND		0.11	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
cis-1,3-Dichloropropene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Dibromochloromethane	ND		0.13	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Ethylbenzene	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Methylene chloride	0.84	J	0.40	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
Styrene	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Tetrachloroethene	ND		0.14	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Toluene	ND		0.12	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
trans-1,2-Dichloroethene	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
trans-1,3-Dichloropropene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Trichloroethene	ND		0.11	2.5	µg/Kg	1.01	7/7/2005 6:32:00 PM
Vinyl chloride	ND		0.08	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
Xylenes (total)	ND		0.18	5.0	µg/Kg	1.01	7/7/2005 6:32:00 PM
Surr: 1,2-Dichloroethane-d4	136	S	0.13	71-128	%REC	1.01	7/7/2005 6:32:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-002A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-02
W Order:	0507031			**Collection Date:**	7/6/2005 9:05:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.97 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**% Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6145.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	53.4	S	0.09	59-125	%REC	1.01	7/7/2005 6:32:00 PM
Surr: Dibromofluoromethane	153		0.18	40-156	%REC	1.01	7/7/2005 6:32:00 PM
Surr: Toluene-d8	57.4	S	0.12	75-125	%REC	1.01	7/7/2005 6:32:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-002A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-02
W Order:	0507031			**Collection Date:**	7/6/2005 9:05:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.17 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.7	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6159.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.46	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
1,1,2,2-Tetrachloroethane	ND		0.74	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
1,1,2-Trichloroethane	ND		0.51	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
1,1-Dichloroethane	ND		0.46	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
1,1-Dichloroethene	ND		0.65	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
1,2-Dichloroethane	ND		0.46	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
1,2-Dichloropropane	ND		0.37	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
2-Butanone	ND		0.65	46	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
2-Hexanone	ND		1.0	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
4-Methyl-2-pentanone	ND		1.1	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Acetone	51		1.8	46	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Benzene	ND		0.42	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Bromodichloromethane	ND		0.37	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Bromoform	ND		0.28	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Bromomethane	ND		1.4	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Carbon disulfide	ND		0.28	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Carbon tetrachloride	ND		0.51	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Chlorobenzene	ND		0.42	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Chloroethane	ND		1.3	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Chloroform	ND		0.19	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Chloromethane	ND		1.8	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
cis-1,2-Dichloroethene	ND		0.51	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
cis-1,3-Dichloropropene	ND		0.42	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Dibromochloromethane	ND		0.60	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Ethylbenzene	ND		0.46	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Methylene chloride	3.7	J	1.9	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Styrene	ND		0.46	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Tetrachloroethene	ND		0.65	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Toluene	ND		0.56	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
trans-1,2-Dichloroethene	ND		0.46	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
trans-1,3-Dichloropropene	ND		0.42	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Trichloroethene	ND		0.51	12	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Vinyl chloride	ND		0.37	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Xylenes (total)	ND		0.83	23	µg/Kg-dry	4.27	7/8/2005 12:59:00 PM
Surr: 1,2-Dichloroethane-d4	122		0.60	71-128	%REC	4.27	7/8/2005 12:59:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 **StateCertNo:** 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-002A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-02
W Order:	0507031			**Collection Date:**	7/6/2005 9:05:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.17 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.7	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6159.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	58.4	S	0.42	59-125	%REC	4.27	7/8/2005 12:59:00 PM
Surr: Dibromofluoromethane	131		0.83	40-156	%REC	4.27	7/8/2005 12:59:00 PM
Surr: Toluene-d8	58.1	S	0.56	75-125	%REC	4.27	7/8/2005 12:59:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-003A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-03
W Order:	0507031			**Collection Date:**	7/6/2005 9:15:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.94 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6146.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
1,1,2,2-Tetrachloroethane	ND		0.16	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
1,1,2-Trichloroethane	ND		0.11	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
1,1-Dichloroethane	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
1,1-Dichloroethene	ND		0.14	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
1,2-Dichloroethane	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
1,2-Dichloropropane	ND		0.08	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
2-Butanone	ND		0.14	10	µg/Kg	1.01	7/7/2005 7:07:00 PM
2-Hexanone	ND		0.22	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
4-Methyl-2-pentanone	ND		0.24	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
Acetone	25		0.39	10	µg/Kg	1.01	7/7/2005 7:07:00 PM
Benzene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Bromodichloromethane	ND		0.08	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Bromoform	ND		0.06	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Bromomethane	ND		0.30	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
Carbon disulfide	1.7	J	0.06	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Carbon tetrachloride	ND		0.11	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Chlorobenzene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Chloroethane	ND		0.29	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
Chloroform	ND		0.04	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Chloromethane	ND		0.38	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
cis-1,2-Dichloroethene	14		0.11	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
cis-1,3-Dichloropropene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Dibromochloromethane	ND		0.13	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Ethylbenzene	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Methylene chloride	1.2	J	0.40	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
Styrene	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Tetrachloroethene	3.8		0.14	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Toluene	ND		0.12	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
trans-1,2-Dichloroethene	ND		0.10	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
trans-1,3-Dichloropropene	ND		0.09	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Trichloroethene	0.78	J	0.11	2.5	µg/Kg	1.01	7/7/2005 7:07:00 PM
Vinyl chloride	10		0.08	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
Xylenes (total)	ND		0.18	5.0	µg/Kg	1.01	7/7/2005 7:07:00 PM
Surr: 1,2-Dichloroethane-d4	133	S	0.13	71-128	%REC	1.01	7/7/2005 7:07:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT: Earth Tech, Inc. **Lab ID:** 0507031-003A
Project: Johnny Cake Road Site, New York **Client Sample ID:** ST-03
W Order: 0507031 **Collection Date:** 7/6/2005 9:15:00 AM
Matrix: SOIL **Date Received:** 7/7/2005 12:45:00 PM
Inst. ID: MS03_10 **Sample Size:** 4.94 g **PrepDate:**
ColumnID: Rtx-VMS **%Moisture:** **BatchNo:** R1727
Revision: 7/8/2005 12:45:23 PM **TestCode:** 8260S_TCL **FileID:** J6146.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	62.9		0.09	59-125	%REC	1.01	7/7/2005 7:07:00 PM
Surr: Dibromofluoromethane	152		0.18	40-156	%REC	1.01	7/7/2005 7:07:00 PM
Surr: Toluene-d8	59.6	S	0.12	75-125	%REC	1.01	7/7/2005 7:07:00 PM

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-003A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-03
W Order:	0507031			**Collection Date:**	7/6/2005 9:15:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.13 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.4	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6160.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.48	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
1,1,2,2-Tetrachloroethane	ND		0.76	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
1,1,2-Trichloroethane	ND		0.52	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
1,1-Dichloroethane	ND		0.48	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
1,1-Dichloroethene	ND		0.67	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
1,2-Dichloroethane	ND		0.48	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
1,2-Dichloropropane	ND		0.38	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
2-Butanone	ND		0.67	48	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
2-Hexanone	ND		1.0	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
4-Methyl-2-pentanone	ND		1.1	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Acetone	59		1.9	48	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Benzene	ND		0.43	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Bromodichloromethane	ND		0.38	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Bromoform	ND		0.29	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Bromomethane	ND		1.4	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Carbon disulfide	ND		0.29	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Carbon tetrachloride	ND		0.52	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Chlorobenzene	ND		0.43	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Chloroethane	ND		1.4	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Chloroform	ND		0.19	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Chloromethane	ND		1.8	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
cis-1,2-Dichloroethene	8.2	J	0.52	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
cis-1,3-Dichloropropene	ND		0.43	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Dibromochloromethane	ND		0.62	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Ethylbenzene	ND		0.48	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Methylene chloride	4.4	J	1.9	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Styrene	ND		0.48	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Tetrachloroethene	4.3	J	0.67	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Toluene	ND		0.57	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
trans-1,2-Dichloroethene	ND		0.48	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
trans-1,3-Dichloropropene	ND		0.43	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Trichloroethene	ND		0.52	12	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Vinyl chloride	3.8	J	0.38	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Xylenes (total)	ND		0.86	24	µg/Kg-dry	4.42	7/8/2005 1:34:00 PM
Surr: 1,2-Dichloroethane-d4	132	S	0.62	71-128	%REC	4.42	7/8/2005 1:34:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-003A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-03
W Order:	0507031			**Collection Date:**	7/6/2005 9:15:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.13 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.4	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6160.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	61.8		0.43	59-125	%REC	4.42	7/8/2005 1:34:00 PM
Surr: Dibromofluoromethane	144		0.86	40-156	%REC	4.42	7/8/2005 1:34:00 PM
Surr: Toluene-d8	55.6	S	0.57	75-125	%REC	4.42	7/8/2005 1:34:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-004A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-04
W Order:	0507031			**Collection Date:**	7/6/2005 10:47:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.92 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6147.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
1,1,2,2-Tetrachloroethane	ND		0.16	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
1,1,2-Trichloroethane	ND		0.11	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
1,1-Dichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
1,1-Dichloroethene	ND		0.14	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
1,2-Dichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
1,2-Dichloropropane	ND		0.08	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
2-Butanone	ND		0.14	10	µg/Kg	1.02	7/7/2005 7:42:00 PM
2-Hexanone	ND		0.22	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
4-Methyl-2-pentanone	ND		0.24	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
Acetone	28		0.40	10	µg/Kg	1.02	7/7/2005 7:42:00 PM
Benzene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Bromodichloromethane	ND		0.08	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Bromoform	ND		0.06	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Bromomethane	ND		0.31	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
Carbon disulfide	39		0.06	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Carbon tetrachloride	ND		0.11	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Chlorobenzene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Chloroethane	ND		0.30	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
Chloroform	ND		0.04	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Chloromethane	ND		0.39	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
cis-1,2-Dichloroethene	5.7		0.11	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
cis-1,3-Dichloropropene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Dibromochloromethane	ND		0.13	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Ethylbenzene	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Methylene chloride	1.8	J	0.41	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
Styrene	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Tetrachloroethene	ND		0.14	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Toluene	ND		0.12	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
trans-1,2-Dichloroethene	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
trans-1,3-Dichloropropene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Trichloroethene	0.87	J	0.11	2.6	µg/Kg	1.02	7/7/2005 7:42:00 PM
Vinyl chloride	2.9	J	0.08	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
Xylenes (total)	ND		0.18	5.1	µg/Kg	1.02	7/7/2005 7:42:00 PM
Surr: 1,2-Dichloroethane-d4	150	S	0.13	71-128	%REC	1.02	7/7/2005 7:42:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Cont. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-004A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-04
W Order:	0507031			**Collection Date:**	7/6/2005 10:47:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.92 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6147.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	55.6	S	0.09	59-125	%REC	1.02	7/7/2005 7:42:00 PM
Surr: Dibromofluoromethane	175	S	0.18	40-156	%REC	1.02	7/7/2005 7:42:00 PM
Surr: Toluene-d8	55.1	S	0.12	75-125	%REC	1.02	7/7/2005 7:42:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech. Inc.			**Lab ID:**	0507031-004A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-04
W Order:	0507031			**Collection Date:**	7/6/2005 10:47:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.16 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.9	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6161.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.47	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
1,1,2,2-Tetrachloroethane	ND		0.75	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
1,1,2-Trichloroethane	ND		0.51	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
1,1-Dichloroethane	ND		0.47	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
1,1-Dichloroethene	ND		0.66	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
1,2-Dichloroethane	ND		0.47	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
1,2-Dichloropropane	ND		0.37	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
2-Butanone	ND		0.66	47	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
2-Hexanone	ND		1.0	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
4-Methyl-2-pentanone	ND		1.1	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Acetone	55		1.8	47	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Benzene	ND		0.42	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Bromodichloromethane	ND		0.37	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Bromoform	ND		0.28	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Bromomethane	ND		1.4	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Carbon disulfide	73		0.28	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Carbon tetrachloride	ND		0.51	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Chlorobenzene	ND		0.42	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Chloroethane	ND		1.4	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Chloroform	ND		0.19	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Chloromethane	ND		1.8	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
cis-1,2-Dichloroethene	4.0	J	0.51	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
cis-1,3-Dichloropropene	ND		0.42	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Dibromochloromethane	ND		0.61	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Ethylbenzene	ND		0.47	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Methylene chloride	3.4	J	1.9	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Styrene	ND		0.47	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Tetrachloroethene	ND		0.66	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Toluene	ND		0.56	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
trans-1,2-Dichloroethene	ND		0.47	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
trans-1,3-Dichloropropene	ND		0.42	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Trichloroethene	ND		0.51	12	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Vinyl chloride	ND		0.37	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Xylenes (total)	ND		0.84	23	µg/Kg-dry	4.31	7/8/2005 2:08:00 PM
Surr: 1,2-Dichloroethane-d4	126		0.61	71-128	%REC	4.31	7/8/2005 2:08:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-004A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-04
W Order:	0507031			**Collection Date:**	7/6/2005 10:47:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	1.16 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.9	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6161.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	59.4		0.42	59-125	%REC	4.31	7/8/2005 2:08:00 PM
Surr: Dibromofluoromethane	137		0.84	40-156	%REC	4.31	7/8/2005 2:08:00 PM
Surr: Toluene-d8	55.6	S	0.56	75-125	%REC	4.31	7/8/2005 2:08:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-005A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-05
W Order:	0507031			**Collection Date:**	7/6/2005 11:15:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.4	**BatchNo:**	R1802
Revision:	7/13/2005 10:35:41 A	**TestCode:**	8260S_TCL	**FileID:**	T9370.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		54	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
1,1,2,2-Tetrachloroethane	ND		86	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
1,1,2-Trichloroethane	ND		59	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
1,1-Dichloroethane	ND		54	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
1,1-Dichloroethene	ND		76	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
1,2-Dichloroethane	ND		54	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
1,2-Dichloropropane	ND		43	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
2-Butanone	ND		76	5400	µg/Kg-dry	500	7/11/2005 7:53:00 PM
2-Hexanone	ND		120	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
4-Methyl-2-pentanone	ND		130	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Acetone	ND		210	5400	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Benzene	ND		49	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Bromodichloromethane	ND		43	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Bromoform	ND		32	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Bromomethane	ND		160	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Carbon disulfide	ND		32	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Carbon tetrachloride	ND		59	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Chlorobenzene	ND		49	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Chloroethane	ND		160	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Chloroform	ND		22	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Chloromethane	ND		210	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
cis-1,2-Dichloroethene	37000	E	59	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
cis-1,3-Dichloropropene	ND		49	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Dibromochloromethane	ND		70	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Ethylbenzene	ND		54	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Methylene chloride	ND		220	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Styrene	ND		54	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Tetrachloroethene	530	J	76	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Toluene	14000		65	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
trans-1,2-Dichloroethene	300	J	54	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
trans-1,3-Dichloropropene	ND		49	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Trichloroethene	1100	J	59	1300	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Vinyl chloride	3100		43	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Xylenes (total)	ND		97	2700	µg/Kg-dry	500	7/11/2005 7:53:00 PM
Surr: 1,2-Dichloroethane-d4	107		70	71-128	%REC	500	7/11/2005 7:53:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.   Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057   (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-005A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-05
W Order:	0507031			**Collection Date:**	7/6/2005 11:15:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.4	**BatchNo:**	R1802
Revision:	7/13/2005 10:35:41 A	**TestCode:**	8260S_TCL	**FileID:**	T9370.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	82.6		49	59-125	%REC	500	7/11/2005 7:53:00 PM
Surr: Dibromofluoromethane	97.7		97	40-156	%REC	500	7/11/2005 7:53:00 PM
Surr: Toluene-d8	98.4		65	75-125	%REC	500	7/11/2005 7:53:00 PM

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
E Value above quantitation range
J Analyte detected below quantitation limits
P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM   **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-005A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-05
W Order:	0507031			**Collection Date:**	7/6/2005 11:15:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.4	**BatchNo:**	R1813
Revision:	7/13/2005 3:52:16 PM	**TestCode:**	8260S_TCL	**FileID:**	T9381.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		220	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
1,1,2,2-Tetrachloroethane	ND		350	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
1,1,2-Trichloroethane	ND		240	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
1,1-Dichloroethane	ND		220	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
1,1-Dichloroethene	ND		300	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
1,2-Dichloroethane	ND		220	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
1,2-Dichloropropane	ND		170	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
2-Butanone	ND		300	22000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
2-Hexanone	ND		480	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
4-Methyl-2-pentanone	ND		520	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Acetone	ND		840	22000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Benzene	ND		190	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Bromodichloromethane	ND		170	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Bromoform	ND		130	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Bromomethane	ND		650	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Carbon disulfide	ND		130	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Carbon tetrachloride	ND		240	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Chlorobenzene	ND		190	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Chloroethane	ND		630	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Chloroform	ND		86	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Chloromethane	ND		820	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
cis-1,2-Dichloroethene	60000		240	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
cis-1,3-Dichloropropene	ND		190	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Dibromochloromethane	ND		280	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Ethylbenzene	ND		220	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Methylene chloride	ND		860	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Styrene	ND		220	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Tetrachloroethene	1000	J	300	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Toluene	26000		260	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
trans-1,2-Dichloroethene	480	J	220	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
trans-1,3-Dichloropropene	ND		190	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Trichloroethene	2200	J	240	5400	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Vinyl chloride	1900	J	170	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Xylenes (total)	ND		390	11000	µg/Kg-dry	2000	7/13/2005 10:57:00 A
Surr: 1,2-Dichloroethane-d4	100		280	71-128	%REC	2000	7/13/2005 10:57:00 A

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-005A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-05
W Order:	0507031			**Collection Date:**	7/6/2005 11:15:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	7.4	**BatchNo:**	R1813
Revision:	7/13/2005 3:52:16 PM	**TestCode:**	8260S_TCL	**FileID:**	T9381.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	64.0		190	59-125	%REC	2000	7/13/2005 10:57:00 A
Surr: Dibromofluoromethane	89.2		390	40-156	%REC	2000	7/13/2005 10:57:00 A
Surr: Toluene-d8	81.6		260	75-125	%REC	2000	7/13/2005 10:57:00 A

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-006A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-06
W Order:	0507031			**Collection Date:**	7/6/2005 11:37:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.98 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6148.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.10	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
1,1,2,2-Tetrachloroethane	ND		0.16	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
1,1,2-Trichloroethane	ND		0.11	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
1,1-Dichloroethane	ND		0.10	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
1,1-Dichloroethene	ND		0.14	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
1,2-Dichloroethane	ND		0.10	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
1,2-Dichloropropane	ND		0.08	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
2-Butanone	1.6	J	0.14	10	µg/Kg	1	7/7/2005 8:16:00 PM
2-Hexanone	ND		0.22	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
4-Methyl-2-pentanone	ND		0.24	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
Acetone	9.4	J	0.39	10	µg/Kg	1	7/7/2005 8:16:00 PM
Benzene	ND		0.09	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Bromodichloromethane	ND		0.08	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Bromoform	ND		0.06	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Bromomethane	ND		0.30	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
Carbon disulfide	ND		0.06	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Carbon tetrachloride	ND		0.11	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Chlorobenzene	ND		0.09	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Chloroethane	ND		0.29	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
Chloroform	ND		0.04	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Chloromethane	ND		0.38	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
cis-1,2-Dichloroethene	110		0.11	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
cis-1,3-Dichloropropene	ND		0.09	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Dibromochloromethane	ND		0.13	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Ethylbenzene	0.55	J	0.10	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Methylene chloride	ND		0.40	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
Styrene	ND		0.10	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Tetrachloroethene	0.83	J	0.14	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Toluene	7.0		0.12	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
trans-1,2-Dichloroethene	2.7		0.10	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
trans-1,3-Dichloropropene	ND		0.09	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Trichloroethene	3.2		0.11	2.5	µg/Kg	1	7/7/2005 8:16:00 PM
Vinyl chloride	77		0.08	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
Xylenes (total)	1.3	J	0.18	5.0	µg/Kg	1	7/7/2005 8:16:00 PM
Surr: 1,2-Dichloroethane-d4	94.7		0.13	71-128	%REC	1	7/7/2005 8:16:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-006A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-06
W Order:	0507031			**Collection Date:**	7/6/2005 11:37:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.98 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6148.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	90.1		0.09	59-125	%REC	1	7/7/2005 8:16:00 PM
Surr: Dibromofluoromethane	95.9		0.18	40-156	%REC	1	7/7/2005 8:16:00 PM
Surr: Toluene-d8	102		0.12	75-125	%REC	1	7/7/2005 8:16:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT: Earth Tech, Inc.		**Lab ID:**	0507031-007A
Project: Johnny Cake Road Site, New York		**Client Sample ID:**	ST-07
W Order: 0507031		**Collection Date:**	7/6/2005 11:40:00 AM
Matrix: SOIL		**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID: MS03_10	**Sample Size:** 4.9 g	**PrepDate:**	
ColumnID: Rtx-VMS	**% Moisture:**	**BatchNo:**	R1727
Revision: 7/8/2005 12:45:23 PM	**TestCode:** 8260S_TCL	**FileID:**	J6149.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
1,1,2,2-Tetrachloroethane	ND		0.16	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
1,1,2-Trichloroethane	ND		0.11	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
1,1-Dichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
1,1-Dichloroethene	ND		0.14	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
1,2-Dichloroethane	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
1,2-Dichloropropane	ND		0.08	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
2-Butanone	ND		0.14	10	µg/Kg	1.02	7/7/2005 8:51:00 PM
2-Hexanone	ND		0.22	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
4-Methyl-2-pentanone	ND		0.24	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
Acetone	4.2	J	0.40	10	µg/Kg	1.02	7/7/2005 8:51:00 PM
Benzene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Bromodichloromethane	ND		0.08	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Bromoform	ND		0.06	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Bromomethane	ND		0.31	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
Carbon disulfide	ND		0.06	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Carbon tetrachloride	ND		0.11	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Chlorobenzene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Chloroethane	ND		0.30	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
Chloroform	ND		0.04	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Chloromethane	ND		0.39	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
cis-1,2-Dichloroethene	35		0.11	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
cis-1,3-Dichloropropene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Dibromochloromethane	ND		0.13	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Ethylbenzene	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Methylene chloride	ND		0.41	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
Styrene	ND		0.10	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Tetrachloroethene	62		0.14	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Toluene	ND		0.12	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
trans-1,2-Dichloroethene	0.54	J	0.10	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
trans-1,3-Dichloropropene	ND		0.09	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Trichloroethene	57		0.11	2.6	µg/Kg	1.02	7/7/2005 8:51:00 PM
Vinyl chloride	ND		0.08	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
Xylenes (total)	ND		0.18	5.1	µg/Kg	1.02	7/7/2005 8:51:00 PM
Surr: 1,2-Dichloroethane-d4	90.6		0.13	71-128	%REC	1.02	7/7/2005 8:51:00 PM

Qualifiers:

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Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech. Inc.			**Lab ID:**	0507031-007A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-07
W Order:	0507031			**Collection Date:**	7/6/2005 11:40:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	4.9 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**		**BatchNo:**	R1727
Revision:	7/8/2005 12:45:23 PM	**TestCode:**	8260S_TCL	**FileID:**	J6149.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	91.9		0.09	59-125	%REC	1.02	7/7/2005 8:51:00 PM
Surr: Dibromofluoromethane	90.4		0.18	40-156	%REC	1.02	7/7/2005 8:51:00 PM
Surr: Toluene-d8	99.6		0.12	75-125	%REC	1.02	7/7/2005 8:51:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-008A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-08
W Order:	0507031			**Collection Date:**	7/6/2005 11:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.51 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.6	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6172.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		1.1	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
1,1,2,2-Tetrachloroethane	ND		1.7	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
1,1,2-Trichloroethane	ND		1.2	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
1,1-Dichloroethane	ND		1.1	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
1,1-Dichloroethene	ND		1.5	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
1,2-Dichloroethane	ND		1.1	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
1,2-Dichloropropane	ND		0.86	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
2-Butanone	ND		1.5	110	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
2-Hexanone	ND		2.4	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
4-Methyl-2-pentanone	ND		2.6	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Acetone	84	J	4.2	110	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Benzene	ND		0.96	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Bromodichloromethane	ND		0.86	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Bromoform	ND		0.64	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Bromomethane	ND		3.2	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Carbon disulfide	49		0.64	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Carbon tetrachloride	ND		1.2	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Chlorobenzene	ND		0.96	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Chloroethane	ND		3.1	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Chloroform	ND		0.43	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Chloromethane	ND		4.1	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
cis-1,2-Dichloroethene	2100		1.2	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
cis-1,3-Dichloropropene	ND		0.96	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Dibromochloromethane	ND		1.4	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Ethylbenzene	ND		1.1	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Methylene chloride	6.0	J	4.3	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Styrene	ND		1.1	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Tetrachloroethene	ND		1.5	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Toluene	ND		1.3	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
trans-1,2-Dichloroethene	6.5	J	1.1	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
trans-1,3-Dichloropropene	ND		0.96	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Trichloroethene	13	J	1.2	27	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Vinyl chloride	180		0.86	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Xylenes (total)	ND		1.9	54	µg/Kg-dry	9.8	7/8/2005 8:32:00 PM
Surr: 1,2-Dichloroethane-d4	111		1.4	71-128	%REC	9.8	7/8/2005 8:32:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-008A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-08
W Order:	0507031			**Collection Date:**	7/6/2005 11:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.51 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.6	**BatchNo:**	R1741
Revision:	7/11/2005 8:02:25 AM	**TestCode:**	8260S_TCL	**FileID:**	J6172.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	59.5		0.96	59-125	%REC	9.8	7/8/2005 8:32:00 PM
Surr: Dibromofluoromethane	116		1.9	40-156	%REC	9.8	7/8/2005 8:32:00 PM
Surr: Toluene-d8	63.6	S	1.3	75-125	%REC	9.8	7/8/2005 8:32:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-008A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-08
W Order:	0507031			**Collection Date:**	7/6/2005 11:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	***Sample Size:***	0.49 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.6	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6183.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		1.1	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
1,1,2,2-Tetrachloroethane	ND		1.8	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
1,1,2-Trichloroethane	ND		1.2	28	µg/Kg dry	10.2	7/9/2005 3:59:00 PM
1,1-Dichloroethane	ND		1.1	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
1,1-Dichloroethene	20	J	1.6	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
1,2-Dichloroethane	ND		1.1	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
1,2-Dichloropropane	ND		0.89	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
2-Butanone	ND		1.6	110	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
2-Hexanone	ND		2.5	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
4-Methyl-2-pentanone	ND		2.7	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Acetone	84	J	4.4	110	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Benzene	ND		1.0	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Bromodichloromethane	ND		0.89	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Bromoform	ND		0.67	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Bromomethane	ND		3.3	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Carbon disulfide	20	J	0.67	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Carbon tetrachloride	ND		1.2	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Chlorobenzene	ND		1.0	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Chloroethane	ND		3.2	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Chloroform	ND		0.45	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Chloromethane	ND		4.2	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
cis-1,2-Dichloroethene	5700	E	1.2	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
cis-1,3-Dichloropropene	ND		1.0	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Dibromochloromethane	ND		1.5	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Ethylbenzene	ND		1.1	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Methylene chloride	6.6	J	4.5	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Styrene	ND		1.1	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Tetrachloroethene	47		1.6	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Toluene	ND		1.3	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
trans-1,2-Dichloroethene	59		1.1	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
trans-1,3-Dichloropropene	ND		1.0	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Trichloroethene	200		1.2	28	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Vinyl chloride	90		0.89	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Xylenes (total)	ND		2.0	56	µg/Kg-dry	10.2	7/9/2005 3:59:00 PM
Surr: 1,2-Dichloroethane-d4	111		1.5	71-128	%REC	10.2	7/9/2005 3:59:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-008A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-08
W Order:	0507031			**Collection Date:**	7/6/2005 11:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS03_10	**Sample Size:**	0.49 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.6	**BatchNo:**	R1757
Revision:	7/11/2005 8:11:19 AM	**TestCode:**	8260S_TCL	**FileID:**	J6183.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	57.1	S	1.0	59-125	%REC	10.2	7/9/2005 3:59:00 PM
Surr: Dibromofluoromethane	115		2.0	40-156	%REC	10.2	7/9/2005 3:59:00 PM
Surr: Toluene-d8	61.8	S	1.3	75-125	%REC	10.2	7/9/2005 3:59:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-008A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-08
W Order:	0507031			**Collection Date:**	7/6/2005 11:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.6	**BatchNo:**	R1802
Revision:	7/13/2005 10:35:41 A	**TestCode:**	8260S_TCL	**FileID:**	T9371.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
1,1,2,2-Tetrachloroethane	ND		88	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
1,1,2-Trichloroethane	ND		60	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
1,1-Dichloroethane	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
1,1-Dichloroethene	ND		77	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
1,2-Dichloroethane	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
1,2-Dichloropropane	ND		44	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
2-Butanone	ND		77	5500	µg/Kg-dry	500	7/11/2005 8:25:00 PM
2-Hexanone	ND		120	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
4-Methyl-2-pentanone	ND		130	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Acetone	ND		210	5500	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Benzene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Bromodichloromethane	ND		44	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Bromoform	ND		33	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Bromomethane	ND		160	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Carbon disulfide	ND		33	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Carbon tetrachloride	ND		60	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Chlorobenzene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Chloroethane	ND		160	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Chloroform	ND		22	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Chloromethane	ND		210	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
cis-1,2-Dichloroethene	5200		60	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
cis-1,3-Dichloropropene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Dibromochloromethane	ND		71	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Ethylbenzene	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Methylene chloride	ND		220	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Styrene	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Tetrachloroethene	ND		77	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Toluene	ND		66	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
trans-1,2-Dichloroethene	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
trans-1,3-Dichloropropene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Trichloroethene	220	J	60	1400	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Vinyl chloride	ND		44	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Xylenes (total)	ND		98	2700	µg/Kg-dry	500	7/11/2005 8:25:00 PM
Surr: 1,2-Dichloroethane-d4	106		71	71-128	%REC	500	7/11/2005 8:25:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-008A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-08
W Order:	0507031			**Collection Date:**	7/6/2005 11:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.6	**BatchNo:**	R1802
Revision:	7/13/2005 10:35:41 A	**TestCode:**	8260S_TCL	**FileID:**	T9371.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
Surr: 4-Bromofluorobenzene	77.5		49	59-125	%REC	500	7/11/2005 8:25:00 PM
Surr: Dibromofluoromethane	93.1		98	40-156	%REC	500	7/11/2005 8:25:00 PM
Surr: Toluene-d8	92.3		66	75-125	%REC	500	7/11/2005 8:25:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT: Earth Tech, Inc.		**Lab ID:**	0507031-009A
Project: Johnny Cake Road Site, New York		**Client Sample ID:**	ST-09
W Order: 0507031		**Collection Date:**	7/6/2005 12:00:00 PM
Matrix: SOIL		**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID: MS01_11	**Sample Size:** 5 g	**PrepDate:**	
ColumnID: Rtx-VMS	**% Moisture:** 8.8	**BatchNo:**	R1802
Revision: 7/13/2005 10:35:41 A	**TestCode:** 8260S_TCL	**FileID:**	T9372.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				**SW8260B**			
1,1,1-Trichloroethane	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
1,1,2,2-Tetrachloroethane	ND		88	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
1,1,2-Trichloroethane	ND		60	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
1,1-Dichloroethane	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
1,1-Dichloroethene	ND		77	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
1,2-Dichloroethane	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
1,2-Dichloropropane	ND		44	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
2-Butanone	ND		77	5500	µg/Kg-dry	500	7/11/2005 8:56:00 PM
2-Hexanone	ND		120	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
4-Methyl-2-pentanone	ND		130	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Acetone	ND		210	5500	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Benzene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Bromodichloromethane	ND		44	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Bromoform	ND		33	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Bromomethane	ND		160	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Carbon disulfide	ND		33	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Carbon tetrachloride	ND		60	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Chlorobenzene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Chloroethane	ND		160	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Chloroform	ND		22	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Chloromethane	ND		210	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
cis-1,2-Dichloroethene	12000		60	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
cis-1,3-Dichloropropene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Dibromochloromethane	ND		71	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Ethylbenzene	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Methylene chloride	ND		220	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Styrene	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Tetrachloroethene	ND		77	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Toluene	ND		66	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
trans-1,2-Dichloroethene	ND		55	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
trans-1,3-Dichloropropene	ND		49	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Trichloroethene	160	J	60	1400	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Vinyl chloride	590	J	44	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Xylenes (total)	ND		99	2700	µg/Kg-dry	500	7/11/2005 8:56:00 PM
Surr: 1,2-Dichloroethane-d4	101		71	71-128	%REC	500	7/11/2005 8:56:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Cont. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech. Inc.			**Lab ID:**	0507031-009A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	ST-09
W Order:	0507031			**Collection Date:**	7/6/2005 12:00:00 PM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	5 g	**PrepDate:**	
ColumnID:	Rtx-VMS	**%Moisture:**	8.8	**BatchNo:**	R1802
Revision:	7/13/2005 10:35:41 A	**TestCode:**	8260S_TCL	**FileID:**	T9372.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS BY GC/MS				SW8260B			
Surr: 4-Bromofluorobenzene	73.9		49	59-125	%REC	500	7/11/2005 8:56:00 PM
Surr: Dibromofluoromethane	89.9		99	40-156	%REC	500	7/11/2005 8:56:00 PM
Surr: Toluene-d8	85.3		66	75-125	%REC	500	7/11/2005 8:56:00 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/13/2005 4:01:43 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	25 g	**PrepDate:**	7/13/2005
ColumnID:	Rtx-VMS	**%Moisture:**	16.9	**BatchNo:**	1098/R1897
Revision:	7/20/2005 8:51:46 AM	**TestCode:**	8260L	**FileID:**	T9426.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS IN TCLP BY GC/MS				**SW8260B**		**(SW1311)**	
1,1-Dichloroethene	ND		0.000440	0.0100	mg/L	20	7/18/2005 6:11:00 PM
1,2-Dichloroethane	ND		0.000360	0.0100	mg/L	20	7/18/2005 6:11:00 PM
2-Butanone	ND		0.0136	0.0400	mg/L	20	7/18/2005 6:11:00 PM
Benzene	ND		0.000340	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Carbon tetrachloride	ND		0.000660	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Chlorobenzene	ND		0.000340	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Chloroform	ND		0.000460	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Tetrachloroethene	0.103		0.000920	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Trichloroethene	0.0130		0.000620	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Vinyl chloride	ND		0.000620	0.0200	mg/L	20	7/18/2005 6:11:00 PM
Surr: 1,2-Dichloroethane-d4	111		0	75-134	%REC	20	7/18/2005 6:11:00 PM
Surr: 4-Bromofluorobenzene	77.8		0	75-125	%REC	20	7/18/2005 6:11:00 PM
Surr: Dibromofluoromethane	104		0	75-127	%REC	20	7/18/2005 6:11:00 PM
Surr: Toluene-d8	104		0	75-125	%REC	20	7/18/2005 6:11:00 PM

Qualifiers:
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
E Value above quantitation range
J Analyte detected below quantitation limits
P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.
5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	FIMS 100	**Sample Size:**	25 Ml	**PrepDate:**	7/15/2005 12:15:00 PM
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1084/R1874
Revision:	7/18/2005 2:59:05 PM	**TestCode:**	TCLPHG	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TCLP MERCURY				**SW1311/7470A**		**(SW7470A)**	
Mercury	ND		0.000024	0.00040	mg/L	1	7/15/2005 7:31:22 PM

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech. Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	ICAP 61E	**Sample Size:**	10 mL	**PrepDate:**	7/14/2005
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1077/R1901
Revision:	7/20/2005 11:28:18 A	**TestCode:**	TCLPICP	**FileID:**	5399

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TCLP METALS BY ICP				**SW6010B**		**(SW3010A)**	
Arsenic	ND		0.012	0.50	mg/L	1	7/19/2005 11:27:00 A
Barium	1.2		0.0010	0.50	mg/L	1	7/19/2005 11:27:00 A
Cadmium	0.0026	J	0.00060	0.10	mg/L	1	7/19/2005 11:27:00 A
Chromium	ND		0.0034	0.50	mg/L	1	7/19/2005 11:27:00 A
Lead	0.0092	J	0.0026	0.50	mg/L	1	7/19/2005 11:27:00 A
Selenium	ND		0.011	0.10	mg/L	1	7/19/2005 11:27:00 A
Silver	ND		0.0046	0.50	mg/L	1	7/19/2005 11:27:00 A

Qualifiers:

- B Analyte detected in the associated Method Blank
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- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Cont. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS06_40	**Sample Size:**	100 mL	**PrepDate:**	7/13/2005
ColumnID:	ZB-5	**%Moisture:**	16.9	**BatchNo:**	1063/R1888
Revision:	7/19/2005 11:10:14 A	**TestCode:**	8270L	**FileID:**	K7863.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS COMPOUNDS IN TCLP BY GC/M SW8270C					(SW3520C)		
(3+4)-Methylphenol	ND		0.00090	0.10	mg/L	1	7/19/2005 12:02:00 A
1,4-Dichlorobenzene	ND		0.00050	0.10	mg/L	1	7/19/2005 12:02:00 A
2,4,5-Trichlorophenol	ND		0.0017	0.50	mg/L	1	7/19/2005 12:02:00 A
2,4,6-Trichlorophenol	ND		0.00080	0.10	mg/L	1	7/19/2005 12:02:00 A
2,4-Dinitrotoluene	ND		0.00080	0.10	mg/L	1	7/19/2005 12:02:00 A
2-Methylphenol	ND		0.00070	0.10	mg/L	1	7/19/2005 12:02:00 A
Hexachlorobenzene	ND		0.00070	0.10	mg/L	1	7/19/2005 12:02:00 A
Hexachlorobutadiene	ND		0.00070	0.10	mg/L	1	7/19/2005 12:02:00 A
Hexachloroethane	ND		0.00080	0.10	mg/L	1	7/19/2005 12:02:00 A
Nitrobenzene	ND		0.00050	0.10	mg/L	1	7/19/2005 12:02:00 A
Pentachlorophenol	ND		0.063	0.50	mg/L	1	7/19/2005 12:02:00 A
Pyridine	ND		0.0056	0.10	mg/L	1	7/19/2005 12:02:00 A
Surr: 2,4,6-Tribromophenol	81.1		0	46-149	%REC	1	7/19/2005 12:02:00 A
Surr: 2-Fluorobiphenyl	53.9		0	42-130	%REC	1	7/19/2005 12:02:00 A
Surr: 2-Fluorophenol	76.6		0	26-130	%REC	1	7/19/2005 12:02:00 A
Surr: Nitrobenzene-d5	74.2		0	42-130	%REC	1	7/19/2005 12:02:00 A
Surr: Phenol-d5	82.8		0	21-134	%REC	1	7/19/2005 12:02:00 A
Surr: Terphenyl-d14	52.7		0	24-147	%REC	1	7/19/2005 12:02:00 A

Qualifiers:

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- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	WC	**Sample Size:**	NA	**PrepDate:**	
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	R1854
Revision:	7/15/2005 4:32:55 PM	**TestCode:**	IGN1030S	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
IGNITABILITY OF SOLIDS				**SW1030**			
Ignitability	ND		0	0		1	7/15/2005

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc.

Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	pH meter	**Sample Size:**	NA	**PrepDate:**	
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	R1787
Revision:	7/12/2005 1:12:29 PM	**TestCode:**	PH9045C	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
LABORATORY (PH)				**SW-846 9045C**			
pH	7.71		0	1.00	pH Units	1	7/12/2005 12:45:00 P

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	Mettler balance	**Sample Size:**	NA	**PrepDate:**	
ColumnID:		**%Moisture:**		**BatchNo:**	R1758
Revision:	7/9/2005 11:40:36 AM	**TestCode:**	PMOIST	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
PERCENT MOISTURE				**ASTM D2216**			
Percent Moisture	16.9		0	1.00	wt%	1	7/8/2005

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	AA3	**Sample Size:**	10 g	**PrepDate:**	7/13/2005
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1065/R1840
Revision:	7/20/2005 8:28:10 AM	**TestCode:**	RCN7.3.3	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TOTAL RELEASABLE CYANIDE				**SW7.3.3.2**		**(SW7.3.3.2)**	
Reactive Cyanide	ND		25	25	mg/Kg	1	7/14/2005

Qualifiers:
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Cont. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	WC	**Sample Size:**	10 g	**PrepDate:**	7/13/2005
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1064/R1808
Revision:	7/13/2005 2:04:15 PM	**TestCode:**	RS7.3.4	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TOTAL RELEASABLE SULFIDE				SW7.3.4.2		(SW7.3.4.2)	
Reactive Sulfide	ND		50	50	mg/Kg	1	7/13/2005

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

ATTACHMENT D

SUBSURFACE Drilling Solutions	**Subsurface Log**	Hole No.: MW-2R Sheet 1 of 1	Date started: 7/25/05 Date Finished: 7/25/05

Client: Earth Tech, Inc. Location: Johnny Cake Road Town of Danube, NY	Method of Investigation: 6 1/4" Hollow-Stem Auger	Well Depth: 23.0' bgs Depth to Screen: 3.0' bgs

Project No.: 86361 Project Mgr.: Pete Johnson	Drilling Co.: SDS Geologist: N/A	Driller: J. Grant D. Helper: C. Ross Drill Rig: Mobile B-59	Weather: Sunny 85 deg. F

Depth (ft.)	Sample No.	Sample Depth (ft.)	Sample Blows per 6"	Sample "N"	Sample Recovery (ft.)	Sample Description
						0.0-5.5': Moist, brown fine to coarse sand; some fine gravel; trace silt; trace clay; trace organics.
5						5.5'-12.5': Wet, brown silt and clay; trace fine to coarse sand; trace organics.
						12.5'-25.5': Wet, gray silt and clay; some fine to coarse gravel; trace fine to coarse sand.
10						
15						
20						
25						
30						
35						

Depth bgs / Well Details / Groundwater and Other Observations

Sample Types:
S = Split Spoon: 2" by 2' T= Shelby Tube: ____
R = Rock Core: ____ O Auger cuttings
N = ASTM D1586

Well Backfill Key: Cement; Native Fill; Sand; Bentonite

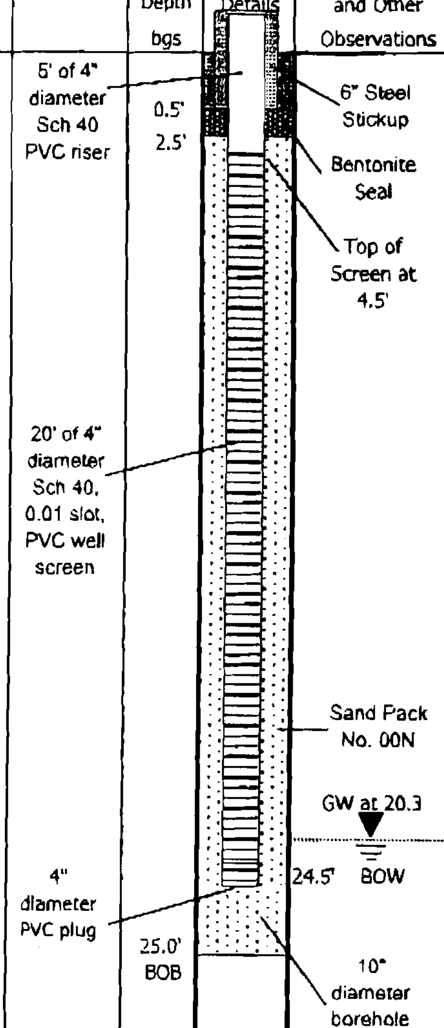
SUBSURFACE Drilling Solutions	Subsurface Log	Hole No.: MW-2RR	Date started: 7/27/05
		Sheet 1 of 1	Date Finished: 7/27/05

Client: Earth Tech, Inc.	Method of investigation:	Well Depth: 24.5' bgs
Location: Johnny Cake Road, Town of Danube, NY	6 1/4" Hollow-Stem Auger	Depth to Screen: 4.5' bgs

Project No.: 86361	Drilling Co.: SDS	Driller: J. Grant	Weather:
		D. Helper: C. Ross	M-Sunny
Project Mgr.: Pete Johnson	Geologist: N/A	Drill Rig: Mobile B-59	80 deg. F

Depth (ft.)	Sample No.	Sample Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)	Sample Description
						0.0-1.5': Moist, brown fine sand; some fine gravel; little medium to coarse sand; trace clay; trace organics.
5						1.5'-7.0': Wet, brown silt and fine sand; little coarse to medium sand; trace clay; trace organics.
						7.0'-11.0': Wet, brown silt and fine sand; little clay; trace medium to coarse sand.
10						
						15.0'-25.0': Wet, gray silt and fine sand; little fine gravel; trace medium to coarse sand; trace clay.
15						
20						
25						
30						
35						

Well Details / Depth bgs / Groundwater and Other Observations



Sample Types:
S = Split Spoon: 2" by 2' T= Shelby Tube:
R = Rock Core: O Auger cuttings
N = ASTM D1586

Well Backfill Key: Cement, Native Fill, Sand, Bentonite

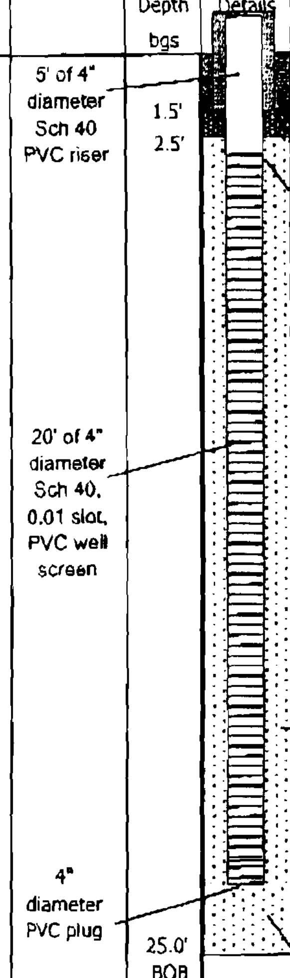
SUBSURFACE
Drilling Solutions

Subsurface Log

Hole No.:	MW-4R
Sheet	1 of 1
Date started:	7/26/05
Date Finished:	7/26/05
Client:	Earth Tech, Inc.
Location:	Johnny Cake Road, Town of Danube, NY
Method of investigation:	6 1/4" Hollow-Stem Auger
Well Depth:	23.5' bgs
Depth to Screen:	3.5' bgs
Project No.:	86361
Project Mgr.:	Pete Johnson
Drilling Co.:	SDS
Geologist:	N/A
Driller:	J. Grant
D. Helper:	C. Ross
Drill Rig:	Mobile B-59
Weather:	Overcast, rain 75 deg. F

Depth (ft.)	Sample No.	Sample Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)	Sample Description
						0.0-4.0': Moist, brown fine sand; little fine gravel little medium to coarse sand; trace organics.
5						4.0'-7.5': Wet, brown silt and fine sand; trace coarse to medium sand; trace organics.
						7.5'-15.0': Wet, brown silt; little fine sand and clay.
10						
						15.0'-25.0': Wet, brown silt; little fine sand and clay; trace cobbles.
15						
20						
25						
30						
35						

Well Details



Groundwater and Other Observations

- 6" Steel Stickup
- Bentonite Seal
- Top of Screen at 3.5'
- GW at 16.5
- Sand Pack No. 00N
- 23.5' BOW
- 10" diameter borehole

Sample Types:
S = Split Spoon: 2" by 2'
T= Shelby Tube:
R = Rock Core:
O Auger cuttings
N = ASTM D1586

Well Backfill Key
- Cement
- Native Fill
- Sand
- Bentonite

SUBSURFACE
Drilling Solutions

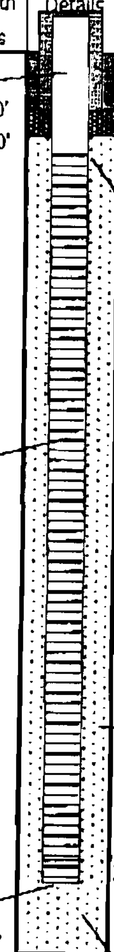
Subsurface Log

Hole No.:	MW-6R	Date started:	7/25/05
Sheet	1 of 1	Date Finished:	7/25/05

Client: Earth Tech, Inc.
Location: Johnny Cake Road, Town of Danube, NY
Method of investigation: 6 1/4" Hollow-Stem Auger
Well Depth: 23.0' bgs
Depth to Screen: 3.0' bgs

Project No.: 86361
Project Mgr.: Pete Johnson
Drilling Co.: SDS
Geologist: N/A
Driller: J. Grant
D. Helper: C. Ross
Drill Rig: Mobile B-59
Weather: Sunny 85 deg. F

Depth (ft.)	Sample No.	Sample Depth (ft.)	Blows per 6"	"N"	Recovery (ft.)	Sample Description		Depth bgs	Well Details	Groundwater and Other Observations
0–5						0.0-5.0': Moist, brown fine sand; some fine gravel little medium to coarse sand; trace organics.	5' of 4" diameter Sch 40 PVC riser	1.0' 2.0'		6" Steel Stickup Bentonite Seal Top of Screen at 3.0'
5–10						5.0'-8.0': Wet, brown fine to coarse sand; trace clay; trace silt; trace organics. 8.0'-14.5': Wet, brown fine to coarse sand; little fine gravel; trace clay; trace silt; trace organics.				
10–15						14.5'-25.0': Wet, gray fine sand; little medium to coarse sand; trace clay; trace silt; trace organics.	20' of 4" diameter Sch 40, 0.01 slot, PVC well screen			
15–20										GW at 17.0
20–25							4" diameter PVC plug	23.0' BOW 25.0' BOB		Sand Pack No. 00N 10" diameter borehole
25–35										



Sample Types:
S = Split Spoon: 2" by 2'
T= Shelby Tube:
R = Rock Core:
O Auger cuttings
N = ASTM D1586

Well Backfill Key: Cement, Sand, Native Fill, Bentonite

ATTACHMENT E

Legend:

Property Line	Set 5-foot Metal Fence Post
Adjoiner Deed Line	(M) Measured Distance
Traveled Centerline	(P) Platted Distance
Barbed Wire Fence	Liber 799 - Page 670 Deed Book and Page
Stonewall	Utility Pole
Woods / Brush Line	MW-12A Monitoring Well and Designation
Centerline of Creek	Subdivision Lot Number
Edge of Water	Deciduous Tree
Found Iron (Pipe, Rebar, et cetera)	Coniferous Tree
Set 5/8-inch Rebar with 1 1/4-inch Red Plastic Cap Marked "S. Thew, L.S. No. 050226"	

Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of the New York State Education Law.

Only copies from the original of this survey marked with an original seal shall be considered to be valid and true copies.

Map References:

1. Titled "Survey & Map of Johnny Cake Ridge" dated June 1, 1990, prepared by Santo Associates, and is recorded in the Herkimer County Clerks Office as Map Number JJ14A34.
2. Titled "Proposed Subdivision Map of Lands of Robert D. Johnson, Estate to be Conveyed to Charles Soukup" dated October 5, 2003, and prepared by Charles R. Ackerbauer, PE LS.
3. Titled "Figure 2 Soil Boring Locations and Soil Sample Results Johnny Cake Road Site Danube, New York" dated May 13, 2004, and prepared by Weston Solutions, Inc.

General Notes:

1. North arrow as shown indicates Magnetic North as observed in 1990 as shown on a subdivision map prepared by Santo Associates dated June 1, 1990.
2. The vertical datum is an assumed datum based on the top of P.V.C. elevation of MW-1 being 100.00'.
3. This survey prepared without the benefit of an abstract of title and is subject to such facts that may be disclosed therein.
4. The information shown hereon is based on an instrument survey completed on September 13, 2005.

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

301 St. Anthony Street
Utica, New York 13501
Telephone: 315/733-7278
Facsimile: 315/797-1957

REV	DESCRIPTION	DATE
2	Updated Title Block & Owner Information	2/16/06
1	Added Monitoring Well Information	9/20/05

STATE OF NEW YORK ★ JAMES S. THEW ★ LICENSED LAND SURVEYOR 050226

PROJECT NUMBER: UK075-08-05

DRAWN: R. Korosac

CHECKED: [signature]

SCALE: 1" = 100'

DATE: 9/15/05

Map Showing Lands of United States Marshals Service Johnny Cake Road

Town of Danube
County of Herkimer
State of New York

Thew Associates, PLLC
Land Surveyors - GPS Consultants

ATTACHMENT F

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019A
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS01_11	**Sample Size:**	25 g	**PrepDate:**	7/13/2005
ColumnID:	Rtx-VMS	**%Moisture:**	16.9	**BatchNo:**	1098/R1897
Revision:	7/20/2005 8:51:46 AM	**TestCode:**	8260L	**FileID:**	T9426.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
VOLATILE ORGANIC COMPOUNDS IN TCLP BY GC/MS				**SW8260B**		**(SW1311)**	
1,1-Dichloroethene	ND		0.000440	0.0100	mg/L	20	7/18/2005 6:11:00 PM
1,2-Dichloroethane	ND		0.000360	0.0100	mg/L	20	7/18/2005 6:11:00 PM
2-Butanone	ND		0.0136	0.0400	mg/L	20	7/18/2005 6:11:00 PM
Benzene	ND		0.000340	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Carbon tetrachloride	ND		0.000660	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Chlorobenzene	ND		0.000340	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Chloroform	ND		0.000460	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Tetrachloroethene	0.103		0.000920	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Trichloroethene	0.0130		0.000620	0.0100	mg/L	20	7/18/2005 6:11:00 PM
Vinyl chloride	ND		0.000620	0.0200	mg/L	20	7/18/2005 6:11:00 PM
Surr: 1,2-Dichloroethane-d4	111		0	75-134	%REC	20	7/18/2005 6:11:00 PM
Surr: 4-Bromofluorobenzene	77.8		0	75-125	%REC	20	7/18/2005 6:11:00 PM
Surr: Dibromofluoromethane	104		0	75-127	%REC	20	7/18/2005 6:11:00 PM
Surr: Toluene-d8	104		0	75-125	%REC	20	7/18/2005 6:11:00 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	FIMS 100	**Sample Size:**	25 Ml	**PrepDate:**	7/15/2005 12:15:00 PM
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1084/R1874
Revision:	7/18/2005 2:59:05 PM	**TestCode:**	TCLPHG	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TCLP MERCURY				**SW1311/7470A**		**(SW7470A)**	
Mercury	ND		0.000024	0.00040	mg/L	1	7/15/2005 7:31:22 PM

Qualifiers:

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- E Value above quantitation range
- J Analyte detected below quantitation limits
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Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	ICAP 61E	**Sample Size:**	10 mL	**PrepDate:**	7/14/2005
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1077/R1901
Revision:	7/20/2005 11:28:18 A	**TestCode:**	TCLPICP	**FileID:**	5399

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TCLP METALS BY ICP				**SW6010B**		**(SW3010A)**	
Arsenic	ND		0.012	0.50	mg/L	1	7/19/2005 11:27:00 A
Barium	1.2		0.0010	0.50	mg/L	1	7/19/2005 11:27:00 A
Cadmium	0.0026	J	0.00060	0.10	mg/L	1	7/19/2005 11:27:00 A
Chromium	ND		0.0034	0.50	mg/L	1	7/19/2005 11:27:00 A
Lead	0.0092	J	0.0026	0.50	mg/L	1	7/19/2005 11:27:00 A
Selenium	ND		0.011	0.10	mg/L	1	7/19/2005 11:27:00 A
Silver	ND		0.0046	0.50	mg/L	1	7/19/2005 11:27:00 A

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100 StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	MS06_40	**Sample Size:**	100 mL	**PrepDate:**	7/13/2005
ColumnID:	ZB-5	**%Moisture:**	16.9	**BatchNo:**	1063/R1888
Revision:	7/19/2005 11:10:14 A	**TestCode:**	8270L	**FileID:**	K7863.D

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
SEMI-VOLATILE ORGANICS COMPOUNDS IN TCLP BY GC/M SW8270C						**(SW3520C)**	
(3+4)-Methylphenol	ND		0.00090	0.10	mg/L	1	7/19/2005 12:02:00 A
1,4-Dichlorobenzene	ND		0.00050	0.10	mg/L	1	7/19/2005 12:02:00 A
2,4,5-Trichlorophenol	ND		0.0017	0.50	mg/L	1	7/19/2005 12:02:00 A
2,4,6-Trichlorophenol	ND		0.00080	0.10	mg/L	1	7/19/2005 12:02:00 A
2,4-Dinitrotoluene	ND		0.00080	0.10	mg/L	1	7/19/2005 12:02:00 A
2-Methylphenol	ND		0.00070	0.10	mg/L	1	7/19/2005 12:02:00 A
Hexachlorobenzene	ND		0.00070	0.10	mg/L	1	7/19/2005 12:02:00 A
Hexachlorobutadiene	ND		0.00070	0.10	mg/L	1	7/19/2005 12:02:00 A
Hexachloroethane	ND		0.00080	0.10	mg/L	1	7/19/2005 12:02:00 A
Nitrobenzene	ND		0.00050	0.10	mg/L	1	7/19/2005 12:02:00 A
Pentachlorophenol	ND		0.063	0.50	mg/L	1	7/19/2005 12:02:00 A
Pyridine	ND		0.0056	0.10	mg/L	1	7/19/2005 12:02:00 A
Surr: 2,4,6-Tribromophenol	81.1		0	46-149	%REC	1	7/19/2005 12:02:00 A
Surr: 2-Fluorobiphenyl	53.9		0	42-130	%REC	1	7/19/2005 12:02:00 A
Surr: 2-Fluorophenol	76.6		0	26-130	%REC	1	7/19/2005 12:02:00 A
Surr: Nitrobenzene-d5	74.2		0	42-130	%REC	1	7/19/2005 12:02:00 A
Surr: Phenol-d5	82.8		0	21-134	%REC	1	7/19/2005 12:02:00 A
Surr: Terphenyl-d14	52.7		0	24-147	%REC	1	7/19/2005 12:02:00 A

Qualifiers:

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ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

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5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	WC	**Sample Size:**	NA	**PrepDate:**	
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	R1854
Revision:	7/15/2005 4:32:55 PM	**TestCode:**	IGN1030S	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
IGNITABILITY OF SOLIDS				**SW1030**			
Ignitability	ND		0	0		1	7/15/2005

Qualifiers:

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- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

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5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100
StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	pH meter	**Sample Size:**	NA	**PrepDate:**	
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	R1787
Revision:	7/12/2005 1:12:29 PM	**TestCode:**	PH9045C	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
LABORATORY (PH)				**SW-846 9045C**			
pH	7.71		0	1.00	pH Units	1	7/12/2005 12:45:00 P

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Conf. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

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East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	Mettler balance	**Sample Size:**	NA	**PrepDate:**	
ColumnID:		**%Moisture:**		**BatchNo:**	R1758
Revision:	7/9/2005 11:40:36 AM	**TestCode:**	PMOIST	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
PERCENT MOISTURE				**ASTM D2216**			
Percent Moisture	16.9		0	1.00	wt%	1	7/8/2005

Qualifiers:

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- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

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5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

Analytical Results

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	AA3	**Sample Size:**	10 g	**PrepDate:**	7/13/2005
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1065/R1840
Revision:	7/20/2005 8:28:10 AM	**TestCode:**	RCN7.3.3	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TOTAL RELEASABLE CYANIDE				**SW7.3.3.2**		**(SW7.3.3.2)**	
Reactive Cyanide	ND		25	25	mg/Kg	1	7/14/2005

Qualifiers:

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Prim./Conf. column %D or RPD exceeds limit

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

O'Brien & Gere Laboratories, Inc. — Analytical Results

5000 Brittonfield Parkway
East Syracuse, NY 13057 (315) 437-6100

StateCertNo: 10155

CLIENT:	Earth Tech, Inc.			**Lab ID:**	0507031-019B
Project:	Johnny Cake Road Site, New York			**Client Sample ID:**	JC-WC
W Order:	0507031			**Collection Date:**	7/7/2005 8:45:00 AM
Matrix:	SOIL			**Date Received:**	7/7/2005 12:45:00 PM
Inst. ID:	WC	**Sample Size:**	10 g	**PrepDate:**	7/13/2005
ColumnID:		**%Moisture:**	16.9	**BatchNo:**	1064/R1808
Revision:	7/13/2005 2:04:15 PM	**TestCode:**	RS7.3.4	**FileID:**	

Analyte	Result	Qual	MDL	PQL	Units	DF	Date Analyzed
TOTAL RELEASABLE SULFIDE				**SW7.3.4.2**		**(SW7.3.4.2)**	
Reactive Sulfide	ND		50	50	mg/Kg	1	7/13/2005

Qualifiers:

B	Analyte detected in the associated Method Blank	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Prim./Cont. column %D or RPD exceeds limit
S	Spike Recovery outside accepted recovery limits		

Print Date: 7/20/2005 2:38:16 PM **Project Supervisor:** Monika Santucci

ATTACMENT G

MW-1	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	1.6	4.6	Frozen	6.78
Temperature (°C)	21.7	9.1		20.3
pH	6.75	7.12		6.65
Conductivity (mS/cm)	1076	1114		1044
Dissolved Oxygen (mg/l)	3.4	0.43		0.56
Turbidity	23.7	7.3		2.89

MW-2R	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	3.65	2.65	1.8	3.5
Temperature (°C)	21	13.4	6.9	20.2
pH	7.42	7.7	7.01	7.23
Conductivity (mS/cm)	445	417	454	409
Dissolved Oxygen (mg/l)	1.4	0.45	0.18	0.38
Turbidity	237	80.1	25.4	7.95

MW-2RR	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	5.48	3.35	3.3	3.5
Temperature (°C)	23.6	15.3	2.1	19.4
pH	7.89	8.18	7.01	7.65
Conductivity (mS/cm)	338	330	402	350
Dissolved Oxygen (mg/l)	1.37	0.6	0.39	0.53
Turbidity	9.67	2.55	3.33	30.9

MW-3	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	8.95	3.7	7.2	5.7
Temperature (°C)	20.3	8.2	9.6	16.5
pH	6.69	6.84	7	6.81
Conductivity (mS/cm)	552	452	508	551
Dissolved Oxygen (mg/l)	0.57	2.3	1.63	0.9
Turbidity	4.37	7	37.1	1.26

Weather Conditions
August 2005 - Hot and humid, overcast about 85° F turned to rain by the end
November 2006 - Alternated between 45 - 60° F and rain/mist
March 2006 - Cold and sunny, approximately 34° F
June 2006 - Raining and cool, approximately 55° F

MW-4R

	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	11.35	6.75	8.71	8
Temperature (°C)	20.3	8.7	2.5	16.6
pH	6.98	7.29	7.04	6.56
Conductivity (mS/cm)	629	894	889	921
Dissolved Oxygen (mg/l)	2.68	1.39	7.42	1.63
Turbidity	19.6	5.63	5.59	3.78

MW-6R

	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	12.85	6.75	8.6	6.89
Temperature (°C)	24.9	13.8	7.6	14
pH	6.83	7.05	7.02	6.84
Conductivity (mS/cm)	668	1042	1413	1549
Dissolved Oxygen (mg/l)	2.29	0.63	0.58	0.83
Turbidity	3.74	14.7	35.3	56.2

MW-12A

	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	10.7	5.05	6.82	5.82
Temperature (°C)	21.2	6.9	8.7	16.4
pH	7	7.23	7	6.88
Conductivity (mS/cm)	928	1050	999	1071
Dissolved Oxygen (mg/l)	0.32	0.9	0.71	1.14
Turbidity	9.3	96.3	60.2	31.4

MW-13

	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	10	3.3	6.25	5.1
Temperature (°C)	19.2	7	7.5	13.6
pH	7.19	6.69	7.04	6.6
Conductivity (mS/cm)	637	786	812	758
Dissolved Oxygen (mg/l)	1.42	3.92	2.24	3.09
Turbidity	3.4	2.07	3.31	2.75

Weather Conditions

August 2005 - Hot and humid, overcast about 85° F turned to rain by the end
November 2006 - Alternated between 45 - 60° F and rain/mist
March 2006 - Cold and sunny, approximately 34° F
June 2006 - Raining and cool, approximately 55° F

MW-14	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	6.1	3.75	6.63	5.25
Temperature (°C)	15.1	8.5	7.8	12.1
pH	7.07	6.81	7.05	7.04
Conductivity (mS/cm)	672	576	584	621
Dissolved Oxygen (mg/l)	0.98	4.66	0.93	1.36
Turbidity	7.1	2.16	1.45	3.68

MW-16	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	15.99	8.75	12.32	13.5
Temperature (°C)	20.6	8.1	5	13.9
pH	7.4	7.6	7.03	7.29
Conductivity (mS/cm)	523	572	635	571
Dissolved Oxygen (mg/l)	0.88	2.42	2.69	0.41
Turbidity	3.38	3.46	1.32	6.3

MW-17	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	9.95	5.7	6.34	5.16
Temperature (°C)	20.6	7.7	4.4	13.5
pH	8.45	8.22	7.03	8.14
Conductivity (mS/cm)	340	345	367	374
Dissolved Oxygen (mg/l)	1.61	2.8	3.1	1.28
Turbidity	17.3	23.1	10.1	15.4

MW-18	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	12.4	6.2	8.95	7.92
Temperature (°C)	16.9	8.8	7.6	13.4
pH	7.41	7.43	7.02	7.31
Conductivity (mS/cm)	513	510	585	560
Dissolved Oxygen (mg/l)	0.6	2.38	3.39	0.365
Turbidity	20.6	4.64	4.88	26.2

Weather Conditions

August 2005 - Hot and humid, overcast about 85° F turned to rain by the end
November 2006 - Alternated between 45 - 60° F and rain/mist
March 2006 - Cold and sunny, approximately 34° F
June 2006 - Raining and cool, approximately 55° F

	MW-19				MW-20			
	Aug-05	Nov-05	Mar-06	Jun-06	Aug-05	Nov-05	Mar-06	Jun-06
Depth to Water (ft)	11.2	7.15	8.2	6.8	13.75	9.2	10.23	9.52
Temperature (°C)	19.6	8.2	1	17.1	21.7	7.3	8.4	14.1
pH	7.64	7.86	7.01	7.76	7.4	7.97	7	7.47
Conductivity (mS/cm)	375	355	433	370	726	762	728	707
Dissolved Oxygen (mg/l)	0.8	3.39	3.99	0.95	0.63	1.27	0.53	1.39
Turbidity	10.9	9	6.59	6.4	12.1	8.54	36	60.6

Weather Conditions

August 2005 - Hot and humid, overcast about 85° F turned to rain by the end
November 2006 - Alternated between 45 - 60° F and rain/mist
March 2006 - Cold and sunny, approximately 34° F
June 2006 - Raining and cool, approximately 55° F

TABLE 1
.NNY CAKE ROAD SITE
e, Herkimer County, New York

Septic Tank Excavation

Sample Number	NYSDEC	ST-01	ST-01	ST-02	ST-02	ST-03	ST-03	ST-04	ST-04	ST-05	ST-05
Sample Depth (ft)	TAGM*	17.0-17.5	17.0-17.5	17.0-17.5	17.0-17.5	17.0-17.5	17.0-17.5	17.0-17.5	17.0-17.5	17.0-17.5	17.0-17.5
Date Sampled	(ppm)	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005
Dilution Factor		1.02	3.68	1.01	4.27	1.01	4.42	1.02	4.31	500	2000
VOLATILE ORGANICS (ppm)											
Acetone	0.11	0.032	0.065	0.022	0.051	0.025	0.059	0.028	0.055	ND	ND
Carbon disulfide	2.7	0.0012 J	ND	0.00068 J	ND	0.0017 J	ND	0.039	0.073	ND	ND
Cis-1,2-dichloroethene	0.2	0.046	0.004 J	ND	ND	0.014	0.0082 J	0.0057	0.004 J	37 E	60
Methylene Chloride	0.1	0.00087 J	0.0033 J	0.0084 J	0.0037 J	0.0012 J	0.0044 J	0.0018 J	0.0034 J	ND	ND
Trans-1,2-dichloroethene	0.2	0.00067 J	ND	ND	ND	ND	ND	ND	ND	0.3 J	0.48 J
Vinyl Chloride	0.12	0.0092	ND	ND	ND	0.01	0.0038 J	0.0029 J	ND	3.1	1.9 J
Tetrachloroethene	1.4	ND	ND	ND	ND	0.0038	0.0043 J	ND	ND	0.53 J	1 J
Trichloroethene	0.7	ND	ND	ND	ND	0.00078 J	ND	0.00087 J	ND	1.1 J	2.2 J
Toluene	1.5	ND	ND	ND	ND	ND	ND	ND	ND	14	26
2-Butanone	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes(total)	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Sample Number	NYSDEC	ST-06	ST-07	ST-08	ST-08	ST-08	ST-09
Sample Depth (ft)	TAGM*	8.0-8.5	6.0-6.5	7.5-8.0	7.5-8.0	7.5-8.0	7.5-8.0
Date Sampled	(ppm)	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005	07/06/2005
Dilution Factor		1	1.02	9.8	10.2	500	500
VOLATILE ORGANICS (ppm)							
Acetone	0.11	0.0094 J	0.0042 J	0.84 J	0.084 J	ND	ND
Carbon disulfide	2.7	ND	ND	0.049	0.02 J	ND	ND
Cis-1,2-dichloroethene	0.2	0.11	0.035	2.1	5.7 E	5.2	12
Methylene Chloride	0.1	ND	ND	0.006 J	0.0066 J	ND	ND
Trans-1,2-dichloroethene	0.2	0.0027	0.00054 J	0.0065 J	0.059	ND	ND
Vinyl Chloride	0.12	0.077	ND	0.18	0.09	ND	0.59 J
Tetrachloroethene	1.4	0.00083 J	0.062	ND	0.047	ND	ND
Trichloroethene	0.7	0.0032	0.057	0.0013 J	0.2	0.22 J	0.16 J
Toluene	1.5	0.007	ND	ND	ND	ND	ND
2-Butanone	0.3	0.0016 J	ND	ND	ND	ND	ND
Ethylbenzene	5.5	0.00055 J	ND	ND	ND	ND	ND
Xylenes(total)	1.2	0.0013 J	ND	ND	ND	ND	ND

NOTES:
* - Soil Cleanup Objectives to Protect GW Quality
ppm - parts per million
ND - not detected
J - Analyte Detected Below Quantitation Limits
E - Value Above Quantitation Range
Shading - result exceed cleanup criteria

TABLE 2
JOHNNY CAKE ROAD SITE
Danube, Herkimer County, New York

GARAGE AREA EXCAVATION

Sample Number Sample Depth (ft) Date Sampled Dilution Factor	NYSDEC TAGM* (ppm)	GAR-01 1.5-2.0 07/06/2005 0.99	GAR-02 1.5-2.0 07/06/2005 1.01	GAR-02 1.5-2.0 07/06/2005 10.2	GAR-03 1.5-2.0 07/06/2005 1.01	GAR-04 1.5-2.0 07/06/2005 1	GAR-05 5.5-6.0 07/06/2005 9.61	GAR-06 5.5-6.0 07/06/2005 1	GAR-06 5.5-6.0 07/06/2005 10	GAR-07 5.5-6.0 07/06/2005 1.01	GAR-08 6.5-7.0 07/07/2005 1	GAR-08 6.5-7.0 07/07/2005 10	GAR-09 16.0-16.5 07/06/2005 1	GAR-09 16.0-16.5 07/06/2005 4.54
VOLATILE ORGANICS (ppm)														
Acetone	0.11	0.0052 J	0.0066 J	0.079 J	0.0061 J	0.0058 J	0.068 J	0.0078 J	0.058 J	0.014	0.011 J	0.066 J	0.022	0.061
Carbon disulfide	2.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.085	ND	0.002 J	0.0058 J
Cis-1,2-dichloroethene	0.2	0.0008 J	0.0075	0.0074 J	0.0048	0.0027 J	0.022 J	0.075	0.053	0.0034	0.074	0.018 J	0.0032	ND
Methylene Chloride	0.1	ND	ND	ND	ND	ND	ND	0.0006 J	ND	ND	ND	ND	0.0013 J	0.0047 J
Trans-1,2-dichloroethene	0.2	ND	ND	ND	ND	ND	ND	0.0024 J	ND	0.0013 J	0.0037	ND	ND	ND
Vinyl Chloride	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0022 J	ND
Tetrachloroethene	1.4	0.038	1 E	1.9	0.2	0.063	0.61	0.98 E	1.3	0.0084	0.41 E	0.22	0.0019 J	ND
Trichloroethene	0.7	0.0015 J	0.085	0.083	0.11	0.039	0.38	0.5 E	0.48	0.063	0.61 E	0.23	0.001 J	ND
Toluene	1.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	0.3	ND	ND	ND	ND	ND	ND	ND	ND	0.0028 J	0.0023 J	ND	ND	ND
2-hexanone	1.2	ND	ND	ND	ND	ND	ND	ND	ND	0.0013 J	0.0033 J	ND	ND	ND

NOTES:
* - Soil Cleanup Objectives to Protect GW Quality
ppm - parts per million
ND - not detected
J - Analyte Detected Below Quantitation Limits
E - Value Above Quantitation Range
Shading - result exceed cleanup criteria

TABLE 3
JOHNNY CAKE ROAD SITE
Danube, Herkimer County, New York

ROAD SIDE DITCH SAMPLES

Sample Number Sample Depth (ft) Date Sampled Dilution Factor	NYSDEC TAGM* (ppm)	RSD-01 0.0-0.5 07/12/2005 1.01	RSD-02A 0.0-0.5 07/12/2005 1	RSD-02B 1.0-1.25 07/12/2005 0.99	RSD-03 0.0-0.5 07/12/2005 0.99	RSD-04A 0.0-0.5 07/12/2005 1	RSD-04B 1.0-1.25 07/12/2005 0.99	RSD-05 0.0-0.5 07/12/2005 0.99	RSD-06A 0.0-0.5 07/12/2005 1.01	RSD-06B 1.0-1.25 07/12/2005 1.01
VOLATILE ORGANICS (ppm)										
Acetone	0.11	0.0069 J	0.018	0.016	0.065	0.0068 J	0.0068 J	0.005 J	0.011	0.024
Carbon disulfide	2.7	ND	ND	0.033	0.001 J	ND	ND	ND	0.0046	0.065
Cis-1,2-dichloroethene	0.2	0.0018 J	0.0018 J	0.039	0.002 J	0.017	0.0034	0.00084 J	0.0013 J	0.0036
Methylene Chloride	0.1	0.001 J	ND	ND	0.00084 J	0.00088 J	0.0079 J	0.00089 J	ND	ND
Trans-1,2-dichloroethene	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	0.12	ND	0.0035 J	0.052	ND	0.00074 J	ND	ND	0.001 J	0.022
Tetrachloroethene	1.4	0.004	ND	0.0015 J	ND	0.0053	0.013	0.00075 J	0.00089 J	ND
Trichloroethene	0.7	0.0051	ND	0.001 J	0.0033	0.0098	0.029	0.0016 J	ND	0.00087 J
Toluene	1.5	ND	0.0024 J	ND	ND	ND	ND	ND	ND	0.00011 J
2-Butanone	0.3	ND	0.0052 J	0.0047 J	0.16	ND	ND	ND	0.0026 J	0.0088 J
2-hexanone	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenxene	5.5	ND	0.00088 J	0.0033	ND	ND	ND	ND	ND	ND
Xylenes (total)	1.2	ND	0.0021 J	0.016	ND	ND	ND	ND	ND	ND

NOTES:
* - Soil Cleanup Objectives to Protect GW Quality
ppm - parts per million
ND - not detected
J - Analyte Detected Below Quantitation Limits
E - Value Above Quantitation Range
Shading - result exceed cleanup criteria

TABLE 4
JOHNNY CAKE FARM ROAD SITE
GROUNDWATER SUMMARY-POST SOIL REMEDIATION

Contaminant----->ppb	Acetone	carbon disulfide	cis-1,2-dichloroethene	trans-1,2-dichloroethene	2-butanone	trichloroethene	tetrachloroethene	vinyl chloride	dichlorofluoromethane
DEC 703 Standard			5	5		5	5	2	5
Fed. DW Standard			70	100		5	5	2	
MW-1 (Aug. 29, 2005)	1.6	ND	4.3	ND	ND	2.4	0.67	ND	ND
MW-1 (Nov. 29, 2005)	1.5	ND	8.4	ND	ND	1	ND	18	0.56
MW-1 (March 07, 2006)	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-1 (June 08, 2006)	1.6	ND	11	ND	ND	4.3	ND	4.5	0.53
MW-2R (Aug. 29, 2005)	1.6	ND	6.6	ND	3.7	1.3	1.3	ND	ND
MW-2R (Nov. 29, 2005)	1	ND	4.8	ND	ND	0.84	ND	ND	ND
MW-2R (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2R (June 08, 2006)	0.74	ND	4.5	ND	ND	ND	ND	3.2	ND
MW-2RR (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2RR (Nov. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2RR (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2RR (June 08, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3 (Aug. 29, 2005)	6.2	ND	12	ND	ND	11	16	18	ND
MW-3 (Nov. 29, 2005)	ND	ND	0.6	ND	ND	1.7	11	ND	ND
MW-3 (March 07, 2006)	ND	ND	ND	ND	ND	8.6	38 J	ND	ND
MW-3 (June 08, 2006)	ND	ND	2.5	ND	ND	5.5	27	ND	ND
MW-4R (Aug. 29, 2005)	1.6	ND	57	0.91	ND	35	0.69	0.65	0.96
MW-4R (Nov. 29, 2005)	1.6	ND	50	ND	ND	20	1.3	3	0.78
MW-4R (March 07, 2006)	ND	ND	280/320	2.1/4.5	ND	190/210	8.1/8.1	ND	ND
MW-4R (June 08, 2006)	ND	ND	170	1.8	ND	110	7.3	5.4	0.8
MW-6R (Aug. 29, 2005)	3.3/3.7 (Dupl)	ND	1.6	ND	ND	ND	ND	1.3	ND
MW-6R (Nov. 29, 2005)	1.1	ND	1.5/4.8 (dupl)	ND	ND	0.84 (Dupl.)	ND	ND	ND
MW-6R (March 07, 2006)	ND	ND	2.1	ND	ND	ND	ND	ND	ND
MW-6R (June 08, 2006)	ND	ND	2.4	ND	ND	ND	ND	12	ND
MW-12A (Aug. 29, 2005)	1.2	ND	0.83	ND	ND	ND	ND	2.5	ND
MW-12A (Nov. 29, 2005)	1.6	ND	ND	ND	ND	ND	ND	0.77	ND
MW-12A (March 07, 2006)	3.3 J	ND	ND	ND	ND	ND	ND	ND	ND
MW-12A (June 08, 2006)	ND	ND	ND	ND	ND	ND	Nd	1.5	ND
MW-13 (Aug. 29, 2005)	ND	ND	35	0.57	ND	0.63	ND	ND	ND
MW-13 (Nov. 29, 2005)	ND	ND	19	ND	ND	1.3	ND	ND	ND
MW-13 (March 07, 2006)	ND	ND	100	ND	ND	1.2	ND	ND	ND
MW-13 (June 08, 2006)	2.7	ND	31	ND	ND	2.2	ND	ND	ND
MW-14 (Aug. 29, 2005)	ND	ND	30	0.71	ND	4.3	ND	ND	ND
MW-14 (Nov. 29, 2005)	ND	ND	96	ND	ND	2.8	ND	ND	ND
MW-14 (March 07, 2006)	ND	ND	19	ND	ND	2.5	ND	ND	ND
MW-14 (June 08, 2006)	ND	ND	20	ND	ND	3.4	ND	ND	ND

Contaminant----->ppb	Acetone	carbon disulfide	cis-1,2-dichloroethene	trans-1,2-dichloroethene	2-butanone	trichloroethene	tetrachloroethene	vinyl chloride	dichlorofluoromethane
DEC 703 Standard			5	5		5	5	2	5
Fed. DW Standard			70	100		5	5	2	
MW-16 (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16 (Nov. 29, 2005)	9.2	ND	ND	ND	ND	ND	ND	ND	ND
MW-16 (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16 (June 08, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (Nov. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (March 07, 2006)	3.4 J	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (June 08, 2006)	4.6	ND	ND	ND	ND	ND	ND	ND	ND
MW-18 (Aug. 29, 2005)	ND	ND	34	ND	ND	ND	ND	43	1.1
MW-18 (Nov. 29, 2005)	ND	ND	5.6	ND	ND	ND	ND	14	ND
MW-18 (March 07, 2006)	ND	ND	2.6	ND	ND	ND	ND	ND	ND
MW-18 (June 08, 2006)	3.1	ND	2.1	ND	ND	ND	ND	6	ND
MW-19 (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19 (Nov. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19 (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19 (June 08, 2006)	0.59	ND	ND	ND	ND	ND	ND	ND	ND
MW-20 (Aug. 29, 2005)	2	ND	42	ND	ND	7.4	ND	2.5	ND
MW-20 (Nov. 29, 2005)	ND	ND	35	ND	ND	10	0.78	2.4	ND
MW-20 (March 07, 2006)	ND	ND	34	ND	ND	8.6	0.24 J	ND	ND
MW-20 (June 08, 2006)	1.7	ND	22	0.81	ND	4.9	ND	2.1	ND

result exceeds 6 NYCRR Part 703 GWS
result exceeds Federal DW Standards
NS - no sample collected due to well water being frozen.
J - Below method detection limit, estimated concentration.

APPENDIX 1

Weston Solutions, Inc.
Federal Programs Division
Suite 201
1090 King Georges Post Road
Edison, New Jersey 08837-3703
732-225-6116 • Fax 732-225-7037
www.westonsolutions.com

REMOVAL SUPPORT TEAM
EPA CONTRACT 68-W-00-113

SOIL BORING SAMPLING AND ANALYSIS REPORT

JOHNNY CAKE ROAD SITE
JOHNNY CAKE ROAD
DANUBE, HERKIMER COUNTY, NEW YORK

Prepared by

Removal Support Team, Federal Programs Division
Weston Solutions, Inc.
Edison, New Jersey 08837

Prepared for

U.S. Environmental Protection Agency
Region II - Removal Action Branch
Edison, New Jersey 08837

DCN #: RST-02-F-01257
TDD #: 02-03-08-0026
EPA Contract No.: 68-W-00-113

Approved by:

RST

M. Mahnkopf

Michael Mahnkopf - Site Project Manager

Date: 06/01/04

RST

John Brennan - Group Leader

Date: 6/1/04

USEPA

James Haklar - On-Scene Coordinator

Date: 6/2/04

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Federal Programs Division
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1090 King Georges Post Road
Edison, New Jersey 08837-3703
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REMOVAL SUPPORT TEAM
EPA CONTRACT 68-W-00-113

June 1, 2004

James Haklar, On-Scene Coordinator
U.S. Environmental Protection Agency, Region II
Removal Action Branch
2890 Woodbridge Avenue
Edison, NJ 08837

EPA CONTRACT NO: 68-W-00-113
TDD NO: 02-03-08-0026
DOCUMENT CONTROL NO: RST-02-F-01257
SUBJECT: JOHNNY CAKE ROAD SITE
SOIL BORING SAMPLING AND ANALYSIS REPORT

Dear Mr. Haklar:

Enclosed please find the Soil Boring Sampling and Analysis Report pertaining to the September and October, 2003 soil investigation at the Johnny Cake Road site located in Danube, Herkimer County, New York. If you have any questions or comments, please call me at (732) 225-6116, ext. 213.

Very truly yours,

WESTON SOLUTIONS, INC.

M. Mahnkopf

Michael Mahnkopf
Project Manager

Enclosure

cc: TDD No. 02-03-08-0026

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1090 King Georges Post Road
Edison, New Jersey 08837-3703
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REMOVAL SUPPORT TEAM
EPA CONTRACT 68-W-00-113

SOIL BORING SAMPLING AND ANALYSIS REPORT

JOHNNY CAKE ROAD SITE
JOHNNY CAKE ROAD
DANUBE, HERKIMER COUNTY, NEW YORK

Prepared by

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Edison, New Jersey 08837

Prepared for

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RST

M. Mahnkopf

Michael Mahnkopf - Site Project Manager

Date: 06/01/04

RST

John Brennan - Group Leader

Date: 6/1/04

USEPA

James Haklar - On-Scene Coordinator

Date: 6/2/04

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LIST OF APPENDICES

1.0 BACKGROUND

The Johnny Cake Road Site consists of farmland property located along Johnny Cake Road in the town of Danube, Herkimer County, New York (see Figure 1). During the 14-month operation of an illicit cocaine refining laboratory operated on the site, unknown quantities of solvents were spilled in various locations on the property. On at least one occasion, individuals were observed spilling those liquids on the site driveway. Other means of disposal included dumping on the unpaved garage floor, dumping into the site septic tank through the house drains or sinks and runoff from the house basement floor to the driveway surface. Additional spills may have included releases of drummed solvents in the garage drum storage area. In 1987, the U.S. Marshals Service (USMS) seized the property.

In August of 1990, EPA received a verbal request from the USMS and U.S. Attorney's Office to conduct a removal assessment. Since that time, EPA has performed various removal activities including the following: removal of the contents of the septic tank and a 55-gallon drum; sampling of the site and six nearby residences to determine the nature and extent of contamination and installation of groundwater monitoring wells and/or point-of-entry treatment systems at the aforementioned six residences in order to provide a source of potable water.

Previous sampling of the soil and water at the site by EPA has confirmed contamination with volatile organic compounds including: tetrachloroethene, trichloroethene, vinyl chloride, toluene and 1,2-dichloroethene (cis- and trans- isomers).

In September & October of 2003, EPA installed an additional five groundwater monitoring wells in order to facilitate the long term delineation of the groundwater contamination plume. EPA also installed 27 soil borings and collected 167 subsurface soil samples at the site. These samples were collected and analyzed to determine the current concentrations of volatile organic compounds in the soil.

This report discusses the following:

1. Soil samples collected and analyzed during the installation of the above mentioned groundwater monitoring wells;

2. Installation of the above-mentioned soil borings and subsequent soil sample collection and analytical results.

2.0 GENERAL SCOPE OF WORK

The objective of this soil assessment was to determine the horizontal and vertical extent of VOC contaminated soils in excess of their respective Recommended Soil Cleanup Objectives, which are listed in the New York State Department of Environmental Conservation (NYSDEC), Technical And Administrative Guidance Memorandum (TAGM) #4046, Determination of Soil Cleanup Objectives and Cleanup Levels (See Appendix 1).

2.1 Groundwater Monitoring Wells

Five soil borings associated with the installation of groundwater monitoring wells (MW-16 through MW-20) and an additional 27 soil borings (JCRS-0029 through JCRS-0055) were installed utilizing a CME-850 track mounted drill rig supplied and operated by SJB Services, Inc., Ballston Spa, New York, 12020. Soil borings associated with the groundwater monitoring wells were installed between 09/23/03 and 09/30/03.

Four of the five soil borings associated with the groundwater monitoring wells (MW-16, MW-18 through MW-20) were installed to depths of 24' - 26'. During the installation, continuous two foot split spoon soil samples were collected. One soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-20'; 20'-24' and 24'-26'.

One of the five borings associated with the groundwater monitoring wells (MW-17) was installed to a depth of 40'. Because of the close proximity to groundwater monitoring well MW-16, continuous two foot split spoon soil samples were collected starting at the 24' depth and extending to 40'. One soil sample for laboratory analysis was collected from each of the following depth intervals: 24'-28'; 28'-32' and 32'-36'. As explained later in this report, two soil samples were collected from the 36'-40' depth interval.

Each depth interval was field screened for volatile organic vapor concentrations every six inches utilizing a calibrated photoionization detector (PID). The six inch increment exhibiting the highest PID reading was sampled. If none of the six inch increments within the depth interval exhibited PID readings, the deepest six inch increment was sampled. This was not the case, however, for all samples collected from soil boring MW-18. Certain six inch increments exhibiting the highest PID readings could not be collected by the En Core Sampler because they were either wet to saturated or due to poor recovery. In these situations, another six inch increment within the same depth interval was sampled. See the Test Boring Logs included as Appendix 2.

Soil samples were analyzed for Target Compound List (TCL) Volatile Organic Compounds (VOCs) by Compu Chem, 501 Madison Avenue, Cary, NC, 27513, (919) 379-4100, New York State Department of Health (NYSDOH) Certification No. 10065. It should also be noted that based on data validation results, analyte concentrations, where applicable, are reported as estimated (J), exceeds calibration range (E), quantitated on a diluted sample (D), and/or detected in the laboratory blank (B).

2.2 Soil Borings

Twenty-seven soil borings were installed at the site between 10/01/03 and 10/14/03. For the purpose of this report, the soil borings have been grouped according to the approximate locations in which they were installed. These groupings are described below.

a. East Drainage Ditch

Three soil borings were installed in this area. One soil boring (JCRS-0037) was installed to a depth of 12' below ground surface and two soil borings (JCRS-0036, JCRS-0038) were installed to a depth of 40' below ground surface.

b. Septic System

Four soil borings were installed in this area. All four soil borings (JCRS-0043, JCRS-0053, JCRS-0054, JCRS-0055) were installed to a depth of 12' below ground surface.

c. Groundwater Monitoring Wells MW-1, MW-2 & MW-6

Three soil borings were installed in this area. All three soil borings (JCRS-0039, JCRS-0041, JCRS-0042) were installed to a depth of 40' below ground surface.

d. Western Side of Driveway

Three soil borings were installed in this area. All three soil borings (JCRS-0047, JCRS-0048, JCRS-0049) were installed to a depth of 12' below ground surface.

e. Pool Area

Two soil borings were installed in this area. Both soil borings (JCRS-0044, JCRS-0045) were installed to a depth of 12' below ground surface.

f. Northern Drainage Ditch

Three soil borings were installed in this area. One soil boring (JCRS-0040) was installed to a depth of 40' below ground surface and two soil borings (JCRS-0051, JCRS-0052) were installed to a depth of 12' below ground surface.

g. Stable Area

Three soil borings were installed in this area. One soil boring (JCRS-0035) was installed to a depth of 40' below ground surface and two soil borings (JCRS-0030, JCRS-0031) were installed to a depth of 12' below ground surface.

h. Drainage Pipe

Two soil borings were installed in this area. One soil boring (JCRS-0046) was installed to a depth of 40' below ground surface and one soil boring (JCRS-0050) was installed to a depth of 12' below ground surface.

i. Northern Boundary of Johnny Cake Road

Four soil borings were installed in this area. Two soil borings (JCRS-0029, JCRS-0032) were installed to a depth of 12' below ground surface and two soil borings (JCRS-0033, JCRS-0034) were installed to a depth of 40' below ground surface.

During the installation of each 12' soil boring, continuous two foot split spoon soil samples were collected. One soil sample for laboratory analysis was collected from each the following depth intervals: 0-4'; 4'-8' and 8'-12'.

During the installation of each 40' soil boring, continuous two foot split spoon soil samples were collected. One soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'.

Each depth interval was field screened for volatile organic vapor concentrations every six inches utilizing a calibrated photoionization detector (PID). The six inch increment exhibiting the highest PID reading was sampled. If none of the six inch increments within the depth interval exhibited PID readings, the deepest six inch increment was sampled. This was not the case, however, for all samples collected from soil borings JCRS-0032, JCRS-0035, JCRS-0046, JCRS-0053 and JCRS-0054. Certain six inch increments exhibiting the highest PID readings could not be collected by the En Core Sampler because they were either wet to saturated or due to poor recovery. In these situations, another six inch increment within the same depth interval was sampled. See the Test Boring Logs included as Appendix 2.

Soil samples were analyzed for Target Compound List (TCL) Volatile Organic Compounds (VOCs) by Compu Chem, 501 Madison Avenue, Cary, NC, 27513, (919) 379-4100, New York State Department of Health (NYSDOH) Certification No. 10065. It should also be noted that based on data validation results, analyte concentrations, where applicable, are reported as estimated (J), exceeds calibration range (E), quantitated on a diluted sample (D), and/or detected in the laboratory blank (B).

3.0 GROUNDWATER MONITORING WELLS

Five soil borings associated with the installation of groundwater monitoring wells (MW-16 through MW-20) were installed by SJB Services, Inc. between 09/23/03 and 09/30/03. The Test Boring Logs are included as Appendix 2.

3.1 Groundwater Monitoring Well MW-16

Soil boring MW-16 was installed on 09/23/03 to a depth of 26' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.1, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-20'; 20'-24' and 24'-26'. Based on PID readings, the following soil samples were submitted for laboratory analysis: MW-16A (2.5'), MW-16B (7.0'), MW-16C (9.5'), MW-16D (13.0'), MW-16E (20.0'), MW-16F (22.0') and MW-16G (25.5').

Quality Assurance/Quality Control (QA/QC) samples included the collection of one field duplicate sample (MW-21B duplicate of MW-16B) and one matrix spike/matrix spike duplicate sample (MW-16C MS/MSD). A total of eight soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples MW-16A through MW-16D, MW-16F and MW-21B exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 0.37 ppm DJ, 1.9 ppm BJD, 3.3 ppm BJD, 0.23 ppm BJD, 0.41 ppm JB and 4.7 ppm D. Analytical results are summarized in Table 1 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

3.2 Groundwater Monitoring Well MW-17

Soil boring MW-17 was installed on 09/24/03 and 09/25/03 to a depth of 40' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.1, one soil sample for laboratory analysis was collected from each of the following depth intervals: 24'-28'; 28'-32' and 32'-36'. Two soil samples were collected from the 36'-40' depth interval. This was done so the deepest interval (40') could be sampled along with the interval (38') exhibiting the highest PID reading. Based on PID readings, the following soil samples were submitted for laboratory analysis: MW-17F (26.0'), MW-17G (31.5'), MW-17H (33.5'), MW-17I (38.0'), MW-17J (40.0').

QA/QC samples included the collection of two field duplicate samples (MW-21G duplicate of MW-17G; MW-21J duplicate of MW-17J) and two matrix spike/matrix spike duplicate samples (MW-17F MS/MSD; MW-17I MS/MSD). A total of seven soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples MW-17G, MW-17H and MW-21G exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 1.2 ppm JB, 0.68 ppm B and 0.52 ppm B. Analytical results are summarized in Table 1 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

3.3 Groundwater Monitoring Well MW-18

Soil boring MW-18 was installed on 09/26/03 to a depth of 24' below ground surface. Groundwater was encountered at 9.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.1, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-20' and 20'-24'. Based on PID readings and/or soil descriptions (wet to saturated), the following soil samples were submitted for laboratory analysis: MW-18A (4.0'), MW-18B (8.0'), MW-18C (8.5'), MW-18D (13.5'), MW-18E (19.0') and MW-18F (24.0').

QA/QC samples included the collection of one field duplicate sample (MW-21Ba duplicate of MW-18B) and one matrix spike/matrix spike duplicate sample (MW-18A MS/MSD). A total of seven soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample MW-18C exhibited an acetone concentration (0.45 ppm D) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 1 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

3.4 Groundwater Monitoring Well MW-19

Soil boring MW-19 was installed on 09/29/03 to a depth of 24' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.1, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-20' and 20'-24'. Based on PID readings, the following soil samples were submitted for laboratory analysis: MW-19A (2.0'), MW-19B (6.0'), MW-19C (8.0'), MW-19D (14.0'), MW-19E (18.0') and MW-19F (24.0').

QA/QC samples included the collection of one field duplicate sample (MW-21Bb duplicate of MW-19B) and one matrix spike/matrix spike duplicate sample (MW-19A MS/MSD). A total of seven soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample MW-19A exhibited an acetone concentration (0.24 ppm B) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 1 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

3.5 Groundwater Monitoring Well MW-20

Soil boring MW-20 was installed on 09/30/03 to a depth of 24' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.1, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-20' and 20'-24'. Based on PID readings, the following soil samples were submitted for laboratory analysis: MW-20A (4.0'), MW-20B (8.0'), MW-20C (9.5'), MW-20D (15.0'), MW-20E (19.0') and MW-20F (24.0').

QA/QC samples included the collection of one field duplicate sample (MW-21C duplicate of MW-20C) and one matrix spike/matrix spike duplicate sample (MW-20B MS/MSD). A total of seven soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples MW-20D and MW-20E exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 0.97 ppm J and 0.89 ppm J. Analytical results are summarized in Table 1 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

4.0 EAST DRAINAGE DITCH

Three soil borings were installed in this area by SJB Services, Inc. between 10/06/03 and 10/08/03. The Test Boring Logs are included as Appendix 2.

4.1 Soil Boring JCRS-0036

Soil boring JCRS-0036 was installed on 10/06/03 and 10/07/03 to a depth of 40' below ground surface. Groundwater was encountered at 1.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0036A (0.5'), JCRS-0036B (7.0'), JCRS-0036C (8.5'), JCRS-0036D (16.0'), JCRS-0036E (18.5'), JCRS-0036F (31.5') and JCRS-0036G (32.5').

QA/QC samples included the collection of two field duplicate samples (JCRS-0080D duplicate of JCRS-0036C; JCRS-0080E duplicate of JCRS-0036F). A total of nine soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0036A, JCRS-0036E, JCRS-0036F, JCRS-0036G and JCRS-0080E exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 3.4 ppm DJ, 0.74 ppm DJ, 1.8 ppm DJ, 8.1 ppm DJ and 2.0 ppm D. Analytical results indicated that soil samples JCRS-0036B and JCRS-0080D exhibited trichloroethene concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.7 ppm. Respective trichloroethene concentrations were 1.1 ppm DJ and 0.73 ppm DJ.

Analytical results also indicated that soil samples JCRS-0036E, JCRS-0036G and JCRS-0080E exhibited 2-butanone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.3 ppm. Respective 2-butanone concentrations were 0.5 ppm DJ, 0.85 ppm DJ and 0.46 ppm DJ. Analytical results are summarized in Table 2 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

4.2 Soil Boring JCRS-0037

Soil boring JCRS-0037 was installed on 10/07/03 to a depth of 12' below ground surface. Groundwater was encountered at 2.0' below ground surface.

During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0037A (0.5'), JCRS-0037B (8.0') and JCRS-0037C (12.0').

QA/QC samples included the collection of one matrix spike/matrix spike duplicate sample (JCRS-0037B MS/MSD). A total of three soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0037A exhibited an acetone concentration (18 ppm DJ) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 2 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

4.3 Soil Boring JCRS-0038

Soil boring JCRS-0038 was installed on 10/07/03 and 10/08/03 to a depth of 40' below ground surface. Groundwater was encountered at 1.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'.

Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0038A (2.0'), JCRS-0038B (6.5'), JCRS-0038C (9.5'), JCRS-0038D (15.0'), JCRS-0038E (19.5'), JCRS-0038F (32.0') and JCRS-0038G (38.0').

QA/QC samples included the collection of one field duplicate sample (JCRS-0080F duplicate of JCRS-0038F). A total of eight soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0038B, JCRS-0038C, JCRS-0038D, JCRS-0038F and JCRS-0038G exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 4.4 ppm DJ, 0.3 ppm J, 1.8 ppm DJ, 0.76 ppm J and 7.3 ppm DJ. Analytical results indicated that soil samples JCRS-0038B and JCRS-0038D exhibited 2-butanone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.3 ppm. Respective 2-butanone concentrations were 0.7 ppm DJ and 0.5 ppm DJ.

Analytical results also indicated that soil sample JCRS-0038F a exhibited methylene chloride concentration (0.31 ppm JB) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.1 ppm. Analytical results are summarized in Table 2 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

5.0 SEPTIC SYSTEM

Four soil borings were installed in this area by SJB Services, Inc. between 10/10/03 and 10/14/03. The Test Boring Logs are included as Appendix 2.

5.1 Soil Boring JCRS-0043

Soil boring JCRS-0043 was installed on 10/10/03 to a depth of 12' below ground surface. Groundwater was encountered at 5.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'.

Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0043A (3.0'), JCRS-0043B (7.0') and JCRS-0043C (12.0'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0043A exhibited an acetone concentration (0.32 ppm J) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results also indicated that soil sample JCRS-0043B exhibited trichloroethene (2.0 ppm D) and tetrachloroethene (4.4 ppm D) concentrations in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives of 0.7 ppm and 1.4 ppm.

Analytical results are summarized in Table 3 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

5.2 Soil Boring JCRS-0053

Soil boring JCRS-0053 was installed on 10/14/03 to a depth of 12' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings and/or soil descriptions (wet to saturated), the following soil samples were submitted for laboratory analysis: JCRS-0053A (2.0'), JCRS-0053B (5.0') and JCRS-0053C (8.0'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0053A through JCRS-0053C did not exhibit VOCs in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives. Analytical results are summarized in Table 3 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

5.3 Soil Boring JCRS-0054

Soil boring JCRS-0054 was installed on 10/14/03 to a depth of 12' below ground surface. Groundwater was encountered at 5.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings and/or soil descriptions (wet to saturated), the following soil samples were submitted for laboratory analysis: JCRS-0054A (3.5'), JCRS-0054B (8.0') and JCRS-0054C (10.5'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0054A through JCRS-0054C did not exhibit VOCs in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives. Analytical results are summarized in Table 3 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

5.4 Soil Boring JCRS-0055

Soil boring JCRS-0055 was installed on 10/14/03 to a depth of 12' below ground surface. Groundwater was encountered at 5.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0055A (0.5'), JCRS-0055B (4.5') and JCRS-0055C (11.5'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations. It should be noted that during the installation of soil boring JCRS-0055, it was observed that fill, wood, plastic containers and a petroleum odor (PID = 0.5) existed in the 0-2' depth interval (see Test Boring Log in Appendix 2).

Analytical results indicated that soil sample JCRS-0055A exhibited an acetone concentration (0.26 ppm J) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 3 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

6.0 GROUNDWATER MONITORING WELLS MW-1, MW-2 & MW-6

Three soil borings were installed by SJB Services, Inc. between 10/08/03 and 10/10/03. The Test Boring Logs are included as Appendix 2.

6.1 Soil Boring JCRS-0039 (Near MW-6)

Soil boring JCRS-0039 was installed on 10/08/03 to a depth of 40' below ground surface. Groundwater was encountered at 7.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0039A (3.0'), JCRS-0039B (6.0'), JCRS-0039C (12.0'), JCRS-0039D (13.0'), JCRS-0039E (23.0'), JCRS-0039F (24.5') and JCRS-0039G (33.0').

QA/QC samples included the collection of one matrix spike/matrix spike duplicate sample (JCRS-0039B MS/MSD). A total of seven soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0039D exhibited an acetone concentration (0.21 ppm J) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results indicated that soil sample JCRS-0039F exhibited a trichloroethene concentration (3.9 ppm D) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.7 ppm. Analytical results indicated that soil sample JCRS-0039D exhibited a vinyl chloride concentration (4.3 ppm DJ) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results also indicated that soil sample JCRS-0039D exhibited a cis-1,2-dichloroethene concentration (52 ppm DJ) in excess of the NYSDEC TAGM #4046 Recommended Soil Cleanup Objective for total VOCs (10 ppm). Since a Recommended Soil Cleanup Objective for cis-1,2-dichloroethene has not been established, the TAGM #4046 total VOC limit of 10 ppm (in any individual sample) is being used. Analytical results are summarized in Table 4 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

6.2 Soil Boring JCRS-0041 (Near MW-1)

Soil boring JCRS-0041 was installed on 10/09/03 to a depth of 40' below ground surface. Groundwater was encountered at 8.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0041A (2.5'), JCRS-0041B (6.0'), JCRS-0041C (9.5'), JCRS-0041D (14.5'), JCRS-0041E (19.0'), JCRS-0041F (31.0') and JCRS-0041G (35.0'). A total of seven soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0041A through JCRS-0041G did not exhibit VOCs in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives. Analytical results are summarized in Table 4 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

6.3 Soil Boring JCRS-0042 (Near MW-2)

Soil boring JCRS-0042 was installed on 10/10/03 to a depth of 40' below ground surface. Groundwater was encountered at 8.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0042A (3.5'), JCRS-0042B (7.0'), JCRS-0042C (12.0'), JCRS-0042D (16.0'), JCRS-0042E (22.5'), JCRS-0042F (32.0') and JCRS-0042G (39.0').

QA/QC samples included the collection of one field duplicate sample (JCRS-0080H duplicate of JCRS-0042B) and one matrix spike/matrix spike duplicate sample (JCRS-0042E MS/MSD). A total of eight soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0042 B and JCRS-0042D exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 12 ppm DJ and 17 ppm DJ. Analytical results indicated that soil samples JCRS-0042B, JCRS-0080H and JCRS-0042D exhibited trichloroethene concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.7 ppm. Respective trichloroethene concentrations were 17 ppm DJ, 11 ppm DJ and 1.2 ppm DJ. Analytical results indicated that soil samples JCRS-0042A, JCRS-0042B, JCRS-0080H and JCRS-0042D exhibited tetrachloroethene concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 1.4 ppm. Respective tetrachloroethene concentrations were 1.7 ppm D, 330 ppm D, 190 ppm D and 5.6 ppm DJ. Analytical results indicated that soil samples JCRS-0042B and JCRS-0080H exhibited methylene chloride concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.1 ppm. Respective methylene chloride concentrations were 7.7 ppm DJB and 8.7 ppm DJB. Analytical results are summarized in Table 4 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

7.0 WESTERN SIDE OF DRIVEWAY

Three soil borings were installed in this area by SJB Services, Inc. on 10/13/03 and 10/14/03. The Test Boring Logs are included as Appendix 2.

7.1 Soil Boring JCRS-0047

Soil boring JCRS-047 was installed on 10/13/03 to a depth of 12' below ground surface. Groundwater was encountered at 9.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0047A (3.5'), JCRS-0047B (6.5') and JCRS-0047C (12.0'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0047C exhibited acetone (0.51 ppm DJ) and methylene chloride (0.39 ppm DJB) concentrations in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives of 0.2 ppm and 0.1 ppm. Analytical results are summarized in Table 5 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

7.2 Soil Boring JCRS-0048

Soil boring JCRS-0048 was installed on 10/13/03 to a depth of 12' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0048A (2.5'), JCRS-0048B (7.5') and JCRS-0048C (12.0'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0048A exhibited acetone (1.8 ppm D) and methylene chloride (0.31 ppm DJB) concentrations in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives of 0.2 ppm and 0.1 ppm. Analytical results are summarized in Table 5 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

7.3 Soil Boring JCRS-0049

Soil boring JCRS-0049 was installed on 10/14/03 to a depth of 12' below ground surface. Groundwater was encountered at 9.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings and/or soil descriptions (wet to saturated), the following soil samples were submitted for laboratory analysis: JCRS-0049A (3.5'), JCRS-0049B (8.0') and JCRS-0049C (12.0').

QA/QC samples included the collection of one field duplicate sample (JCRS-0080J duplicate of JCRS-0049C) and one matrix spike/matrix spike duplicate sample (JCRS-0049B MS/MSD). A total of four soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that VOCs were not detected (U) in soil samples JCRS-0049A through JCRS-0049C. Analytical results also indicated that soil sample JCRS-0080J did not exhibit VOCs in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives. Analytical results are summarized in Table 5 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

8.0 POOL AREA

Two soil borings were installed in this area by SJB Services, Inc. on 10/10/03. The Test Boring Logs are included as Appendix 2.

8.1 Soil Boring JCRS-0044

Soil boring JCRS-0044 was installed on 10/10/03 to a depth of 12' below ground surface. Groundwater was encountered at 5.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0044A (3.5'), JCRS-0044B (7.5') and JCRS-0044C (12.0'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0044B exhibited a tetrachloroethene concentration (1.9 ppm D) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 1.4 ppm. Analytical results are summarized in Table 6 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

8.2 Soil Boring JCRS-0045

Soil boring JCRS-0045 was installed on 10/10/03 to a depth of 12' below ground surface.

Groundwater was encountered at 5.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0045A (0.5'), JCRS-0045B (7.0') and JCRS-0045C (11.5'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0045B exhibited a trichloroethene concentration (17 ppm D) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.7 ppm. Analytical results are summarized in Table 6 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

9.0 NORTHERN DRAINAGE DITCH

Three soil borings were installed in this area by SJB Services, Inc. on 10/09/03 and 10/14/03. It should be noted that the borings were not actually installed in the ditch (due to the presence of utilities), but were installed just south of the ditch. The Test Boring Logs are included as Appendix 2.

9.1 Soil Boring JCRS-0040

Soil boring JCRS-0040 was installed on 10/09/03 to a depth of 40' below ground surface. Groundwater was encountered at 8.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0040A (3.0'), JCRS-0040B (8.0'), JCRS-0040C (10.5'), JCRS-0040D (14.5'), JCRS-0040E (19.0'), JCRS-0040F (29.0') and JCRS-0040G (40.0').

QA/QC samples included the collection of one field duplicate sample (JCRS-0080G duplicate of JCRS-0040C) and one matrix spike/matrix spike duplicate sample (JCRS-0040A MS/MSD). A total of eight soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0040A through JCRS-0040G and JCRS-0080G did not exhibit VOC concentrations in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives. Analytical results are summarized in Table 7 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

9.2 Soil Boring JCRS-0051

Soil boring JCRS-0051 was installed on 10/14/03 to a depth of 12' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0051A (2.5'), JCRS-0051B (7.5') and JCRS-0051C (10.5'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0051A exhibited an acetone concentration (5.7 ppm DJ) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 7 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

9.3 Soil Boring JCRS-0052

Soil boring JCRS-0052 was installed on 10/14/03 to a depth of 12' below ground surface. Groundwater was encountered at 7.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0052A (3.5'), JCRS-0052B (6.5') and JCRS-0052C (10.5'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0052A through JCRS-0052C did not exhibit VOCs in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives. Analytical results are summarized in Table 7 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

10.0 STABLE AREA

Three soil borings were installed in this area by SJB Services, Inc. on 10/01/03, 10/02/03, 10/03/03, 10/06/03 and 11/03/03. The Test Boring Logs are included as Appendix 2.

10.1 Soil Boring JCRS-0030

Soil boring JCRS-0030 was installed on 10/01/03 to a depth of 12' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0030A (4.0'), JCRS-0030B (6.5') and JCRS-0030C (12.0'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0030A exhibited an acetone concentration (8.1 ppm J) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 8 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

10.2 Soil Boring JCRS-0031

Soil boring JCRS-0031 was installed on 10/02/03 to a depth of 12' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0031A (1.5'), JCRS-0031B (8.0') and JCRS-0031C (12.0').

QA/QC samples included the collection of one matrix spike/matrix spike duplicate sample (JCRS-0031C MS/MSD). A total of three soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0031A exhibited an acetone concentration (1.0 ppm BJ) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results indicated that soil sample JCRS-0031C exhibited a 2-butanone concentration (0.35 DJ ppm) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.3 ppm. Analytical results are summarized in Table 8 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

10.3 Soil Boring JCRS-0035

Soil boring JCRS-0035 was installed on 10/03/03 and 10/06/03 to a depth of 40' below ground surface. Groundwater was encountered at 8.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings and/or soil descriptions (wet to saturated), the following soil samples were submitted for laboratory analysis: JCRS-0035A (3.0'), JCRS-0035B (8.0'), JCRS-0035C (12.0'), JCRS-0035D (12.5'), JCRS-0035E (18.5'), JCRS-0035F (29.5') and JCRS-0035G (40.0'). Due to holding time issues, soil samples JCRS-0035A, JCRS-0035B, JCRS-0035C, JCRS-0035D and JCRS-0035E were not analyzed and discarded. Soil boring JCRS-0035 was re-installed adjacent to the original boring location on 11/03/03 and the following samples were collected and submitted for laboratory analysis: JCRS-0035A-1 (3.0'), JCRS-0035B-1 (8.0'), JCRS-0035C-1 (12.0'), JCRS-0035D-1 (12.5') and JCRS-0035E-1 (18.5').

QA/QC samples included the collection of one matrix spike/matrix spike duplicate sample (JCRS-0035G MS/MSD). A total of seven soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0035B-1 exhibited a trichloroethene (0.93 ppm J) concentration in excess its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.7 ppm. Analytical results also indicated that soil sample JCRS-0035E-1 exhibited an acetone concentration (1.8 ppm) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 8 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

11.0 DRAINAGE PIPE

Two soil borings were installed in this area by SJB Services, Inc. on 10/13/03 and 10/14/03. The Test Boring Logs are included as Appendix 2.

11.1 Soil Boring JCRS-0046

Soil boring JCRS-0046 was installed on 10/13/03 to a depth of 40' below ground surface. Groundwater was encountered at 21.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings and/or soil descriptions (wet to saturated), the following soil samples were submitted for laboratory analysis: JCRS-0046A (1.0'), JCRS-0046B (6.5'), JCRS-0046C (9.0'), JCRS-0046D (15.0'), JCRS-0046E (18.5'), JCRS-0046F (30.5') and JCRS-0046G (36.0').

QA/QC samples included the collection of one field duplicate sample (JCRS-0080I duplicate of JCRS-0046A) and one matrix spike/matrix spike duplicate sample (JCRS-0046F MS/MSD). A total of eight soil samples, plus the MS/MSD, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results also indicated that soil samples JCRS-0046C and JCRS-0046E exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 0.76 ppm DJ and 0.75 ppm DJ. Analytical results are summarized in Table 9 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

11.2 Soil Boring JCRS-0050

Soil boring JCRS-0050 was installed on 10/14/03 to a depth of 12' below ground surface. Groundwater was encountered at 7.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'.

Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0050A (3.0'), JCRS-0050B (4.5') and JCRS-0050C (10.5'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results also indicated that soil sample JCRS-0050B exhibited an acetone concentration (13 ppm DJ) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 9 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

12.0 NORTHERN BOUNDARY OF JOHNNY CAKE ROAD

Four soil borings were installed in this area by SJB Services, Inc. on 10/01/03, 10/02/03, 10/03/03 and 11/03/03. The Test Boring Logs are included as Appendix 2.

12.1 Soil Boring JCRS-0029

Soil boring JCRS-0029 was installed on 10/01/03 to a depth of 12' below ground surface. Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0029A (2.5'), JCRS-0029B (8.0') and JCRS-0029C (9.0'). A total of three soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil sample JCRS-0029C exhibited an acetone concentration (0.29 ppm BD) in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Analytical results are summarized in Table 10 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

12.2 Soil Boring JCRS-0032

Soil boring JCRS-0032 was installed on 10/02/03 to a depth of 12' below ground surface.

Groundwater was encountered at 6.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8' and 8'-12'. Based on PID readings and/or soil descriptions (wet to saturated), the following soil samples were submitted for laboratory analysis: JCRS-0032A (4.0'), JCRS-0032B (7.5') and JCRS-0032C (11.5').

QA/QC samples included the collection of one field duplicate sample (JCRS-0080A duplicate of JCRS-0032A). A total of four soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results also indicated that soil samples JCRS-0032A through JCRS-0032C and JCRS-0080A exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 1.7 ppm DB, 1.5 ppm DB, 1.1 ppm DJ and 0.76 ppm DJ. Analytical results are summarized in Table 10 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

12.3 Soil Boring JCRS-0033

Soil boring JCRS-0033 was installed on 10/02/03 to a depth of 40' below ground surface. Groundwater was encountered at 4.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'.

Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0033A (4.0'), JCRS-0033B (8.0'), JCRS-0033C (9.0'), JCRS-0033D (16.0'), JCRS-0033E (17.5'), JCRS-0033F (29.0') and JCRS-0033G (37.5'). A total of seven soil samples were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results also indicated that soil samples JCRS-0033A through JCRS-0033G exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 0.34 ppm J, 5.6 ppm DJB, 3.3 ppm DJB, 7.6 ppm DB, 16 ppm DJ, 1.5 ppm DJ and 4.4 ppm D. Analytical results indicated that soil sample JCRS-0033G exhibited methylene chloride (0.2 ppm DJ) and 2-butanone (0.53 ppm DJ) concentrations in excess of their respective NYSDEC TAGM #4046 Recommended Soil Cleanup Objectives of 0.1 ppm and 0.3 ppm.

Analytical results are summarized in Table 10 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

12.4 Soil Boring JCRS-0034

Soil boring JCRS-0034 was installed on 10/02/03 and 10/03/03 to a depth of 40' below ground surface. Groundwater was encountered at 4.0' below ground surface. During the installation, continuous two foot split spoon soil samples were collected. In accordance with the procedures discussed in Section 2.2, one soil sample for laboratory analysis was collected from each of the following depth intervals: 0-4'; 4'-8'; 8'-12'; 12'-16'; 16'-24'; 24'-32' and 32'-40'. Based on PID readings, the following soil samples were submitted for laboratory analysis: JCRS-0034A (0.5'), JCRS-0034B (8.0'), JCRS-0034C (11.0'), JCRS-0034D (16.0'), JCRS-0034E (23.5'), JCRS-0034F (30.5') and JCRS-0034G (40.0'). Due to holding time issues, soil samples JCRS-0034C, JCRS-0034D, JCRS-0034E, JCRS-0034F and JCRS-0034G were not analyzed and discarded. Soil boring JCRS-0034 was re-installed adjacent to the original boring location on 11/03/03 and the following samples were collected and submitted for laboratory analysis: JCRS-0034C-1 (11.0'), JCRS-0034D-1 (16.0'), JCRS-0034E-1 (23.5'), JCRS-0034F-1 (30.5') and JCRS-0034G-1 (40.0').

QA/QC samples included the collection of two field duplicate samples (JCRS-0080B duplicate of JCRS-0034A; JCRS-0080C-1 duplicate of JCRS-0034E-1) and two matrix spike/matrix spike duplicate sample (JCRS-0034B MS/MSD; JCRS-0034G-1). A total of nine soil samples, plus the MS/MSDs, were analyzed for TCL VOCs. See Figure 2 for soil boring locations.

Analytical results indicated that soil samples JCRS-0034A, JCRS-0034E-1, JCRS-0034F-1 and JCRS-0080C-1 exhibited acetone concentrations in excess of its NYSDEC TAGM #4046 Recommended Soil Cleanup Objective of 0.2 ppm. Respective acetone concentrations were 0.86 ppm D, 0.69 ppm D, 0.61 ppm D and 0.86 ppm J. Analytical results are summarized in Table 10 (Appendix 3) and shown on Figure 2. The analytical results (Form I's) and data validation reports are included in Appendix 4.

13.0 SITE SPECIFIC QUALITY ASSURANCE/QUALITY CONTROL PLAN

The objective of the QA/QC plan is to provide analytical results which are legally defensible in a court of law. The QA/QC plan incorporated procedures for field sampling, chain of custody, laboratory analyses, and reporting to assure generation of sound analytical results. Sampling procedures were conducted in accordance with the "Sampling Quality Assurance Project Plan", DCN RST-02-F-01059, dated 09/18/03 and prepared by Weston Solutions, Inc.'s Removal Support Team.

13.1 Sampling Equipment and Methods

Samples were collected at the locations and depths as described in Sections 3.0 through 12.0 above. Equipment utilized for this project were galvanized steel split spoon samplers and dedicated 5 gram En Core Samplers.

All samples were transferred immediately after collection into sample containers selected by parameter as listed below. The type of sample containers required for this investigation were as follows:

a. TCL Volatile Organic Compounds - 3 - 5 gram En Core Samplers;
b. Percent Moisture - 1 - 4 oz. glass jar.

All soil samples were packed on ice immediately following collection. All samples were labeled with the following information:

a. sample number;
b. date and time of collection;
c. site name;

d. sample collector's initials;
e. analyses required.

Accurate field notes were maintained which included the information listed above. Additional information included, but was not limited to:

a. sample location sketch;
b. sample method;
c. general comments, including any modification from the sample plan.

13.2 Equipment Decontamination

All of the galvanized steel split spoon samplers utilized in the collection of soil samples were decontaminated in the following manner:

c. physical removal of remaining soil;
d. non-phosphate (Alconox) detergent wash;
e. tap water rinse;
f. deionized water rinse;
g. isopropanol rinse*;
h. air dry;
i. deionized water rinse.

* Isopropanol was used as the solvent rinse because based on previous sampling results, acetone was a contaminant of concern.

Decontamination liquids were not containerized and were disposed on-site.

13.3 Chain of Custody

Chain of custody was maintained for all samples. Chain of custody originated with the collection of the samples and was maintained until the samples were relinquished to the laboratory.
The chain of custody form detailed the following information:

a. sample identification number;
b. sample collection date and time;
c. sample matrix;
d. expected contaminant concentration (low, medium, high);
e. sample type (grab or composite);
f. sample preservation;
g. analytical parameters;
h. name(s) and signatures(s) of sampler(s);
i. signatures(s) of individual(s) with control over samples.

13.4 Quality Assurance/Quality Control Samples

The matrices for samples included in this investigation were soil and water. QA/QC samples included the collection of one field duplicate and one matrix spike/matrix spike duplicate sample at the frequency of one per 20 samples. Extra volume was submitted to allow the laboratory to perform matrix spike sample analysis. This analysis provides information about the effect of sample matrix digestion and measurement methodology. Field duplicate samples provide an indication of sample homogeneity and were not identified to the laboratory.

Field rinsate blanks were also collected on a daily basis. The purpose of the field blanks was to place a mechanism of control on equipment decontamination, sample handling, storage and shipment. Field blanks were used to indicate potential contamination from ambient air and from sampling equipment used to collect and transfer samples from point of collection into their appropriate sample containers. Analytical results for the field blanks are summarized in Table 11 (Appendix 3). The analytical results (Form I's) and the data validation reports are included in Appendix 4.

13.5 Sample QA/QC Data

A CLP Format QA/QC package was provided for all samples submitted for analysis.

14.0 DATA VALIDATION

Data was evaluated according to criteria contained in the Removal Program Data Validation Procedures that accompany OSWER Directive number 9360.4-1 and in accordance with Region II guidelines using the following data validation SOP: SOP HW-13, "USEPA Region II Data Validation SOP for Statement of Work OLCO 2.1, Rev.2". Laboratory analytical results were assessed by the data reviewer for compliance with required precision, accuracy, completeness, representativeness, and sensitivity.

Data validation was performed by RST in accordance with Level QA-2 criteria. Data validation results indicate that the analytical results are valid and acceptable. For specific comments, see the Data Validation Reports included as Appendix 4.

15.0 GPS LOCATIONAL DATA

In order to document the locations of the soil borings, locational data was obtained using a global positioning system (GPS) unit. See Table 12 in Appendix 5 for tabulated locational data.

APPENDIX 1

NYSDEC, TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM (TAGM) # 4046, DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS

New York State Department of Environmental Conservation

TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM #4046

DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS

TO: Regional Haz. Waste Remediation Engineers, Bureau Directors, and Section Chiefs

FROM: Michael J. O'Toole, Jr., Director, Division of Hazardous Waste Remediation

SUBJECT: DIVISION TECHNICAL AND ADMINISTRATIVE GUIDANCE MEMORANDUM: DETERMINATION OF SOIL CLEANUP OBJECTIVES AND CLEANUP LEVELS

DATE: JAN 24, 1994

Michael J. O'Toole, Jr. (signed)

The cleanup goal of the Department is to restore inactive hazardous waste sites to predisposal conditions, to the extent feasible and authorized by law. However, it is recognized that restoration to predisposal conditions will not always be feasible.

1. INTRODUCTION:

This TAGM provides a basis and procedure to determine soil cleanup levels at individual Federal Superfund, State Superfund, 1986 EQBA Title 3 and Responsible Party (RP) sites, when the Director of the DHWR determines that cleanup of a site to predisposal conditions is not possible or feasible.

The process starts with development of soil cleanup objectives by the Technology Section for the contaminants identified by the Project Managers. The Technology Section uses the procedure described in this TAGM to develop soil cleanup objectives. Attainment ofthese generic soil cleanup objectives will, at a minimum, eliminate all significant threats to human health and/or the environment posed by the inactive hazardous waste site. Project Managers should use these cleanup objectives in selecting alternatives in the Feasibility Study (FS). Based on the proposed selected remedial technology (outcome of FS), final site specific soil cleanup levels are established in the Record of Decision (ROD) for these sites.

It should be noted that even after soil cleanup levels are established in the ROD, these levels may prove to be unattainable when remedial construction begins. In that event, alternative remedial actions or institutional controls may be necessary to protect the environment.

2. BASIS FOR SOIL CLEANUP OBJECTIVES:

The following alternative bases are used to determine soil cleanup objectives:

a. Human health based levels that correspond to excess lifetime cancer risks of one in a million for Class A[1] and B[2] carcinogens, or one in 100,000 for Class C[3] carcinogens. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

b. Human health based levels for systemic toxicants, calculated from Reference Doses (RfDs). RfDs are an estimate of the daily exposure an individual (including sensitive individuals) can experience without appreciable risk of health effects during a lifetime. An average scenario of exposure in which children ages one to six (who exhibit the greatest tendency to ingest soil) is assumed. An intake rate of 0.2 gram/day for a five-year exposure period for a 16-kg child is assumed. These levels are contained in USEPA's Health Effects Assessment Summary Tables (HEASTs) which are compiled and updated quarterly by the NYSDEC's Division of Hazardous Substances Regulation;

c. Environmental concentrations which are protective of groundwater/drinking water quality; based on promulgated or proposed New York State Standards;

d. Background values for contaminants; and

e. Detection limits.

A recommendation on the appropriate cleanup objective is based on the criterion that produces the most stringent cleanup level using criteria a, b, and c for organic chemicals, and criteria a, b, and d for heavy metals. If criteria a and/or b are below criterion d for a contaminant, its background value should be used as the cleanup objective. However, cleanup objectives developed using this approach must be, at a minimum, above the method detection limit (MDL) and it is preferable to have the soil cleanup objectives above the Contract Required Quantitation Limit (CRQL) as defined by NYSDEC. If the cleanup objective of a compound is "non-detectable", it should mean that it is not detected at the MDL. Efforts should be made to obtain the best MDL detection possible when selecting a laboratory and analytical protocol.

3. DETERMINATION OF SOIL CLEANUP GOALS FOR ORGANICS IN SOIL FOR PROTECTION OF WATER QUALITY

The water/soil partitioning theory is used to determine soil cleanup objectives which would be protective of groundwater/drinking water quality for its best use. This theory is conservative in nature and assumes that contaminated soil and groundwater are in direct contact. This theory is based upon the ability of organic matter in soil to adsorb organic chemicals. The approach predicts the maximum amount of contamination that may remain in soil so that leachate from the contaminated soil will not violate groundwater and/or drinking water standards.

This approach is not used for heavy metals, which do not partition appreciably into soil organic matter. For heavy metals, eastern USA or New York State soil background values may be used as soil cleanup objectives. A list of values that have been tabulated is attached. Soil background data near the site, if available, is preferable and should be used as the cleanup objective for such metals. Background samples should be free from the influences of this site and any other source of contaminants. Ideal background samples may be obtained from uncontaminated upgradient and upwind locations.

Protection of water quality from contaminated soil is a two-part problem. The first is predicting the amount of contamination that will leave the contaminated media as leachate. The second part of the problem is to determine how much of that contamination will actually contribute to a violation of groundwater standards upon reaching and dispersing into groundwater. Some of the contamination which initially leaches out of soil will be absorbed by other soil before it reaches groundwater. Some portion will be reduced through natural attenuation or other mechanism.

PART A: PARTITION THEORY MODEL

There are many test and theoretical models which are used to predict leachate quality given a known value of soil contamination. The Water-Soil Equilibrium Partition Theory is used as a basis to determine soil standard or contamination limit for protection of water quality by most of the models currently in use. It is based on the ability of organic carbon in soil to adsorb contamination. Using a water quality value which may not be exceeded in leachate and the partition coefficient method, the equilibrium concentration (Cs) will be expressed in the same units as the water standards. The following expression is used:

Allowable Soil Concentration $Cs = f \times Koc \times Cw \ldots. (1)$

Where: f = fraction of organic carbon of the natural soil medium.

Koc = partition coefficient between water and soil media. Koc can be estimated by the following equation:

$\log Koc = 3.64 - 0.55 \log S$

S = water solubility in ppm
Cw = appropriate water quality value from TOGS 1.1.1

Most Koc and S values are listed in the Exhibit A-1 of the USEPA Superfund Public Health Evaluation Manual (EPA/540/1-86/060). The Koc values listed in this manual should be used for the purpose. If the Koc value for a contaminant is not listed, it should be estimated using the above mentioned equation.

PART B: PROCEDURE FOR DETERMINATION OF SOIL CLEANUP OBJECTIVES

When the contaminated soil is in the unsaturated zone above the water table, many mechanisms are at work that prevent all of the contamination that would leave the contaminated soil from impacting groundwater. These mechanisms occur during transport and may work simultaneously. They include the following: (1) volatility, (2) sorption and desorption, (3) leaching and diffusion, (4) transformation and degradation, and (5) change in concentration of contaminants after reaching and/or mixing with the groundwater surface. To account for these mechanisms, a correction factor of 100 is used to establish soil cleanup objectives. This value of 100 for the correction is consistent with the logic used by EPA in its Dilution Attenuation Factor (DAF) approach for EP Toxicity and TCLP. (Federal Register/Vol. 55, No. 61, March 29, 1990/Pages 11826-27). Soil cleanup objectives are calculated by multiplying the allowable soil concentration by the correction factor. If the contaminated soil is very close (<3' - 5') to the groundwater table or in the groundwater, extreme caution should be exercised when using the correction factor of 100 (one hundred) as this may not give conservative cleanup objectives. For such situations the Technology Section should be consulted for site-specific cleanup objectives.

Soil cleanup objectives are limited to the following maximum values. These values are consistent with the approach promulgated by the States of Washington and Michigan.

1. Total VOCs $\leq$ 10 ppm.
2. Total Semi VOCs $\leq$ 500 ppm.
3. Individual Semi VOCs $\leq$ 50 ppm.
4. Total Pesticides $\leq$ 10 ppm.

One concern regarding the semi-volatile compounds is that some of these compounds are so insoluble that their Cs values are fairly large. Experience (Draft TOGS on Petroleum Contaminated Soil Guidance) has shown that soil containing some of these insoluble substances at high concentrations can exhibit a distinct odor even though the substance will not leach from the soil. Hence any time a soil exhibits a discernible odor nuisance, it shall not be considered clean even if it has met the numerical criteria.

4. <u>DETERMINATION OF FINAL CLEANUP LEVELS:</u>

Recommended soil cleanup objectives should be utilized in the development of final cleanup levels through the Feasibility Study (FS) process. During the FS, various alternative remedial actions developed during the Remedial Investigation (RI) are initially screened and narrowed down to the list of potential alternative remedial actions that will be evaluated in detail. These alternative remedial actions are evaluated using the criteria discussed in TAGM 4030, Selection of Remedial Actions at Inactive Hazardous Waste Sites, revised May 15, 1990, and the preferred remedial action will be selected. After the detailed evaluation of the preferred remedial action, the final cleanup levels which can be actually achieved using the preferred remedial action must be established. Remedy selection, which will include final cleanup levels, is the subject of TAGM 4030.

Recommended soil cleanup objectives that have been calculated by the Technology Section are presented in Appendix A. These objectives are based on a soil organic carbon content of 1% (0.01) and should be adjusted for the actual organic carbon content if it is known. For determining soil organic carbon content, use attached USEPA method (Appendix B). Please contact the Technology Section, Bureau of Program Management for soil cleanup objectives not included in Appendix A.

TAGM 4046 Footnotes:

1. Class A are proved human carcinogens
2. Class B are probable human carcinogens
3. Class C are possible human carcinogens

APPENDIX A

TABLE 1
Recommended soil cleanup objectives (mg/kg or ppm)
Volatile Organic Contaminants

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	USEPA Health Based (ppm) Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Acetone	2.2	50	0.0011	0.11	N/A	8,000	10	0.2
Benzene	83	0.7	0.0006	0.06	24	N/A	5	0.06
Benzoic Acid	54 *	50	0.027	2.7	N/A	300,000	5	2.7
2-Butanone	4.5 *	50	0.003	0.3	N/A	4,000	10	0.3
Carbon Disulfide	54 *	50	0.027	2.7	N/A	8,000	5	2.7
Carbon Tetrachloride	110 *	5	0.006	0.6	5.4	60	5	0.6
Chlorobenzene	330	5	0.017	1.7	N/A	2,000	5	1.7
Chloroethane	37 *	50	0.019	1.9	N/A	N/A	10	1.9
Chloroform	31	7	0.003	0.30	114	800	5	0.3
Dibromochloromethane	N/A	50	N/A	N/A	N/A	N/A	5	N/A
1,2-Dichlorobenzene	1,700	4.7	0.079	7.9	N/A	N/A	330	7.9
1,3-Dichlorobenzene	310 *	5	0.0155	1.55	N/A	N/A	330	1.6
1,4-Dichlorobenzene	1,700	5	0.085	8.5	N/A	N/A	330	8.5
1,1-Dichloroethane	30	5	0.002	0.2	N/A	N/A	5	0.2
1,2-Dichloroethane	14	5	0.001	0.1	7.7	N/A	5	0.1
1,1-Dichloroethene	65	5	0.004	0.4	12	700	5	0.4
1,2-Dichloroethene (trans)	59	5	0.003	0.3	N/A	2,000	5	0.3
1-3 dichloropropane	51	5	0.003	0.3	N/A	N/A	5	0.3
Ethylbenzene	1,100	5	0.055	5.5	N/A	8,000	5	5.5
113 Freon (1,1,2 Trichloro- 1,2,2 Trifluoroethane)	1,230 *	5	0.060	6.0	N/A	200,000	5	6.0
Methylene chloride	21	5	0.001	0.1	93	5,000	5	0.1
4-Methyl-2-Pentanone	19 *	50	0.01	1.0	N/A	N/A	10	1.0

TABLE 1 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Tetrachloroethene	277	5	0.014	1.4	14	800	5	1.4
1,1,1-Trichloroethane	152	5	0.0076	0.76	N/A	7,000	5	0.8
1,1,2,2-Tetrachloroethane	118	5	0.006	0.6	35	N/A	5	0.6
1,2,3-trichloropropane	68	5	0.0034	0.34	N/A	80	5	0.4
1,2,4-trichlorobenzene	670 *	5	0.034	3.4	N/A	N/A	330	3.4
Toluene	300	5	0.015	1.5	N/A	20,000	5	1.5
Trichloroethene	126	5	0.007	0.70	64	N/A	5	0.7
Vinyl chloride	57	2	0.0012	0.12	N/A	N/A	10	0.2
Xylenes	240	5	0.012	1.2	N/A	200,000	--	1.2

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 2
Recommended soil cleanup objectives (mg/kg or ppm)
Semi-Volatile Organic Contaminants

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Acenaphthene	4,600	20	0.9	90.0	N/A	5,000	330	50.0 ***
Acenaphthylene	2,056 *	20	0.41	41.0	N/A	N/A	330	41.0
Aniline	13.8	5	0.001	0.1	123	N/A	330	0.1
Anthracene	14,000	50	7.00	700.0	N/A	20,000	330	50.0 ***
Benzo(a)anthracene	1,380,000	0.002	0.03	3.0	0.224	N/A	330	0.224 or MDL
Benzo (a) pyrene	5,500,000	0.002 (ND)	0.110	11.0	0.0609	N/A	330	0.061 or MDL
Benzo (b) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
Benzo (g,h,i) perylene	1,600,000	5	8.0	800	N/A	N/A	330	50.0 ***
Benzo (k) fluoranthene	550,000	0.002	0.011	1.1	N/A	N/A	330	1.1
bis(2-ethylhexyl)phthalate	8,706 *	50	4.35	435.0	50	2,000	330	50.0 ***
Butylbenzylphthlate	2,430	50	1.215	122.0	N/A	20,000	330	50.0 ***
Chrysene	200,000	0.002	0.004	0.4	N/A	N/A	330	0.4
4- Chloroaniline	43 ****	5	0.0022	0.22	200	300	330	0.220 or MDL
4-Chloro-3-methylphenol	47	5	0.0024	0.24	N/A	N/A	330	0.240 or MDL
2-Chlorophenol	15 *	50	0.008	0.8	N/A	400	330	0.8

TABLE 2 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Dibenzofuran	1,230 *	5	0.062	6.2	N/A	N/A	330	6.2
Dibenzo(a,h)anthracene	33,000,000	50	1,650	165,000	0.0143	N/A	330	0.014 or MDL
3,3'-Dichlorobenzidine	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	380	1	0.004	0.4	N/A	200	330	0.4
2,4-Dinitrophenol	38	5	0.002	0.2	N/A	200	1,600	0.200 or MDL
2,6 Dinitrotoluene	198*	5	0.01	1.0	1.03	N/A	330	1.0
Diethylphthlate	142	50	0.071	7.1	N/A	60,000	330	7.1
Dimethylphthlate	40	50	0.020	2.0	N/A	80,000	330	2.0
Di-n-butyl phthalate	162*	50	0.081	8.1	N/A	8,000	330	8.1
Di-n-octyl phthlate	2,346 *	50	1.2	120.0	N/A	2,000	330	50.0 ***
Fluoranthene	38,000	50	19	1900.0	N/A	3,000	330	50.0 ***
Fluorene	7,300	50	3.5	350.0	N/A	3,000	330	50.0 ***
Hexachlorobenzene	3,900	0.35	0.014	1.4	0.41	60	330	0.41
Indeno (1,2,3-cd)pyrene	1,600,000	0.002	0.032	3.2	N/A	N/A	330	3.2
Isophorone	88.31 *	50	0.044	4.40	1,707	20,000	330	4.40
2-methylnaphthalene	727 *	50	0.364	36.4	N/A	N/A	330	36.4
2-Methylphenol	15	5	0.001	0.1	N/A	N/A	330	0.100 or MDL
4-Methylphenol	17	50	0.009	0.9	N/A	4,000	330	0.9
Naphthalene	1,300	10	0.130	13.0	N/A	300	330	13.0
Nitrobenzene	36	5	0.002	0.2	N/A	40	330	0.200 or MDL

TABLE 2 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
2-Nitroaniline	86	5	0.0043	0.43	N/A	N/A	1,600	0.430 or MDL
2-Nitrophenol	65	5	0.0033	0.33	N/A	N/A	330	0.330 or MDL
4-Nitrophenol	21	5	0.001	0.1	N/A	N/A	1,600	0.100 or MDL
3-Nitroaniline	93	5	0.005	0.5	N/A	N/A	1,600	0.500 or MDL
Pentachlorophenol	1,022	1	0.01	1.0	N/A	2,000	1,600	1.0 or MDL
Phenanthrene	4,365 *	50	2.20	220.0	N/A	N/A	330	50.0 ***
Phenol	27	1	0.0003	0.03	N/A	50,000	330	0.03 or MDL
Pyrene	13,295 *	50	6.65	665.0	N/A	2,000	330	50.0 ***
2,4,5-Trichlorophenol	89 *	1	0.001	0.1	N/A	8,000	330	0.1

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available
MDL is Method Detection Limit

* Partition coefficient is calculated by using the following equation:
log Koc = -0.55 log S + 3.64, where S is solubility in water in ppm.
Other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm., Total Semi- VOCs < 500ppm. and Individual Semi-VOCs < 50 ppm.

**** Koc is derived from the correlation Koc = 0.63 Kow (Determining Soil Response Action Levels...... EPA/540/2-89/057). Kow is obtained from the USEPA computer database 'MAIN'.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1%, and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 3
Recommended soil cleanup objectives (mg/kg or ppm)
Organic Pesticides / Herbicides and PCBs

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin-ogens	USEPA Health Based (ppm) Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Aldrin	96,000	ND (<0.01)	0.005	0.5	0.041	2	8	0.041
alpha- BHC	3,800	ND (<0.05)	0.002	0.2	0.111	N/A	8	0.11
beta - BHC	3,800	ND (<0.05)	0.002	0.2	3.89	N/A	8	0.2
delta - BHC	6,600	ND (<0.05)	0.003	0.3	N/A	N/A	8	0.3
Chlordane	21,305 *	0.1	0.02	2.0	0.54	50	80	0.54
2,4-D	104 *	4.4	0.005	0.5	N/A	800	800	0.5
4,4'- DDD	770,000 *	ND (<0.01)	0.077	7.7	2.9	N/A	16	2.9
4,4'-DDE	440,000 *	ND (<0.01)	0.0440	4.4	2.1	N/A	16	2.1
4,4'-DDT	243,000 *	ND (<0.01)	0.025	2.5	2.1	40	16	2.1
Dibenzo-P-dioxins (PCDD) 2,3,7,8 TCDD	1709800	0.000035	0.0006	0.06	N/A	N/A	N/A	N/A
Dieldrin	10,700 *	ND (< 0.01)	0.0010	0.1	0.044	4	16	0.044
Endosulfan I	8,168 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan II	8,031 *	0.1	0.009	0.9	N/A	N/A	16	0.9
Endosulfan Sulfate	10,038 *	0.1	0.01	1.0	N/A	N/A	16	1.0
Endrin	9,157 *	ND (<0.01)	0.001	0.1	N/A	20	8	0.10

TABLE 3 (Continued)

Contaminant	Partition Coefficient, Koc	Groundwater Standards/ Criteria, Cw (ug/l or ppb)	a Allowable soil conc., Cs (ppm)	b ** Soil cleanup objectives to protect GW quality (ppm)	USEPA Health Based (ppm) Carcin- ogens	Systemic Toxicants	CRQL (ppb)	*** Rec. Soil Cleanup Objective (ppm)
Endrin keytone	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
gamma - BHC (Lindane)	1,080	ND (<0.05)	0.0006	0.06	5.4	20	8	0.06
gamma - chlordane	140,000	0.1	0.14	14.0	0.54	5	80	0.54
Heptachlor	12,000	ND (<0.01)	0.0010	0.1	0.16	40	8	0.10
Heptachlor epoxide	220	ND (<0.01)	0.0002	0.02	0.077	0.8	8	0.02
Methoxychlor	25,637	35.0	9.0	900	N/A	400	80	***
Mitotane	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Parathion	760	1.5	0.012	1.2	N/A	500	8	1.2
PCBs	17,510 *	0.1	0.1	10.0	1.0	N/A	160	1.0 (Surface) 10 (sub-surf)
Polychlorinated dibenzo-furans (PCDF)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Silvex	2,600	0.26	0.007	0.7	N/A	600	330	0.7
2,4,5-T	53	35	0.019	1.9	N/A	200	330	1.9

a. Allowable Soil Concentration Cs = f x Cw x Koc
b. Soil cleanup objective = Cs x Correction Factor (CF)
N/A is not available

* Partition coefficient is calculated by using the following equation:
$\log Koc = -0.55 \log S + 3.64$, where S is solubility in water in ppm.
All other Koc values are experimental values.

** Correction Factor (CF) of 100 is used as per TAGM #4046

*** As per TAGM #4046, Total VOCs < 10 ppm.

Note: Soil cleanup objectives are developed for soil organic carbon content (f) of 1% (5% for PCBs as per PCB Guidance Document), and should be adjusted for the actual soil organic carbon content if it is known.

APPENDIX A

TABLE 4
Recommended soil cleanup objectives (mg/kg or ppm)
Heavy Metals

Contaminants	Protect Water Quality (ppm)	Eastern USA Background (ppm)	* CRDL (mg/kg or ppm)	***** Rec. Soil Cleanup Objective (ppm)
Aluminum	N/A	33,000	2.0	SB
Antimony	N/A	N/A	0.6	SB
Arsenic	N/A	3-12 **	0.1	7.5 or SB
Barium	N/A	15-600	2.0	300 or SB
Beryllium	N/A	0-1.75	0.05	0.16 (HEAST) or SB
Cadmium	N/A	0.1-1	0.05	1 or SB
Calcium	N/A	130 - 35,000 ***	50.0	SB
Chromium	N/A	1.5 - 40 **	0.1	10 or SB
Cobalt	N/A	2.5 - 60 **	0.5	30 or SB
Copper	N/A	1 - 50	0.25	25 or SB
Cyanide	N/A	N/A	0.1	***
Iron	N/A	2,000 - 550,000	1.0	2,000 or SB
Lead	N/A	****	0.03	SB ****
Magnesium	N/A	100 - 5,000	50.0	SB
Manganese	N/A	50 - 5,000	0.15	SB
Mercury	N/A	0.001 - 0.2	0.002	0.1
Nickel	N/A	0.5 -25	0.4	13 or SB
Potassium	N/A	8,500 - 43,000 **	50.0	SB
Selenium	N/A	0.1 - 3.9	0.05	2 or SB
Silver	N/A	N/A	0.1	SB
Sodium	N/A	6,000 - 8,000	50.0	SB
Thallium	N/A	N/A	0.1	SB
Vanadium	N/A	1-300	0.5	150 or SB
Zinc	N/A	9-50	0.2	20 or SB

Note: Some forms of metal salts such as Aluminum Phosphide, Calcium Cyanide, Potassium Cyanide, Copper cyanide, Silver cyanide, Sodium cyanide, Zinc phosphide, Thallium salts, Vanadium pentoxide and Chromium (VI) compounds are more toxic in nature. Please refer to the USEPA HEASTs database to find cleanup objectives if such metals are present in soil.

SB is site background
N/A is not available

* CRDL is contract required detection limit which is approx. 10 times the CRDL for water.

** New York State background

*** Some forms of Cyanide are complex and very stable while other forms are pH dependent and hence are very unstable. Site-specific form(s) of Cyanide should be taken into consideration when establishing soil cleanup objective.

**** Background levels for lead vary widely. Average levels in undeveloped, rural areas may range from 4-61 ppm. Average background levels in metropolitan or suburban areas or near highways are much higher and typically range from 200-500 ppm.

***** Recommended soil cleanup objectives are average background concentrations as reported in a 1984 survey of reference material by E. Carol McGovern, NYSDEC.

APPENDIX B

TOTAL ORGANIC CARBON (TOC)

USE AND LIMITATIONS

Total organic carbon is a measure of the total amount of nonvolatile, volatile, partially volatile, and particulate organic compounds in a sample. Total organic carbon is independent of the oxidation state of the organic compounds and is not a measure of the organically bound and inorganic elements that can contribute to the biochemical and chemical oxygen demand tests.

Because inorganic carbon (e.g., carbonates, bicarbonates, free CO_2) will interfere with total organic carbon determinations, samples should be treated to remove inorganic carbon before being analyzed.

FIELD PROCEDURES

Collection

Samples can be collected in glass or plastic containers. A minimum sample size of 25 g is recommended. If unrepresentative material is to be removed from the sample, it should be removed in the field under the supervision of the chief scientist and noted on the field log sheet.

Processing

Samples should be stored frozen and can be held for up to 6 months under that condition. Excessive temperatures should not be used to thaw samples.

LABORATORY PROCEDURES

Analytical Procedures

- Equipment
  - Induction furnace
    e.g., Leco WR-12, Dohrmann DC-50, Coleman CH analyzer, Perkin Elmer 240 elemental analyzer, Carlo-Erba 1106
  - Analytical balance
    0.1 mg accuracy
  - Desiccator
  - Combustion boats
  - 10 percent hydrochloric acid (HCL)
  - Cupric oxide fines (or equivalent material)
  - Benzoic acid or other carbon source as a standard.

- Equipment preparation

- Clean combustion boats by placing them in the induction furnace at 950° C. After being cleaned, combustion boats should not be touched with bare hands.
- Cool boats to room temperature in a desiccator.
- Weigh each boat to the nearest 0.1 mg.

- Sample preparation
  - Allow frozen samples to warm to room temperature.
  - Homogenize each sample mechanically, incorporating any overlying water.
  - Transfer a representative aliquot (5-10 g) to a clean container.

- Analytical procedures
  - Dry samples to constant weight at 70 ± 2°C. The drying temperature is relatively low to minimize loss of volatile organic compounds.
  - Cool dried samples to room temperature in a desiccator.
  - Grind sample using a mortar and pestle to break up aggregates.
  - Transfer a representative aliquot (0.2-0.5 g) to a clean, preweighed combustion boat.
  - Determine sample weight to the nearest 0.1 mg.
  - Add several drops of HCL to the dried sample to remove carbonates. Wait until the effervescing is completed and add more acid. Continue this process until the incremental addition of acid causes no further effervescence. Do not add too much acid at one time as this may cause loss of sample due to frothing. Exposure of small samples (i.e., 1-10 mg) having less than 50 percent carbonate to an HCL atmosphere for 24-48 h has been shown to be an effective means of removing carbonates (Hedges and Stern 1984). If this method is used for sample sizes greater than 10 mg, its effectiveness should be demonstrated by the user.
  - Dry the HCL-treated sample to constant weight at 70 ± 2° C.
  - Cool to room temperature in a desiccator.
  - Add previously ashed cupric oxide fines or equivalent material (e.g., alumina oxide) to the sample in the combustion boat.
  - Combust the sample in an induction furnace at a minimum temperature of 950 ± 10° C.

- Calculations
  - If an ascarite-filled tube is used to capture CO_2, the carbon content of the sample can be calculated as follows:

$$\text{Percent carbon} = \frac{A\,(0.2729)\,(100)}{B}$$

Where:

A = the weight (g) of CO_2 determined by weighing the ascarite tube before and after combustion

B = dry weight (g) of the unacidified sample in the combustion boat

0.2729 = the ratio of the molecular weight of carbon to the molecular weight of carbon dioxide

A silica gel trap should be placed before the ascarite tube to catch any moisture driven off during sample combustion. Additional silica gel should be placed at the exit end of the ascarite tube to trap any water that might be formed by reaction of the trapped CO_2 with the NaOH in the ascarite.

- If an elemental analyzer is used, the amount of CO_2 will be measured by a thermal conductivity detector. The instrument should be calibrated daily using an empty boat blank as the zero point and at least two standards. Standards should bracket the expected range of carbon concentrations in the samples.

QA/QC Procedures

It is critical that each sample be thoroughly homogenized in the laboratory before a subsample is taken for analysis. Laboratory homogenization should be conducted even if samples were homogenized in the field.

Dried samples should be cooled in a desiccator and held there until they are weighed. If a desiccator is not used, the sediment will accumulate ambient moisture and the sample weight will be overestimated. A color-indicating desiccant is recommended so that spent desiccant can be detected easily. Also, the seal on the desiccator should be checked periodically and, if necessary, the ground glass rims should be greased or the "O" rings should be replaced.

It is recommended that triplicate analyses be conducted on one of every 20 samples, or on one sample per batch if less than 20 samples are analyzed. A method blank should be analyzed at the same frequency as the triplicate analyses. The analytical balance should be inspected daily and calibrated at least once per week. The carbon analyzer should be calibrated daily with freshly prepared standards. A standard reference material should be analyzed at least once for each major survey.

DATA REPORTING REQUIREMENTS

Total organic carbon should be reported as a percentage of the dry weight of the unacidified sample to the nearest 0.1 unit. The laboratory should report the results of all samples (including QA replicates, method blanks, and standard reference measurements) and should note any problems that may have influenced sample quality. The laboratory should also provide a summary of the calibration procedure and results (e.g., range covered, regression equation, coefficient of determination).

APPENDIX 2

TEST BORING LOGS

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER MW-16
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 3

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY	
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North - 4757246.377 (m); East – 511679.797 (m)	
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 9/23/03	DATE COMPLETED 9/23/03
	SURFACE ELEVATION 237.748 (m)	
	DEPTH TO FIRST ENCOUNTERED WATER 6 ft.	
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE 26.0'	TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	MW-16

IES BORING LOG (CONTINUATION SHEE

HOLE NUMBER: M 5

PROJECT: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 2 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---		1 3 25 25			Colluvium; CL, clay, silty, low plasticity, brown, soft to firm, v. moist, small angular gravels (10 % + 4) to cobbles	4.5 4.2		
2 ---		4 4 3 5				11.2 5.7 4.4		Sample MW-16A
4 ---		3 5 4 4			Wet to saturated	1.4 0.4 0.5		
6 ---		10 12 15 25				12.8 5.2		Sample MW-16B
8 ---		3 11 12 10			Till; CL, clay, silty, low to moderate plasticity, firm to stiff, wet to saturated	22.3 36.8 5.0		Sample MW-16C
10 ---		22 9 9 14				5.4 2.7		
12 ---		8 12 12 15			Fine sand lenses	3.5 3.9 1.8 1.4		Sample MW-16D
14 ---		21 18 19 22						
16 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: MW-16

TEST BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-16

PROJECT NAME:

GEOLOGIST:

SHEET: 3 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		12			hard, grey, moist	0		
		14				0		
		14				0		
		15				0		
18 ---								
		12						
		15				0		
		14				0		
		15				0		Sample MW-16E
20 ---								
		21						
		18				3.4		
		16				4.4		
		20				11.1		Sample MW-16F
22 ---								
		18				2.5		
		25				3.0		
		25				2.9		
		30/0				1.7		
24 ---								
		22						
		24						
		25				0.1		Sample MW-16G
		43			Total Depth 26 ft.; groundwater at 6 ft.	0		
26 ---								
28 ---								
30 ---								
32 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: MW-16

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER MW-17
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 4

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY	
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North - 4757246.271 (m); East – 511679.367 (m)	
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 9/24/03	DATE COMPLETED 9/25/03
	SURFACE ELEVATION 237.233 (m)	
	DEPTH TO FIRST ENCOUNTERED WATER 6 ft.	
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE 40.0'	TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	MW-17

TES(,ORING LOG (CONTINUATION SHEE

HOLE NUMBER	MV
PROJECT NA	Johnny Cake Road
GEOLOGIST:	R. Moult
SHEET:	2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		Auger to			Colluvium; CL, clay, silty, low plasticity, brown, soft to firm, v. moist, small angular gravels (10 % + 4) to cobbles			
2 ---		24'						
4 ---								
					Wet to saturated			
6 ---								
8 ---					Till; CL, clay, silty, low to moderate plasticity, firm to stiff, wet to saturated			
10 ---								
12 ---								
					Fine sand lenses			
14 ---								
16 ---								

PROJECT NAME: Johnny Cake Road HOLE NO.: MW-17

TES. ORING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-17

PROJECT NAME:

GEOLOGIST:

SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
					hard, grey, moist			
18 ---								
20 ---								
22 ---								
24 ---					Same as above; rock fragments			
		10 18 15 17				0 0		Sample MW-17F
26 ---								
		10 17 22 30				0 0		
28 ---								
		2 7 11 15				0 0		
30 ---								
		9 25 31 28				0.9 0		Sample MW-17G
32 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: MW-17

TEST BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-17

PROJECT NAME:

GEOLOGIST:

SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		10			hard, grey, moist	0		
		26				0		
		33				0.3		Sample MW-17H
		21				0		
34 ---								
		9						
		35				0		
		34				0		
		28				0		
36 ---								
		14						
		37						
-		29				0		
		32				0.1		Sample MW-17I
38 ---								
		12				0		
		42				0		
		48				0		
		37				0		Sample MW-17J
40 ---					Total Depth 40 feet; groundwater at 6 ft.			
42 ---								
44 ---								
46 ---								
48 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: MW-17

TEST BORING LOG

AGENCY	
HOLE NUMBER	MW-18
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 3
PROJECT NAME	Johnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757240.290 (m); East – 511657.038 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	9/26/03
DATE COMPLETED	9/29/03
SURFACE ELEVATION	237.444 (m)
DEPTH TO FIRST ENCOUNTERED WATER	9 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	25.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	MW-18

TES ORING LOG (CONTINUATION SHEE

HOLE NUMBER: MV 3

PROJECT: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 2 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		2			Colluvium; CL, clay, silty, low plasticity,	0		
		3			brown, soft to firm, v. moist, small angular	0		
		3			gravels (5 % + 4) to cobbles	0		
		3				0		
2								
		3				0		
		3				0		
		4				0		
		4				0		Sample MW-18A
4								
		2						
		2				0		
		2			Wet	0		
		2				0		
6								
		1				0		
		1				0		
		2				0		
		2				0		Sample MW-18B
8								
		2			Colluvium; CL, clay, silty, low plasticity,	4.5		Sample MW-18C
		6			mottled, brown to black, stiff to hard, moist	1.5		
		8			gravels (10 % + 4)	0.4		
		13				0.6		
10								
		4				2.6		
		22				0.7		
		22				0.7		
		25				0.7		
12								
		3						
		11			Till; ML, silt, low plasticity, fine sand	0.3		
		12			Lenses, firm to stiff, saturated	1.3		Sample MW-18D
		11				0.7		
14								
		11						
		13				0		
		14				0		
		13				0		
16								

PROJECT NAME: Johnny Cake Road

HOLE NO.: MW-18

TES( )ORING LOG (CONTINUATION SHEET)

PROJECT NAME:	GEOLOGIST:	HOLE NUMBER	MW-18
		SHEET:	3 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		11			hard, grey, wet to saturated			
		12						
		12				0		
		14				0		
18 ---								
		8						
		12				0		Sample MW-18E
		11				0		
		14				0		
20 ---								
		9						
		14						
		18				0		
		18				0		
22 ---								
		16						
		20						
		16				0		
		22				0		Sample MW-18F
24 ---								
					Total Depth 25 ft.; groundwater at 9 ft.			
26 ---								
28 ---								
30 ---								
32 ---								

PROJECT NAME: Johnny Cake Road **HOLE NO.:** MW-18

TEST BORING LOG

AGENCY		HOLE NUMBER MW-19
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 3

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757224.257 (m); East – 511624.344 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 9/29/03 / DATE COMPLETED 9/29/03
	SURFACE ELEVATION 239.616 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 24.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	MW-19

TES(BORING LOG (CONTINUATION SHEE

HOLE NUMBER	M[illegible]9

PROJECT:	Johnny Cake Road	GEOLOGIST:	R. Moult	SHEET:	2 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		1			Colluvium; CL, clay, silty, low plasticity, brown, soft to firm, v. moist, small angular gravels (10 % + 4)	0		
		2				0		
		2				0		
		3				0		Sample MW-19A
2								
		2				0		
		4				0		
		4				0		
		5				0		
4								
		1				0		
		1				0		
		2				0		
		2				0		Sample MW-19B
6								
		2						
		2				0		
		3				0		
		3				0		Sample MW-19C
8					Till; CL, clay, silty, low to moderate plasticity, firm to stiff, wet to saturated			
		5				0		
		8				0		
		11				0		
		12				0		
10								
		7						
		8						
		7				0		
		10				0		
12								
		10						
		8						
		11				0		
		13				0		Sample MW-19D
14								
		5						
		12						
		15						
		9				0		
16								

PROJECT NAME:	Johnny Cake Road	HOLE NO.:	MW-19

TE(ƎORING LOG (CONTINUATION SHEET)

PROJECT NAME:	GEOLOGIST:	HOLE NUMBER: MW-19
		SHEET: 3 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		15			hard, grey, moist			
		14						
		13						
		16				0		Sample MW-19E
18 ---								
		8						
		8				0		
		5				0		
		12				0		
20 ---								
		10				0		
		19				0		
		18						
		17				0		
22 ---								
		12				0		
		15				0		
		22				0		
		25				0		Sample MW-19F
24 ---					Total Depth 24 feet; groundwater at 6 ft.			
26 ---								
28 ---								
30 ---								
32 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: MW-19

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER MW-20
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 3

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757280.234 (m); East – 511634.312 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 9/30/03 — DATE COMPLETED 10/01/03 SURFACE ELEVATION 233.239 (m) DEPTH TO FIRST ENCOUNTERED WATER 6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 24.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	MW-20

BORING LOG (CONTINUATION SHEET)

PROJECT: Johnny Cake Road **GEOLOGIST:** R. Moult **HOLE NUMBER:** M. .0 **SHEET:** 2 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		1			Colluvium; CL, clay, silty, low plasticity, brown, soft to firm, v. moist, small angular gravels (5 % + 4)			
		2						
		3				0		
		3				0		
2								
		3						
		3						
		4				0		
		5				0		Sample MW-20A
4								
		3						
		3						
		3				0		
		3				0		
6								
		4				0		
		3				0		
		3				0		
		3				0		Sample MW-20B
8					Thin sand lense, micaceous, saturated			
		1				0		
		4				3.0		
		4				3.4		Sample MW-20C
		4				1.7		
10								
		1				0		
		3			Till; CL, clay, silty, low to moderate plasticity, firm to stiff, wet to saturated			
		4				0.5		
		5				0.8		
12								
		14				0		
		15				0		
		17				0		
		21				0		
14								
		5						
		9				5.3		Sample MW-20D
		9				5.0		
		8				5.2		
16								

TE(BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: MW-20

PROJECT NAME:

GEOLOGIST:

SHEET: 3 of 3

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		22			hard, grey, moist , rock fragments			
		22						
		13						
		15						
18 ---								
		18						
		16				3.8		Sample MW-20E
		15				1.3		
		12				0		
20 ---					Cobbles at 20 ft.			
		95						
		25						
		33				0		
		53				0		
22 ---								
		31						
		31						
		49						
		52						
24 ---					Total Depth 24 feet; groundwater at 6 ft.			Sample MW-20F
26 ---								
28 ---								
30 ---								
32 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: MW-20

TEST BORING LOG

AGENCY		HOLE NUMBER JCRS-0029
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757255.629 (m); East – 511618.363 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/1/03 / DATE COMPLETED 10/1/03
	SURFACE ELEVATION 234.399 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS – 0029

TES BORING LOG (CONTINUATION SHEE

PROJEC	Johnny Cake Road	GEOLOGIST:	R. Moult	HOLE NUMBER	JC - 0029
				SHEET:	2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		2			Colluvium; CL, clay, sandy, low plasticity, brown, soft to firm, v. moist, small angular gravels (5 % + 4)	0		
		4				0		
		3						
		4						
2								
		7				0.1		Sample JCRS-0029A
		6						
		5						
		4						
4								
		2						
		3				0		
		3				0		
		4				0		
6								
		1				0		
		2				0		
		2				0		
		3				0		Sample JCRS-0029B
8								
		4				1.3		
		4			Till; ML, silt, low plasticity, grey, hard, wet	0.9		Sample JCRS-0029C
		8				0.6		
		8				0.4		
10								
		10				0.3		
		15				0.4		
		16				0.3		
		18				0.1		
12					Total Depth 12 ft. Groundwater @ 6 ft.			
14								
16								

PROJECT NAME:	Johnny Cake Road	HOLE NO.:	JCRS-0029

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0030
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757260.770 (m); East – 511637.922 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/1/03 — DATE COMPLETED 10/1/03 SURFACE ELEVATION 235.899 (m) DEPTH TO FIRST ENCOUNTERED WATER 6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0030

TES BORING LOG (CONTINUATION SHEE

PROJECT: Johnny Cake Road | GEOLOGIST: R. Moult | HOLE NUMBER: JC - 0030 | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---		2 2 2 3			Fill; sand and gravel Colluvium; CL, clay, sandy, low plasticity, brown, soft to firm, v. moist, small angular gravels (5 % + 4)			
2 ---		5 5 6 7				2.8 6.4		Sample JCRS-0030A
4 ---		7 5 3 4				2.9 0.6 1.3		
6 ---		1 1 3 4				2.9 2.1 0.6 1.6		Sample JCRS-0030B
8 ---		1 5 6 10				1.3 1.4		
10 ---		10 15 16 30				0.4 0 1.4 1.8		Sample JCRS-0030C
12 ---					Total Depth 12 ft. Groundwater @ 6 ft.			
14 ---								
16 ---								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0030

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0031
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757263.007 (m); East – 511645.359 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/2/03 — DATE COMPLETED 10/2/03
	SURFACE ELEVATION 235.906 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 7 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS SCALE: Not To Scale

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0031

TES[illegible] BORING LOG (CONTINUATION SHEE[illegible]

PROJEC[illegible]: Johnny Cake Road	GEOLOGIST: R. Moult	HOLE NUMBER: JC[illegible]-0031	SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0					Fill; sand and gravel			
		1						
		2				0.3		
		3			Colluvium; CL, clay, sandy, low plasticity, brown, soft to firm, v. moist, small angular gravels (5 % + 4)	0.5		Sample JCRS-0031A
		2				0		
2								
		2						
		2						
		3				0		
		3				0.3		
4								
		2						
		3						
		4						
		6						
6					Wet to saturated			
		4						
		4						
		4				0		
		4				1.4		Sample JCRS-0031B
8								
		2				0		
		2				0.5		
		1				0		
		2				1.6		
10								
		8				0.7		
		11				1.2		
		11				1.1		
		15				2.2		Sample JCRS-0031C
12					Total Depth 12 ft. Groundwater @ 7 ft.			
14								
16								

PROJECT NAME: Johnny Cake Road HOLE NO.: JCRS – 0031

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0032
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757291.190 (m); East – 511675.318 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/2/03 — DATE COMPLETED 10/2/03
	SURFACE ELEVATION 230.511 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0032

TES ,ORING LOG (CONTINUATION SHEE

HOLE NUMBER JC - 0032

PROJECT: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
	1				Colluvium; CL, clay, sandy, low plasticity,			
	2				brown, soft to firm, v. moist, small angular			
	2				gravels (5 % + 4)	1.8		
	2					1.8		
2 ---								
	5							
	10							
	4							
	4					5.8		
4 ---								
	4					2.3		
	18				Thin sand lense, micaceous	2.2		Sample JCRS-0032A
	11					2.0		
	11					2.0		
6 ---					Wet to saturated			
	11					2.0		
	10					1.4		
	14					15.4		Sample JCRS-0032B
	17					5.1		
8 ---								
	15					11.0		
	14				Till; ML, silt, low plasticity, grey, hard, wet	2.7		
	18				to saturated			
	20					3.8		
10 ---								
	12							
	20							
	20					4.2		Sample JCRS-0032C
	50					1.2		
12 ---					Total Depth 12 ft. Groundwater @ 6 ft.			
14 ---								
16 ---								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0032

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0033
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 4

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757277.829 (m); East – 511681.285 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/2/03 — DATE COMPLETED 10/2/03 SURFACE ELEVATION 232.276 (m) DEPTH TO FIRST ENCOUNTERED WATER 4 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 40.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0033

BORING LOG

(CONTINUATION SHEET)

HOLE NUMBER: JC - 0033

PROJECT: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		0			Colluvium; CL, clay, sandy, low plasticity, brown, soft to firm, v. moist, small angular gravels (5 % + 4)	0		
		1				0		
		2				0.1		
		1						
2								
		2						
		3				2.2		
		4			Wet to saturated	1.6		
		4				2.3		Sample JCRS-0033A
4								
		4						
		5						
		8				0		
		9				0		
6								
		10						
		12						
		12						
		15				0		Sample JCRS-0033B
8								
		7						
		7			Till; ML, silt, low plasticity, grey, hard, wet to saturated	10.4		Sample JCRS-0033C
		7				2.2		
		7				2.0		
10								
		2						
		4				3.3		
		6				4.7		
		12				1.4		
12								
		7				3.4		
		11				0.5		
		15				0.3		
		22				0.3		
14								
		11						
		16						
		14				6.6		
		13				8.2		Sample JCRS-0033D
16								

TE BORING LOG (CONTINUATION SHEET)

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

HOLE NUMBER: JCRS-0033

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		15						
		11			Till; ML, silt, low plasticity, grey, hard, wet to saturated			
		11				10.4		Sample JCRS-003E
		9				1.6		
18 ---								
		18				0		
		12				0		
		3						
		5						
20 ---								
		1				0		
		5						
		5						
		5						
22 ---					Fine grained sand lenses			
		5						
		14						
		13						
		13						
24 ---						0		
		5				0		
		11				0		
		14				0		
		10				0		
26 ---								
		9				0		
		15				0		
		19						
		22						
28 ---								
		2				0		
		5				0		Sample JCRS-0029F
		5						
		10						
30 ---								
		5						
		8						
		9						
		8						
32 ---								

TE BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0033

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		7						
		7				0		
		10				0		
		8				0		
34								
		8				0		
		10				0		
		23				0		
		23				0		
36								
		15			Fine grained sand lense (6 in.)	0		
		25				0		
		24				0.9		Sample JCRS-0033G
		27				0		
38								
		8				0		
		15				0		
		22				0		
		30				0		
40								
					Total Depth 40 feet Groundwater at 4 feet			
42								
44								
46								
48								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS-0033

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0034
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 4

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757266.103 (m); East – 511668.529 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/2/03 — DATE COMPLETED 10/3/03
	SURFACE ELEVATION 235.858 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 4 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 40.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS – 0034

TES 3ORING LOG (CONTINUATION SHEE

PROJEC : Johnny Cake Road	GEOLOGIST: R. Moult	HOLE NUMBER: JC - 0034	SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		1			Colluvium; CL, clay, sandy, low plasticity,	2.0		Sample JCRS-0034A
		2			brown, soft to firm, v. moist, small angular	1.6		
		2			gravels (5 % + 4)			
		3						
2 ---								
		2				1.2		
		2				1.4		
		2			Wet to saturated	1.2		
		3				1.4		
4 ---								
		3				0		
		3				0		
		3				0		
		5						
6 ---								
		4				0		
		5				0		
		6				0		
		8				0		Sample JCRS-0034B
8 ---								
		10				0		
		10			Till; SM, sand, fine grained, well sorted,	0		
		11			silty, grey, medium dense, saturated	0		
		12				0		
10 ---								
		6			CL/ML; clay, silty, low plasticity, grey,	0.1		
		11			wet to saturated	0.3		Sample JCRS-0034C-1
		10				0		
		14				0.1		
12 ---								
		8						
		13						
		12				0		
		11				0		
14 ---								
		1						
		10				0		
		12				0		
		16				0		Sample JCRS-0034D-1
16 ---								

TE(BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0034

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		8				0		
		10				0		
		12				0		
		14				0		
18 ---								
		14						
		15				1.2		
		14				0.9		
		14				1.2		
20 ---								
		8						
		12				1.1		
		14				1.4		
		13				1.1		
22 ---					Gravel lense (22 – 23 ft.)			
		18				1.8		
		16				0.5		
		25				3.1		Sample JCRS-0034E-1
		30				1.4		
24 ---								
		15						
		32						
		49				0		
		45				32.5		
26 ---					CL; clay, low to moderate plasticity, grey, Hard, moist			
		33				1.4		
		32				1.1		
		30				1.1		
		38				0		
28 ---								
		18				5.5		
		22				10.2		
		22				2.5		
		30				0		
30 ---								
		19				41.0		Sample JCRS-0034F-1
		8				11.4		
		9				5.3		
		11				0.9		
32 ---								

TES BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0034

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		14				0		
		21				0		
		33				0		
		32				0		
34 ---								
		13				0		
		21			Sand lense, micaceous	0		
		32						
		60						
36 ---					CL; clay, moderate plasticity, grey to black			
		25				0		
		25				0		
		50				0		
		52				0		
38 ---								
		15						
		20						
		15						
		12				0		Sample JCRS-0034G-1
40 ---								
					Total Depth 40 feet			
					Groundwater at 4 feet			
42 ---								
44 ---								
46 ---								
48 ---								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS-0034

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0035
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 4

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757256.340 (m); East – 511641.826 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/3/03 — DATE COMPLETED 10/6/03
	SURFACE ELEVATION 235.969 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 8 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 40.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0035

TE BORING LOG (CONTINUATION SHEET)

HOLE NUMBER	JC - 0035
PROJECT:	Johnny Cake Road
GEOLOGIST:	R. Moult
SHEET:	2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		7			Fill; Sand and Gravel	0		
		8						
		9						
		10				0		
2								
		7			Colluvium; CL, clay, sandy, low plasticity,	0		
		5			brown, soft to firm, v. moist, small angular	0		Sample JCRS-0035A-1
		5			gravels (5 % + 4)			
		7						
4								
		2				0		
		5				0		
		5				0		
		7				0		
6								
		2						
		4				0		
		2				0		
		4			Wet to saturated	0		Sample JCRS-0035B-1
8								
		3				0		
		4				0		
		2				0		
		3				0		
10								
		1				0		
		2				0		
		4				0		
		3				0		Sample JCRS-0035C-1
12								
		3			SC; sand, clayey, loose, yellow-brown, saturated	1.5		Sample JCRS-0035D-1
-		3				0.7		
		3				0.3		
		4						
14								
		3			CL, clay, silty, sandy, brown, soft to firm, saturated	1.1		
		5				1.3		
		5				0.5		
		5						
16								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS - 0035

TES BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0035

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		4				1.9		
		4				0.5		
		7			Till; CL/ML, clay, silty, low to moderately	0.5		
		7			Plastic, grey, sand lenses	0.3		
18 ---								
		4				0.7		Sample JCRS-0035E-1
		12				0.5		
		17				0.1		
		17				0.3		
20 ---								
		10				0		
		12				0.3		
		12				0.1		
		15						
22 ---								
		17				0		
		21				0.1		
		22						
		26						
24 ---								
		3				2.4		
		6				2.5		
		13				1.8		
		19				0.8		
26 ---								
		10				1.0		
		17				3.1		
		30				3.5		
		50				1.0		
28 ---								
		15						
		13						
		25				9.6		Sample JCRS-0035F
		22				0		
30 ---								
		9				0		
		11			Sand lense	0		
		16				0		
		20				0		
32 ---								

TES. BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0035

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		10						
		12				0		
		17				0		
		21						
34								
		10						
		21				0		
		22						
		25				0		
36					ML; silt, low plastic, grey, hard, moist, Gravel lense (36-37')			
		25						
		21						
		20				0		
		20				0		
38								
		11						
		18						
		25				0		
		25				0		Sample JCRS-0035G
40								
					Total Depth 40 feet Groundwater at 8 feet			
42								
44								
46								
48								

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0036
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 4
PROJECT NAME	Johnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757242.478 (m); East – 511692.323 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/6/03
DATE COMPLETED	10/7/03
SURFACE ELEVATION	236.805 (m)
DEPTH TO FIRST ENCOUNTERED WATER	1 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	40.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

TE ORING LOG (CONTINUATION SHE

HOLE NUMBER: JC – 0036

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		1			Colluvium; SC, sand, clayey, low plasticity, yellow brown, angular to sub-angular, loose, saturated	0.3		Sample JCRS-0036A
		1				0		
		2						
		2						
2 ---								
		2			Colluvium; CL, clay, sandy, low plasticity, brown, firm, saturated, organics			
		3				0		
		5				0		
		6				0		
4 ---								
		7				0		
		8				0		
		11						
		12						
6 ---								
		11				0		
		12				0		Sample JCRS-0036B
		13						
		15						
8 ---								
		7				0.5		Sample JCRS-0036C
		14				0.2		
		12				0		
		7				0		
10 ---								
		7				0		
		7			SM, sand, silty, micaceous, green-brown, medium dense, saturated	0		
		8				0.1		
		6				0.1		
12 ---					Till; CL/ML, clay, silty, low plasticity, grey, very stiff, wet			
		10						
-		14				0		
		15				0		
		12				0		
14 ---								
		22				0.4		
		24				0.1		
		23				0.1		
		23				0.1		Sample JCRS-0036D
16 ---								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS – 0036

TE BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0036

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		25 31 35 48			Till; CL/ML, clay, silty, low plasticity, grey hard, wet, gravels to cobbles (5% + 4, 4" Max.)	0.2 0.2 0.1		
18 ---								
		20 25 30 35				0.3 0.9		Sample JCRS-0036E
20 ---								
		2 6 6 6			Wet to saturated	0		
22 ---								
		4 6 7 10			Till; CL, clay, silty, moderate plasticity, hard, moist to wet	0 0		
24 ---								
		24 25 29 27				0 0 0 0		
26 ---								
		38 25 35 30			Till: CL/CH, clay, moderate to high plasticity, grey, hard, v. moist	0 0		
28 ---								
		22 25 25 27				1.4 2.9 1.8 2.2		
30 ---								
		12 19 22 38				2.9 2.2 3.8 1.6		Sample JCRS-0036F
32 ---								

TE(BORING LOG (CONTINUATION SHEET)

HOLE NUMBER JCRS-0036

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		28 40 48			Till: CL, clay, low plasticity, grey, hard, moist to wet	7.7		Sample JCRS-0036G
34								
		25 35 30 20				2.0		
36								
		35 49 60 48				2.0 0.9 0.5 0.5		
38								
		35 40 60 50/10"			SM, sand, silty, fine grained, grey, saturated	0 0 0 0		
40								
					Total Depth 40 feet Groundwater at 1 foot			
42								
44								
46								
48								

TEST BORING LOG

AGENCY		HOLE NUMBER JCRS-0037
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757236.415 (m); East – 511694.202 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/7/03; DATE COMPLETED 10/7/03
	SURFACE ELEVATION 237.907 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 2 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0037

TE BORING LOG (CONTINUATION SHE

HOLE NUMBER: JC. . - 0037

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0		1 2 1 2			Colluvium; CL, clay, sandy, low plasticity, Green-brown, soft, saturated, organics	0.3		Sample JCRS-0037A
2		3 4 4 7				0 0 0		
4		10 10 13 13			SM; sand, silty, fine grained, subround, Green-brown, loose, saturated	0 0 0		
6		10 13 15 16				0 0 0		Sample JCRS-0037B
8		35 20 75 50				0 0 0 0		
10		30 45 45 45				0 0 0 0		Sample JCRS-0037C
12					Total Depth 12 ft. Groundwater @ 2 ft.			
14								
16								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS - 0037

TEST BORING LOG

AGENCY		**HOLE NUMBER** JCRS-0038
COMPANY NAME Weston Solutions	**DRILL SUBCONTRACTOR** SJB Services	**SHEET** 1 of 4

PROJECT NAME Johnny Cake Road	**SITE LOCATION** Herkimer County, NY
NAME OF DRILLER Bill Bosworth	**HOLE LOCATION** North – 4757225.848 (m); East – 511692.692 (m)
NAME OF GEOLOGIST R. Moult	**SIGNATURE OF GEOLOGIST**
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	**DATE STARTED** 10/7/03 / **DATE COMPLETED** 10/8/03
	SURFACE ELEVATION 239.362 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 1 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	**DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED**
DEPTH DRILLED INTO BEDROCK	**OTHER WATER LEVEL MEASUREMENTS (SPECIFY)**
TOTAL DEPTH OF HOLE 40.0'	**TOTAL FLUID LOSSES**

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0038

TE(BORING LOG (CONTINUATION SHE(

HOLE NUMBER: JC - 0038

PROJE(E: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		1 1 1 1			Colluvium; SC, sand, clayey, low plasticity, mottled, brown to grey, v. loose to medium dense, organics, saturated	0 0 0		
2 ---								
		1 4 11 15			Colluvium; CL, clay, sandy, low plasticity, brown, firm, saturated, organics	0		
4 ---								Sample JCRS-0038A
		6 7 8 9				0 0 0 0		
6 ---								
		10 12 14 11			Cobbles	8.1		Sample JCRS-0038B
8 ---								
		16 17 18 30			Till; clay, silty, low plasticity, grey, stiff to hard, moist to wet	0 0 2.5 0.3		Sample JCRS-0038C
10 ---								
		10 16 12 12				0 0 0		
12 ---								
		10 8 15 12				0.3 0 0 0		
14 ---								
		12 20 25 23				0 1.2 0 0		Sample JCRS-0038D
16 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS - 0038

TE BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0038

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		12			Till; CL/CH, clay, moderately to highly plastic, grey, hard, damp	0		
		23				0		
		45				0		
		50				0		
18 ---								
		38				0		
		50				0		
		48				0.1		Sample JCRS-0038E
		50				0		
20 ---								
		50				0		
		50						
		50/3"						
22 ---								
		40				0		
		40				0		
		50				0		
		60				0		
24 ---								
		36						
		55				0		
		61				0		
		88				0		
26 ---								
		31				0		
		33				0		
		35				0		
		31				0		
28 ---								
		14				0.4		
		27						
		24						
		20						
30 ---								
		40				1.0		
		50				2.3		
		55				2.5		
		59				2.7		Sample JCRS-0038F
32 ---								

HOLE NUMBER	JCRS-0038
PROJECT NAME:	Johnny Cake Road
GEOLOGIST:	R. Moult
SHEET:	4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		22			Till: CL/ML, clay, silty, low plasticity, grey, hard, moist	0		
		27				0		
		33				0		
		35						
34 ---								
		40				1.5		
		80				13.1		
		51						
		42						
36 ---								
		30						
		25						
		45						
		40				16.1		Sample JCRS-0038G
38 ---								
		25						
		35						
		61						
		76				0		
40 ---								
					Total Depth 40 feet Groundwater at 1 foot			
42 ---								
44 ---								
46 ---								
48 ---								

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0039
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 4
PROJECT NAME	Johnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757232.055 (m); East – 511681.332 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/8/03
DATE COMPLETED	10/8/03
SURFACE ELEVATION	239.301 (m)
DEPTH TO FIRST ENCOUNTERED WATER	7 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	40.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0039

...ORING LOG (CONTINUATION SHEET)

HOLE NUMBER	- 0039
PROJECT NAME:	Johnny Cake Road
GEOLOGIST	R. Moult
SHEET:	2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		4			Colluvium; CL, clay, sandy, low plasticity,	0		
		8			brown, soft to firm, v. moist, small angular	0		
		9			gravels (5 % + 4)			
		7						
2 ---								
		6				0		
		12				0		Sample JCRS-0039A
		7						
		6						
4 ---								
		11				0		
		6				0		
		5				0		
		6				0		Sample JCRS-0039B
6 ---								
		4						
		5						
		2						
		1			Wet to saturated			
8 ---								
		1						
		4						
		3						
		4						
10 ---								
		9				0.2		
		14			Till; clay, silty, low plasticity, grey, stiff to	0.8		
		12			Hard, wet	0.9		
		13				1.0		Sample JCRS-0039C
12 ---								
		12				2.2		
-		16			Sand lense	4.5		Sample JCRS-0039D
		15						
		17				3.7		
14 ---					Cobbles			
		21						
		20						
		23						
		21						
16 ---								

PROJECT NAME: Johnny Cake Road **HOLE NO.:** JCRS - 0039

TE(BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0039

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		25						
		30						
		31						
		35				0		
18 ---								
		22				0		
		14				0		
		12				0		
		15				0		
20 ---								
		12				0		
		24						
		25						
		23						
22 ---								
		15				4.3		
		51				2.0		Sample JCRS-0039E
		42						
		31						
24 ---								
		20				7.9		Sample JCRS-0039F
		27				2.7		
		22						
		23						
26 ---								
		35				0.1		
		31				0.1		
		21						
		21						
28 ---								
		32			Till; CL, clay, silty, moderately plastic,	3.1		
		52			Grey, hard, damp to moist, rock fragments			
		48						
		37						
30 ---								
		20						
		35				4.4		
		42				0.6		
		32				0.1		
32 ---								

TE BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0039

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		20 24 43 44			Till; CL, clay, silty, moderately plastic, Grey, hard, damp to moist, rock fragments	0.2 0.7		Sample JCRS-0039G
34 ---								
		10 12 19 21				0 0.8 0.1		
36 ---								
		15 12 19 20				0 0.2 0.4		
38 ---								
		16 14 12 22				0 0 0 0		
40 ---								
					Total Depth 40 feet Groundwater at 7 feet			
42 ---								
44 ---								
46 ---								
48 ---								

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0040
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 4
PROJECT NAME	Johnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757243.501 (m); East – 511666.606 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/9/03
DATE COMPLETED	10/9/03
SURFACE ELEVATION	237.493 (m)
DEPTH TO FIRST ENCOUNTERED WATER	8 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	40.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0040

TE(ƆORING LOG (CONTINUATION SHEE

HOLE NUMBER JC - 0040

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		1			Colluvium; CL, clay, sandy, low plasticity,	0		
		1			brown, soft to firm, v. moist, small angular	0		
		1			gravels (5 % + 4)	0		
		2						
2								
		1				0		
		3				0		Sample JCRS-0040-A
		4						
		9						
4								
		12				0		
		10						
		15						
		20						
6								
		10				0		
		15				0		
		12				0		
		16			Wet to saturated	0		Sample JCRS-0040-B
8								
		22				0		
		23				0		
		21				0		
		24						
10								
		40				6.6		Sample JCRS-0040-C
		44			Till; CL/ML, clay, silty, low plasticity, grey,	2.2		
		50			Hard, moist	1.3		
		41				0.8		
12								
		40						
		46						
		43				0.5		
		60				0.6		
14					ML; silt, sandy, low plasticity, grey, stiff,			
		14			saturated	1.4		Sample JCRS-0040-D
		15				0.7		
		12				0.4		
		11				0.2		
16								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0040

TE(BORING LOG

(CONTINUATION SHEET)

HOLE NUMBER: JCRS-0040

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
16								
		8			ML; silt, sandy, low plasticity, grey, stiff, saturated			
		12						
		10				1.0		
		9				2.1		
18								
		21						
		30				2.4		Sample JCRS-0040-E
		32				1.0		
		30				1.1		
20								
		33						
		34						
		36				0		
		30				1.8		
22								
		25						
		26						
		37				0.1		
		29				0.3		
24					CL/ML; clay, silty, low to moderate plasticity, hard, wet			
		41			Sand lense 25.5' – 26'; SM, sand, silty, poorly graded, dense, saturated	0.4		
		36						
		34						
		25						
26								
		17				1.1		
		26				0.4		
		39						
		54						
28								
		15			Till; CL, clay, silty, moderately plastic, Grey, hard, damp to moist, rock fragments	0		
		24				3.5		Sample JCRS-0040-F
		36				1.4		
		44						
30								
		18						
		25				0		
		38				0.5		
		52				0.3		
32								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS-0040

TE BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0040

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
32		30 21 34 33			Till; CL, clay, silty, moderately plastic, Grey, hard, damp to moist, rock fragments	0 0		
34		30 25 35 32				0 0 0.2		
36		25 35 30 29				0.1 0.3		
38		31 45 71 77				0.6 0.7		Sample JCRS-0040-G
40					Total Depth 40 feet Groundwater at 8 feet			
42								
44								
46								
48								

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0041
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 4

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757233.112 (m); East – 511653.415 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED: 10/9/03 — DATE COMPLETED: 10/9/03 SURFACE ELEVATION 238.946 (m) DEPTH TO FIRST ENCOUNTERED WATER 8 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 40.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0041

TE BORING LOG (CONTINUATION SHEE

HOLE NUMBER: JC - 0041

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		4			Colluvium; CL, clay, sandy, low plasticity, brown, soft to firm, v. moist, small angular gravels (5 % + 4)	0.1		
		4				0.1		
		3				0.1		
		4						
2								
		9				0.3		Sample JCRS-0041-A
		7				0.1		
		7				0 1		
		6				0		
4								
		4						
		4				0.2		
		3				0		
		7				0.4		Sample JCRS-0041-B
6								
		4				0		
		3						
		5						
		8			Wet to saturated			
8								
		5				3.3		
		7				1.7		
		6				8.4		Sample JCRS-0041-C
		7				10.5		
10								
		4				1.4		
		7				2.8		
		6				0.3		
		5						
12					Sand lense from 12' – 13.5'			
		4				0.3		
		9				0.3		
		16			Till; CL/ML, clay, silty, low plasticity, grey,	0.3		
		18			Hard, moist	0.1		
14								
		15				1.5		Sample JCRS-0041-D
		14				0.7		
		20						
		19						
16								

TE[illegible] BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0041

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
16								
		13			Till: ML, silt, sandy, low plasticity, grey,	0		
		21			saturated	0		
		22				0		
		23				0		
18								
		13			Cobbles	1.4		
		25				1.6		Sample JCRS-0041-E
		17				1.4		
		17				0.3		
20								
		9				0		
		11				0.1		
		12				0.1		
		12				0		
22					Till; CL/ML, clay, silty, low to moderate			
		15			plasticity, hard, wet	0		
		10				0.1		
		14				0.1		
		15				0		
24								
		14				0.1		
		16				1.5		
		17				0		
		12				0		
26								
		17				0		
		22						
		23						
		27						
28								
		24				0		
		29				0		
		30						
		35						
30								
		37				4.0		
		50				5.6		Sample JCRS-0041-F
		100						
		75						
32								

TE . BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0041

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
32								
		34			Till; CL, clay, silty, moderately plastic,	0.2		
		29			Grey, hard, damp to moist, rock fragments	0.4		
		34				0.3		
		23						
34								
		24				0.5		
		20				0.7		Sample JCRS-0041-G
		15				0.5		
		12				0.1		
36								
		20						
		25						
		19						
		14				0.1		
38								
		13						
		13				0.2		
		15				0.1		
		16						
40								
					Total Depth 40 feet			
					Groundwater at 8 feet			
42								
44								
46								
48								

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0042
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 4
PROJECT NAME	Johnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757213.058 (m); East – 511657.582 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/10/03
DATE COMPLETED	10/10/03
SURFACE ELEVATION	240.514 (m)
DEPTH TO FIRST ENCOUNTERED WATER	8 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	40.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0042

TE BORING LOG (CONTINUATION SHEE

HOLE NUMBER: JC - 0042

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		2			Colluvium; CL, clay, sandy, low plasticity, brown, firm to stiff, moist to wet	0		
		6						
		9						
		9						
2								
		2						
		6				11.0		
		12				14.9		Sample JCRS-0042-A
		12				14.5		
4								
		9				1.4		
		7				1.1		
		8						
		9			Colluvium; SC, sand, clayey, low plasticity, small angular gravels, medium dense, wet to saturated			
6								
		5				14.2		
		10				300		Sample JCRS-0042-B
		32				98		
		61						
8								
		15				0		
		20				0		
		13						
		18						
10								
		5				0		
		11				0		
		9			Till; CL/ML, clay, silty, low plasticity, grey, very stiff, wet	0		
		13				0		Sample JCRS-0042-C
12								
		11				0		
		12				0		
		11				0		
		13				0		
14								
		10				0		
		15				0		
		14						
		10						Sample JCRS-0042-D
16								

TEST BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0042

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 3 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
16								
		10			Till; CL/ML, clay, silty, low plasticity, grey	0		
		8			hard, wet, gravels (5% + 4, 4")	0		
		25				0		
		10						
18								
		5				0		
		9				0		
		16						
		14						
20								
		6				0		
		9						
		12						
		17						
22					Sand lenses; fine grained, poorly graded,			
		14			Saturated from 23 to 29 feet	0		Sample JCRS-0042-E
		15						
		12						
		20						
24								
		10				0		
		12				0		
		14				0		
		17				0		
26								
		15				0		
		14				0		
		20				0		
		10				0		
28								
		11				0		
		10			Till: CL, clay, silty, low to moderate	0		
		14			plasticity, grey, hard, v. moist to wet	0		
		22				0		
30								
		8				0		
		6				0		
		9				0		
		20				0		Sample JCRS-0042-F
32								

TE . BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0042

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 4 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
32								
		15			Till: CL/ML, clay, silty, as described	0		
		12				0		
		20				0		
		24				0		
34								
		6				0		
		12				0		
		20				0		
		32				0		
36								
		10				0		
		15				0		
		30				0		
		35						
38								
		9				0		
		19				0		Sample JCRS-0042-G
		24						
		35						
40								
					Total Depth 40 feet Groundwater at 8 feet			
42								
44								
46								
48								

PROJECT NAME: Johnny Cake Road HOLE NO.: JCRS-0042

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0043
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 2
PROJECT NAME	Johnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757220.914 (m); East – 511671.142 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/10/03
DATE COMPLETED	10/10/03
SURFACE ELEVATION	240.336 (m)
DEPTH TO FIRST ENCOUNTERED WATER	5 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	12.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

CT	HOLE NO.
Johnny Cake Road	JCRS - 0043

TE(3ORING LOG (CONTINUATION SHE(

HOLE NUMBER - 0043

PROJE(ΛE: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		2			Colluvium; clay, sandy, low plasticity,	0		
		2			soft to firm, gravels (5% + 4); v. moist to	0		
		2			wet	0		
		3						
2								
		4				0		
		5				0		Sample JCRS-0043-A
		5						
		4						
4								
		9				0		
		10				0		
		13				0		
		12			Angular gravels (15 – 20% + 4, 2" max)	0		
6								
		10				0		
		25			Wet to saturated	0		Sample JCRS-0043-B
		13						
		5						
8								
		1				0		
		2				0		
		5						
		9						
10								
		23				0		
		22				0		
		15				0		
		18			Till; CL/ML; clay, silty, low plasticity, grey,	0		Sample JCRS-0043-C
12					Hard, v. moist to wet			
					Total depth 12.0 feet			
					Groundwater at 5 feet			
14								
16								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0043

TEST BORING LOG

AGENCY		HOLE NUMBER JCRS-0044
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME ɔhnny Cake Road	SITE LOCATION Herkimer County, NY
·AME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757223.306 (m); East – 511677.379 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/10/03; DATE COMPLETED 10/10/03
	SURFACE ELEVATION 241.069 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 5 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

CT	HOLE NO.
Johnny Cake Road	JCRS - 0044

TE BORING LOG (CONTINUATION SHE

HOLE NUMBER	0044
PROJECT NAME:	Johnny Cake Road
GEOLOGIST:	R. Moult
SHEET:	2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		2			Fill; Sand, gravels and cobbles in a clay	0		
		4			Matrix, soft to firm, v. moist to saturated	0		
		4				0		
		5						
2								
		4				0		
		5				0		
		4				0		Sample JCRS-0044-A
		7						
4								
		4				0		
		3			Wet to saturated	0		
		4				0		
		3				0		
6					Colluvium; CL, clay, sandy, low plasticity,			
		4			Mottled grey to brown, soft, saturated	0		
		5				0		
		8				0		Sample JCRS-0044-B
		16						
8								
		4				0		
		18				0		
		11				0		
		13				0		
10								
		4						
		7			Till; CL/ML, clay, silty, low plasticity, grey,	0		
		9			stiff, wet to saturated	0		
		10				0		Sample JCRS-0044-C
12								
					Total depth 12.0 feet			
					Groundwater at 5 feet			
14								
16								

PROJECT NAME: Johnny Cake Road HOLE NO.: JCRS - 0044

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0045
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 2
PROJECT NAME	ohnny Cake Road
SITE LOCATION	Herkimer County, NY
AME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757219.372 (m); East – 511681.715 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/10/03
DATE COMPLETED	10/10/03
SURFACE ELEVATION	240.481 (m)
DEPTH TO FIRST ENCOUNTERED WATER	5 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	12.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

CT	HOLE NO.
Johnny Cake Road	JCRS – 0045

TE(3ORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JC - 0045

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		1			Fill; Sand, gravels and cobbles in a clay	0		Sample JCRS-0045-A
		1			Matrix, soft to firm, v. moist to saturated			
		4						
		7						
2								
		8						
		8						
		32						
		7						
4								
		1				0		
		1			Wet to saturated			
		3						
		3			Colluvium; CL, clay, sandy, low plasticity,			
6					Mottled grey to brown, soft, saturated			
		4				0		
		8				0		Sample JCRS-0045-B
		9						
		8						
8								
		9				0		
		13				0		
		14				0		
		15				0		
10								
		10				0		
		9				0		
		13				0		Sample JCRS-0045-C
		12			Total depth 12.0 feet			
12					Groundwater at 5 feet			
14								
16								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0045

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0046
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 4

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757220.856 (m); East – 511626.582 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/13/03 — DATE COMPLETED 10/13/03
	SURFACE ELEVATION 239.908 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 21 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 40.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0046

IE BORING LOG (CONTINUATION SHE

HOLE NUMBER: JC -0046

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 2 of 4

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0		3 5 6 11			Colluvium; CL, clay, sandy, low plasticity, brown, soft to firm, v. moist, small angular Gravels to cobbles (5 % + 4, 6" max.)	0 2.1		Sample JCRS-0046A
2		4 16 85 11			cobbles	0.5		
4		4 8 9 8			Same as above; gravels in tip of sampler	0.7		
6		10 16 22 10				0.9		Sample JCRS-0046B
8		10 37 15 16				1.7 1.9 1.2		Sample JCRS-0046C
10		2 5 5 9				1.2		
12		8 9 12 10			Till; CL/ML, clay, silty, low plasticity, grey, very stiff, wet	0.7 0.9 0.7 0.2		
14		4 8 11 17				1.2 0.4 0.4 1.2		Sample JCRS-0046D
16								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS – 0046

TES BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0046

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET:

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		10 18 28 19			Till; CL/ML, clay, silty, low plasticity, grey hard, wet, gravels to cobbles (5% + 4, 4" Max.)	0.9 0.9 0.7		
18 ---								
		17 30 34 32				1.2		Sample JCRS-0046E
20 ---								
		18 64 50 24			Wet to saturated	1.9 1.9 0.9 0.4		
22 ---					Till; CL, clay, silty, moderate plasticity, hard, moist to wet			
		15 21 40 31				0.2 0		
24 ---								
		22 24 37 39				0 0.5 0.2 0.4		
26 ---					Till: CL/CH, clay, moderate to high plasticity, grey, hard, v. moist			
		17 35 40 38				0 0 0 0		
28 ---								
		13 18 23 32				0 0.2 0.4 0.4		
30 ---								
		12 18 26 40				0.7 0.4 0 0		Sample JCRS-0046F
32 ---								

TE(BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JCRS-0046

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET:

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	REMARKS
		24 21 31 50			Till: CL/CH, clay, moderate to high plasticity, grey, hard, v. moist	0 0 0		
34		14 14 22 30				0 0.2 0.2 0.2		Sample JCRS-0046G
36		22 35 42 45				0 0		
38		25 37 52 56				0 0		
40					Total Depth 40 feet Groundwater at 21 feet			
42								
44								
46								
48								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS-0046

TEST BORING LOG

AGENCY		HOLE NUMBER JCRS-0047
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME 'ohnny Cake Road	SITE LOCATION Herkimer County, NY
.AME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757196.919 (m); East – 511639.273 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/13/03 — DATE COMPLETED 10/13/03 SURFACE ELEVATION 242.446 (m) DEPTH TO FIRST ENCOUNTERED WATER 9 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

'KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS SCALE: Not To Scale

See Soil Boring Location Map

'CT	HOLE NO.
Johnny Cake Road	JCRS - 0047

TES ORING LOG (CONTINUATION SHEET

PROJECT NAME: Johnny Cake Road	GEOLOGIST: R. Moult	HOLE NUMBER: JC 0047	SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		1 2 3 3			Colluvium; CL, clay, sandy, low plasticity, brown, soft to firm v. moist, small gravels to cobbles (5% + 4, 6" max.)	0 0		
2 ---								
		3 6 5 6				0 0 0		Sample JCRS-0047A
4 ---								
		7 5 5 5				0 0		
6 ---								
		6 5 6 50			cobbles	0		Sample JCRS-0047B
8 ---					Till: CL/ML, clay, silty, grey, stiff, wet to Saturated, cobble at 8'			
		10 10 11 15				0 0 0 0		
10 ---								
		10 6 14 15				0 0 0 0		Sample JCRS-0047C
12 ---								
-					Total depth 12.0 feet Groundwater at 9 feet			
14 ---								
16 ---								

PROJECT NAME: Johnny Cake Road HOLE NO.: JCRS - 0047

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0048
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME ohnny Cake Road	SITE LOCATION Herkimer County, NY
AME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757207.043 (m); East – 511630.653 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/13/03 — DATE COMPLETED 10/13/03 SURFACE ELEVATION 241.245 (m) DEPTH TO FIRST ENCOUNTERED WATER 6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

ETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

CT	HOLE NO.
Johnny Cake Road	JCRS - 0048

TES ORING LOG			(CONTINUATION SHEET)				HOLE NUMBER	JC. 0048
PROJECT N		Johnny Cake Road			GEOLOGIST: R. Moult		SHEET:	2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		1			Colluvium; CL, clay, sandy, low plasticity, soft to firm, brown, v. moist, small gravels to cobbles (5% + 4)	0		
		2						
		4						
		4						
2 ---								
		8				1.4		Sample JCRS-0048A
		6						
		5						
		5						
4 ---								
		3				0		
		3				0		
		4						
		4						
6 ---					Wet to saturated			
		3				0		
		5				0		
		7				0		Sample JCRS-0048B
		20						
8 ---								
		6				0		
		5						
		4						
		5						
10 ---								
		10				0		
		12			Till; CL/ML, clay, silty, low to moderate plasticity, hard, wet	0		
		15				0		
		15				0		Sample JCRS-0048C
12 ---								
-								
					Total depth 12.0 feet Groundwater at 6 feet			
14 ---								
16 ---								

PROJECT NAME:	Johnny Cake Road	HOLE NO.:	JCRS - 0048

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0049
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME ɔhnny Cake Road	SITE LOCATION Herkimer County, NY
ɩAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757218.021 (m); East – 511638.173 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/14/03 — DATE COMPLETED 10/14/03
	SURFACE ELEVATION 239.711 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 9 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

ⱪETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

꜀T	HOLE NO.
Johnny Cake Road	JCRS - 0049

TES BORING LOG (CONTINUATION SHEE

PROJECT: Johnny Cake Road | GEOLOGIST: R. Moult | HOLE NUMBER: JC - 0049 | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		1 2 3 5			Colluvium; CL, clay, sandy, low plasticity, soft to firm, brown, v. moist, small gravels to cobbles (5% + 4, 2" max)	0 0		
2		4 4 4 5				0.2 0.4 0.4		Sample JCRS-0049A
4		6 7 6 7				0 0 0 0		
6		6 8 12 10				0 0 0 0		Sample JCRS-0049B
8		6 6 12 10			Wet to saturated	0 0 0 0		
10		10 10 10 10				2.1 1.2 0.7 0		Sample JCRS-0049C
12					Total depth 12.0 feet Groundwater at 9 feet			
14								
16								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0049

TEST BORING LOG

AGENCY		HOLE NUMBER JCRS-0050
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME ohnny Cake Road	SITE LOCATION Herkimer County, NY
AME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757230.261 (m); East – 511631.242 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/14/03 — DATE COMPLETED 10/14/03
	SURFACE ELEVATION 239.024 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 7 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

:T	HOLE NO.
Johnny Cake Road	JCRS - 0050

TE[illegible] BORING LOG (CONTINUATION SHE[illegible]

HOLE NUMBER: JC[illegible]-0050

PROJECT NAME: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		1			Colluvium; CL, clay, sandy, low plasticity, soft to firm, brown, v. moist, small gravels to cobbles (5% + 4)	0		
		1				0		
		9						
		8						
2								
		5				6.2		
		6				6.2		Sample JCRS-0050A
		5						
		5						
4								
		2				7.2		Sample JCRS-0050B
		3				3.3		
		3				2.6		
		2				0.4		
6					Cobbles			
		3				0.7		
		5				0.2		
		12				0.2		
		18				0.7		
8								
		32				0		
		28						
		13			Wet to saturated			
		18						
10								
		12				0		Sample JCRS-0050C
		20						
		15						
		23						
12								
					Total depth 12.0 feet Groundwater at 7 feet			
14								
16								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0050

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0051
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 2
PROJECT NAME	ohnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757238.427 (m); East – 511650.488 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/14/03
DATE COMPLETED	10/14/03
SURFACE ELEVATION	237.840 (m)
DEPTH TO FIRST ENCOUNTERED WATER	6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	12.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

:T	HOLE NO.
Johnny Cake Road	JCRS - 0051

TES ORING LOG (CONTINUATION SHEE

HOLE NUMBER: JC 0051

PROJECT: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		1 1 2 3			Colluvium; CL, clay, sandy, low plasticity, soft to firm, brown, v. moist, small gravels (5% + 4)	0 0		
2 ---								
		3 4 5 5				1.2 0.7		Sample JCRS-0051A
4 ---								
		1 5 3 2			Wet to saturated	0 0 0 0.2		
6 ---								
		3 4 5 6				0 0 0		Sample JCRS-0051B
8 ---								
		6 10 12 17				1.6 1.6 3.1 0.4		
10 ---								
		25 35 50 48				7.2		Sample JCRS-0051C
12 ---								
					Total depth 12.0 feet Groundwater at 6 feet			
14 ---								
16 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS - 0051

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0052
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME ›hnny Cake Road	SITE LOCATION Herkimer County, NY
›AME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757246.121 (m); East – 511673.339 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/14/03 / DATE COMPLETED 10/14/03
	SURFACE ELEVATION 236.580 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 7 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

··ᵉT	HOLE NO.
..hnny Cake Road	JCRS - 0052

TE ORING LOG (CONTINUATION SHE

HOLE NUMBER	JC 0052
PROJE E:	Johnny Cake Road
GEOLOGIST:	R. Moult
SHEET:	2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		1 1 2 2			Colluvium; CL, clay, sandy, low plasticity, soft to firm, brown, v. moist, small gravels (5% + 4)	0 0 0 0		
2								
		1 2 5 5				0 0 0		Sample JCRS-0052A
4								
		1 2 5 6				0 0 0		
6								
		20 26 25 50			Wet to saturated Cobbles	0		Sample JCRS-0052B
8								
		16 65 23 15				0 0 0		
10								
		15 14 16 20				0 0 0 0		Sample JCRS-0052C
12								
					Total depth 12.0 feet Groundwater at 7 feet			
14								
16								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS – 0052

TEST BORING LOG

AGENCY		HOLE NUMBER JCRS-0053
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME ɔhnny Cake Road	SITE LOCATION Herkimer County, NY
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757235.710 (m); East – 511666.784 (m)
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/14/03 ; DATE COMPLETED 10/14/03
	SURFACE ELEVATION 240.079 (m)
	DEPTH TO FIRST ENCOUNTERED WATER 6 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

ᒣT Johnny Cake Road	HOLE NO. JCRS - 0053

TEST BORING LOG (CONTINUATION SHEET)

HOLE NUMBER: JC… 0053

PROJECT NAME: Johnny Cake Road

GEOLOGIST: R. Moult

SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		2			Colluvium; CL, clay, sandy, low plasticity,	0		
		2			soft to firm, brown, v. moist, small gravels	0		
		3			(5% + 4)	0		
		4				0		Sample JCRS-0053A
2 ---								
		3				0		
		4				0		
		4						
		5				0		
4 ---								
		6				0		
		6				0		Sample JCRS-0053B
		4			Wet to saturated	0		
		5				3.6		
6 ---								
		3				0.2		
		3				0.9		
		3				0		
		6				13.7		
8 ---								
		5				3.1		
		12				1.4		
		5				2.4		
		19				7.8		
10 ---								
		20				8.4		Sample JCRS-0053C
		34			Till; CL/ML; clay, silty, low plasticity, firm,	5.8		
		37			grey, v. moist, small angular gravels	2.1		
		17						
12 ---								
-								
					Total depth 12.0 feet			
					Groundwater at 6 feet			
14 ---								
16 ---								

PROJECT NAME: Johnny Cake Road

HOLE NO.: JCRS - 0053

TEST BORING LOG

AGENCY	
HOLE NUMBER	JCRS-0054
COMPANY NAME	Weston Solutions
DRILL SUBCONTRACTOR	SJB Services
SHEET	1 of 2
PROJECT NAME	Johnny Cake Road
SITE LOCATION	Herkimer County, NY
NAME OF DRILLER	Bill Bosworth
HOLE LOCATION	North – 4757229.994 (m); East – 511668.049 (m)
NAME OF GEOLOGIST	R. Moult
SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT	CME 850 track mount
DATE STARTED	10/14/03
DATE COMPLETED	10/14/03
SURFACE ELEVATION	239.792 (m)
DEPTH TO FIRST ENCOUNTERED WATER	5 ft.
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	
DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	
OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE	12.0'
TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

SKETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS SCALE: Not To Scale

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0054

TE ORING LOG (CONTINUATION SHEE

PROJEC : Johnny Cake Road | GEOLOGIST: R. Moult | HOLE NUMBER: JC 0054 | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0								
		2			Colluvium; CL, clay, sandy, low plasticity,	0		
		2			soft to firm, brown, v. moist, small gravels	0		
		3			(5% + 4)	0		
		4				0		
2								
		4				0		
		5				0		
		5				0		Sample JCRS-0054A
		6				0		
4								
		2				0		
		2				0		
		4			Wet to saturated	0		
		4				0		
6								
		4				0		
		3				0		
		2				0		
		2						
8								Sample JCRS-0054B
		4				2.4		
		6				0		
		12				0		
		10				0		
10								
		5				0		Sample JCRS-0054C
		7			Till; CL/ML; clay, silty, low plasticity, firm,			
		9			grey, v. moist, small angular gravels			
		8						
12								
-					Total depth 12.0 feet			
					Groundwater at 5 feet			
14								
16								

TEST BORING LOG

TEST BORING LOG	AGENCY	HOLE NUMBER JCRS-0055
COMPANY NAME Weston Solutions	DRILL SUBCONTRACTOR SJB Services	SHEET 1 of 2

PROJECT NAME Johnny Cake Road	SITE LOCATION Herkimer County, NY	
NAME OF DRILLER Bill Bosworth	HOLE LOCATION North – 4757224.643 (m); East – 511665.811 (m)	
NAME OF GEOLOGIST R. Moult	SIGNATURE OF GEOLOGIST	
TYPE AND SIZE OF DRILLING AND SAMPLING EQUIPMENT CME 850 track mount	DATE STARTED 10/14/03	DATE COMPLETED 10/14/03
	SURFACE ELEVATION 240.161 (m)	
	DEPTH TO FIRST ENCOUNTERED WATER 5 ft.	
OVERBURDEN THICKNESS/ DEPTH TO BEDROCK	DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
DEPTH DRILLED INTO BEDROCK	OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	
TOTAL DEPTH OF HOLE 12.0'	TOTAL FLUID LOSSES	

GEOTECHNICAL SAMPLES	SAMPLE DEPTH	UNDISTURBED/DISTURBED	TOTAL NUMBER OF CORE BOXES

ENVIRONMENTAL SAMPLES	SAMPLE DEPTH	ANALYTES	TOTAL CORE RECOVERY %

DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	CASING TYPE	WELL DEPTH	SCREENED INTERVAL

DATE	START TIME	FINISH TIME	DRILLING DEPTH	DESCRIPTION

KETCH OF DRILLING LOCATION/ADDITIONAL COMMENTS **SCALE:** **Not To Scale**

See Soil Boring Location Map

PROJECT	HOLE NO.
Johnny Cake Road	JCRS - 0055

TES ORING LOG (CONTINUATION SHEE

HOLE NUMBER: JC 0055

PROJECT: Johnny Cake Road | GEOLOGIST: R. Moult | SHEET: 2 of 2

DEPTH	INTERVAL/ RECOVERY/ TIME	BLOW COUNT	USCS SYMBOL	MUNSELL COLOR	DESCRIPTION OF MATERIALS	PID READINGS	LITHOLOGY	DRILLING REMARKS
0 ---								
		1			Fill; Wood, plastic containers, petroleum odor	0.5		Sample JCRS-0055A
		2						
		2						
		4						
2 ---								
		2				0.0		
		4						
		6			Colluvium; clay, sandy, low plasticity,			
		28			Angular gravels (5% +4, 1 inch max.)			
4 ---					Wet to saturated			
		14				13.0		Sample JCRS-0055B
		12				5.3		
		10						
		21						
6 ---								
		14				2.6		
		17				2.1		
		8						
		8						
8 ---								
		4				0.7		
		7						
		10						
		12						
10 ---								
		12				0.4		
		10				0.4		
		16				0.7		Sample JCRS-0055C
		19						
12 ---								
-								
					Total depth 12.0 feet			
					Groundwater at 5 feet			
14 ---								
16 ---								

PROJECT NAME: Johnny Cake Road | HOLE NO.: JCRS - 0055

APPENDIX 3

SOIL SAMPLE RESULTS TABLES

TABLE 1

SOIL SAMPLE RESULTS
GROUNDWATER MONITORING WELLS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
MW-16A	09/23/03	2.5'	**Acetone** 2-Butanone Trichloroethene Tetrachloroethene	**0.37 DJ** 0.005 J 0.002 J 0.009 J	Groundwater Monitoring Well No. MW-16
MW-16B	09/23/03	7.0'	**Acetone** Carbon Disulfide cis-1,2-Dichloroethene 2-Butanone Trichloroethene 4-Methyl-2-Pentanone Tetrachloroethene	**1.9 BDJ** 0.0008 J 0.002 J 0.01 J 0.024 0.001 J 0.046	Groundwater Monitoring Well No. MW-16
MW-16C	09/23/03	9.5'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** cis-1,2-Dichloroethene Toluene 1,2-Dichlorobenzene	0.008 JB **3.3 JBD** 0.016 J 0.02 JB 0.005 JB	Groundwater Monitoring Well No. MW-16
MW-16D	09/23/03	13.0'	**Acetone** Carbon Disulfide	**0.23 JDB** 0.0005 J	Groundwater Monitoring Well No. MW-16
MW-16E	09/23/03	20.0'	Methylcyclohexane Total Xylenes	0.001 J 0.0004 J	Groundwater Monitoring Well No. MW-16
MW-16F	09/23/03	22.0'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Benzene Toluene	0.004 JB **0.41 JB** 0.017 J 0.046 JB	Groundwater Monitoring Well No. MW-16

TABLE 1

SOIL SAMPLE RESULTS
GROUNDWATER MONITORING WELLS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
MW-16G	09/23/03	25.5'	Acetone Carbon Disulfide	0.19 JDB 0.0004 J	Groundwater Monitoring Well No. MW-16
MW-21B	09/23/03	7.0'	**Acetone** Carbon Disulfide cis-1,2-Dichloroethene 2-Butanone Trichloroethene Tetrachloroethene	**4.7 D** 0.0005 J 0.0009 J 0.012 J 0.012 J 0.023	Duplicate of MW-16B
MW-17F	09/24/03	26.0'	Dichlorodifluoromethane Methylcyclohexane Total Xylenes	0.0004 J 0.0006 J 0.002 J	Groundwater Monitoring Well No. MW-17
MW-17G	09/24/03	31.5'	**Acetone** Carbon Disulfide Methylcyclohexane Benzene Total Xylenes	**1.2 JB** 0.002 J 0.0009 J 0.002 JB 0.004 J	Groundwater Monitoring Well No. MW-17
MW-17H	09/24/03	33.5'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Methylene Chloride	0.011 J **0.68 B** 0.031 JB	Groundwater Monitoring Well No. MW-17
MW-21G	09/24/03	31.5'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Methylene Chloride Toluene	0.012 J **0.52 B** 0.04 JB 0.011 JB	Duplicate of MW-17G

TABLE 1

SOIL SAMPLE RESULTS
GROUNDWATER MONITORING WELLS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
MW-17I	09/25/03	38.0'	Methylcyclohexane Total Xylenes	0.0005 J 0.002 J	Groundwater Monitoring Well No. MW-17
MW-17J	09/25/03	40.0'	Carbon Disulfide Total Xylenes	0.0006 J 0.002 J	Groundwater Monitoring Well No. MW-17
MW-21J	09/25/03	40.0'	VOCs	UJ	Duplicate of MW-17J
MW-18A	09/26/03	4.0'	Dichlorodifluoromethane cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.0005 J 0.008 J 0.049 0.036	Groundwater Monitoring Well No. MW-18
MW-18B	09/26/03	8.0'	Dichlorodifluoromethane Chloromethane Vinyl Chloride cis-1,2-Dichloroethene Cyclohexane Trichloroethene Methylcyclohexane Tetrachloroethene	0.001 J 0.0006 J 0.002 J 0.009 J 0.0005 J 0.027 0.0005 J 0.03	Groundwater Monitoring Well No. MW-18

TABLE 1

SOIL SAMPLE RESULTS
GROUNDWATER MONITORING WELLS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
MW-18C	09/26/03	8.5'	Vinyl Chloride **Acetone** Carbon Disulfide trans-1,2-Dichloroethene cis-1,2-Dichloroethene Cyclohexane Trichloroethene Methylcyclohexane Tetrachloroethene	0.005 J **0.45 D** 0.0004 J 0.0007 J 0.081 0.0006 J 0.19 0.0005 J 0.1	Groundwater Monitoring Well No. MW-18
MW-18D	09/26/03	13.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Methylene Chloride cis-1,2-Dichloroethene	0.01 DJ 0.12 DB 0.022 DJB 0.001 J	Groundwater Monitoring Well No. MW-18
MW-18E	09/26/03	19.0'	Acetone	0.14 JB	Groundwater Monitoring Well No. MW-18
MW-18F	09/26/03	24.0'	Carbon Disulfide	0.0005 J	Groundwater Monitoring Well No. MW-18
MW-21BA	09/26/03	8.0'	cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.004 J 0.026 0.048	Duplicate of MW-18B

TABLE 1

SOIL SAMPLE RESULTS
GROUNDWATER MONITORING WELLS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
MW-19A	09/29/03	2.0'	Chloromethane 1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Methyl Acetate	0.0004 J 0.0009 J **0.24 B** 0.023	Groundwater Monitoring Well No. MW-19
MW-19B	09/29/03	6.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Carbon Disulfide	0.0007 J 0.083 B 0.0005 J	Groundwater Monitoring Well No. MW-19
MW-19C	09/29/03	8.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone	0.0009 J 0.14 B	Groundwater Monitoring Well No. MW-19
MW-19D	09/29/03	14.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone	0.0006 J 0.15 B	Groundwater Monitoring Well No. MW-19
MW-19E	09/29/03	18.0'	1,1,2-Trichloro-1,2,2-trifluoroethane	0.001 J	Groundwater Monitoring Well No. MW-19
MW-19F	09/29/03	24.0'	VOCs	UJ	Groundwater Monitoring Well No. MW-19
MW-21Bb	09/29/03	6.0'	1,1,2-Trichloro-1,2,2-trifluoroethane	0.001 J	Duplicate of MW-19B

TABLE 1

SOIL SAMPLE RESULTS
GROUNDWATER MONITORING WELLS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
MW-20A	09/30/03	4.0'	1,1,2-Trichloro-1,2,2-trifluoroethane cis-1,2-Dichloroethene Trichloroethene Toluene Tetrachloroethene Styrene	0.0008 J 0.004 J 0.039 B 0.002 J 0.047 0.0008 J	Groundwater Monitoring Well No. MW-20
MW-20B	09/30/03	8.0'	1,1,2-Trichloro-1,2,2-trifluoroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.0007 J 0.0007 J 0.05 0.13 B 0.064	Groundwater Monitoring Well No. MW-20
MW-20C	09/30/03	9.5'	1,1-Dichloroethene 1,1,2-Trichloro-1,2,2-trifluoroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene Toluene Tetrachloroethene	0.0006 J 0.0006 J 0.0009 J 0.11 0.062 B 0.0006 J 0.002 J	Groundwater Monitoring Well No. MW-20
MW-20D	09/30/03	15.0'	Chloromethane Bromomethane **Acetone** Methylene Chloride	0.057 J 0.067 J **0.97 J** 0.068 J	Groundwater Monitoring Well No. MW-20

TABLE 1

SOIL SAMPLE RESULTS
GROUNDWATER MONITORING WELLS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
MW-20E	09/30/03	19.0'	Chloromethane Bromomethane **Acetone** Methylene Chloride	0.056 J 0.053 J **0.89 J** 0.086 J	Groundwater Monitoring Well No. MW-20
MW-20F	09/30/03	24.0'	VOCs	U	Groundwater Monitoring Well No. MW-20
MW-21C	09/30/03	9.5'	trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.0007 J 0.059 0.035 0.003 J	Duplicate of MW-20C

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 2

SOIL SAMPLE RESULTS
EAST DRAINAGE DITCH
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0036A	10/06/03	0.5'	1,1,2-Trichloro- 1,2,2-trifluoroethane **Acetone** Methylene chloride cis-1,2-Dichloroethene Trichloroethene Toluene Tetrachloroethene	0.003 J **3.4 DJ** 0.011 JB 0.006 J 0.005 J 0.004 J 0.005 J	Soil Boring No. JCRS-0036
JCRS-0036B	10/06/03	7.0'	Vinyl Chloride 1,1-Dichloroethene 1,1,2-Trichloro- 1,2,2-trifluoroethane Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Cyclohexane **Trichloroethene** Tetrachloroethene	0.018 0.003 J 0.001 J 0.19 0.011 J 0.51 DJ 0.005 J **1.1 DJ** 0.24	Soil Boring No. JCRS-0036
JCRS-0036C	10/06/03	8.5'	Vinyl Chloride 1,1-Dichloroethene trans-1,2-Dichloroethene cis-1,2-Dichloroethene Cyclohexane Trichloroethene Tetrachloroethene	0.02 0.002 J 0.013 0.14 DJ 0.005 J 0.24 DJ 0.26 DJ	Soil Boring No. JCRS-0036
JCRS-0080D	10/06/03	8.5'	Vinyl Chloride 1,1-Dichloroethene 1,1,2-Trichloro- 1,2,2-trifluoroethane cis-1,2-Dichloroethene Cyclohexane **Trichloroethene** Tetrachloroethene	0.02 0.003 J 0.0009 J 0.36 DJ 0.005 J **0.73 DJ** 0.85 DJ	Duplicate of JCRS-0036C

TABLE 2

SOIL SAMPLE RESULTS
EAST DRAINAGE DITCH
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0036D	10/06/03	16.0'	Trichloroethene Tetrachloroethene	0.002 J 0.003 J	Soil Boring No. JCRS-0036
JCRS-0036E	10/06/03	18.5'	1,1,2-Trichloro- 1,2,2-trifluoroethane **Acetone** cis-1,2-Dichloroethene **2-Butanone** Trichloroethene Tetrachloroethene	0.11 DJ **0.74 DJ** 0.093 DJ **0.5 DJ** 0.19 DJ 0.2 DJ	Soil Boring No. JCRS-0036
JCRS-0036F	10/07/03	31.5'	**Acetone**	**1.8 DJ**	Soil Boring No. JCRS-0036
JCRS-0080E	10/07/03	31.5'	1,1,2-Trichloro- 1,2,2-trifluoroethane **Acetone** **2-Butanone** Toluene	0.098 D J **2.0 D** **0.46 DJ** 0.004 J	Duplicate of JCRS-0036F
JCRS-0036G	10/07/03	32.5'	**Acetone** **2-Butanone** Toluene	**8.1 DJ** **0.85 DJ** 0.14 J	Soil Boring No. JCRS-0036
JCRS-0037A	10/07/03	0.5'	**Acetone** cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	**18 DJ** 0.002 J 0.001 J 0.001 J	Soil Boring No. JCRS-0037
JCRS-0037B	10/07/03	8.0'	Trichloroethene Tetrachloroethene	0.0006 J 0.0007 J	Soil Boring No. JCRS-0037
JCRS-0037C	10/07/03	12.0'	VOCs	UJ	Soil Boring No. JCRS-0037
JCRS-0038A	10/07/03	2.0'	Acetone Carbon Disulfide	0.15 0.001 J	Soil Boring No. JCRS-0038

TABLE 2

SOIL SAMPLE RESULTS
EAST DRAINAGE DITCH
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0038B	10/07/03	6.5'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** **2-Butanone**	0.1 J **4.4 DJ** **0.7 DJ**	Soil Boring No. JCRS-0038
JCRS-0038C	10/07/03	9.5'	**Acetone**	**0.3 J**	Soil Boring No. JCRS-0038
JCRS-0038D	10/07/03	15.0'	**Acetone** **2-Butanone** Toluene	**1.8 DJ** **0.5 DJ** 0.12 DJB	Soil Boring No. JCRS-0038
JCRS-0038E	10/07/03	19.5'	VOCs	UJ	Soil Boring No. JCRS-0038
JCRS-0038F	10/08/03	32.0'	**Acetone** **Methylene Chloride**	**0.76 J** **0.31 JB**	Soil Boring No. JCRS-0038
JCRS-0080F	10/08/03	32.0'	VOCs	U	Duplicate of JCRS-0038F
JCRS-0038G	10/08/03	38.0'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Tetrachloroethene	0.001 J **7.3 DJ** 0.0007 J	Soil Boring No. JCRS-0038

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 3

SOIL SAMPLE RESULTS
SEPTIC SYSTEM
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0043A	10/10/03	3.0'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** cis-1,2-Dichloroethene Trichloroethene Toluene Tetrachloroethene	0.001 J **0.32 J** 0.002 J 0.011 0.002 J 0.015 B	Soil Boring No. JCRS-0043
JCRS-0043B	10/10/03	7.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene **Trichloroethene** Toluene **Tetrachloroethene**	0.002 J 0.01 J 0.004 J 0.15 **2.0 D** 0.003 J **4.4 D**	Soil Boring No. JCRS-0043
JCRS-0043C	10/10/03	12.0'	1,1,2-Trichloro-1,2,2-trifluoroethane	0.0006 J	Soil Boring No. JCRS-0043
JCRS-0053A	10/14/03	2.0'	VOCs	U	Soil Boring No. JCRS-0053
JCRS-0053B	10/14/03	5.0'	Acetone Tetrachloroethene	0.058 0.003 J	Soil Boring No. JCRS-0053
JCRS-0053C	10/14/03	8.0'	Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	2 DJ 0.004 J 0.012 0.017	Soil Boring No. JCRS-0053
JCRS-0054A	10/14/03	3.5'	Acetone	0.063	Soil Boring No. JCRS-0054
JCRS-0054B	10/14/03	8.0'	Trichloroethene Tetrachloroethene	0.004 J 0.016	Soil Boring No. JCRS-0054

TABLE 3

SOIL SAMPLE RESULTS
SEPTIC SYSTEM
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0054C	10/14/03	10.5'	Acetone	0.026	Soil Boring No. JCRS-0054
JCRS-0055A	10/14/03	0.5'	**Acetone**	**0.26 J**	Soil Boring No. JCRS-0055
JCRS-0055B	10/14/03	4.5'	Dichlorodifluoromethane	0.047	Soil Boring No. JCRS-0055
			Vinyl Chloride	0.05	
			Acetone	0.058	
			Carbon Disulfide	0.043	
			cis-1,2-Dichloroethene	0.006 J	
			Cyclohexane	0.003 J	
			Benzene	0.005 J	
			Trichloroethene	0.019	
			Methylcyclohexane	0.012	
			Toluene	0.031	
			Tetrachloroethene	0.084	
			Ethylbenzene	0.017	
			Total Xylenes	0.063	
JCRS-0055C	10/14/03	11.5'	Acetone	0.008 J	Soil Boring No. JCRS-0055
			cis-1,2-Dichloroethene	0.027	

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 4

SOIL SAMPLE RESULTS
SOIL MONITORING WELLS MW-1, MW-2 & MW-6
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0039A	10/08/03	3.0'	Trichloroethene Tetrachloroethene	0.005 J 0.029	Soil Boring No. JCRS-0039
JCRS-0039B	10/08/03	6.0'	Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.074 B 0.002 J 0.014 0.018	Soil Boring No. JCRS-0039
JCRS-0039C	10/08/03	12.0'	Vinyl Chloride 1,1,2-Trichloro-1,2,2-trifluoroethane cis-1,2-Dichloroethene Trichloroethene	0.007 J 0.0008 J 0.019 J 0.003 J	Soil Boring No. JCRS-0039
JCRS-0039D	10/08/03	13.0'	**Vinyl Chloride** 1,1-Dichloroethene 1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Carbon Disulfide trans-1,2-Dichloroethene **cis-1,2-Dichloroethene**	**4.3 DJ** 0.001 J 0.0007 J **0.21 J** 0.0004 J 0.002 J **52 DJ**	Soil Boring No. JCRS-0039
JCRS-0039E	10/08/03	23.0'	cis-1,2-Dichloroethene	0.95 DJ	Soil Boring No. JCRS-0039
JCRS-0039F	10/08/03	24.5'	cis-1,2-Dichloroethene **Trichloroethene** Tetrachloroethene	2.9 D **3.9 D** 1.1 D	Soil Boring No. JCRS-0039
JCRS-0039G	10/08/03	33.0'	VOCs	U	Soil Boring No. JCRS-0039

TABLE 4

SOIL SAMPLE RESULTS
SOIL MONITORING WELLS MW-1, MW-2 & MW-6
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0041A	10/09/03	2.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.001 J 0.037 0.003 J 0.018 0.047	Soil Boring No. JCRS-0041
JCRS-0041B	10/09/03	6.0'	Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.071 0.005 J 0.002 J 0.007 J	Soil Boring No. JCRS-0041
JCRS-0041C	10/09/03	9.5'	Dichlorodifluoromethane Vinyl Chloride 1,1-Dichloroethene Acetone cis-1,2-Dichloroethene Cyclohexane Trichloroethene Methylcyclohexane Tetrachloroethene Ethylbenzene Total Xylenes	0.0004 J 0.015 0.003 J 0.14 1.6 D 0.011 0.74 DJ 0.009 0.067 0.003 J 0.001 J	Soil Boring No. JCRS-0041
JCRS-0041D	10/09/03	14.5'	Dichlorodifluoromethane Vinyl Chloride Acetone cis-1,2-Dichloroethene Trichloroethene Toluene Tetrachloroethene	0.0005 J 0.004 J 0.13 0.081 0.053 0.025 B 0.053	Soil Boring No. JCRS-0041
JCRS-0041E	10/09/03	19.0'	VOCs	U	Soil Boring No. JCRS-0041

TABLE 4

SOIL SAMPLE RESULTS
SOIL MONITORING WELLS MW-1, MW-2 & MW-6
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0041F	10/09/03	31.0'	VOCs	U	Soil Boring No. JCRS-0041
JCRS-0041G	10/09/03	35.0'	VOCs	U	Soil Boring No. JCRS-0041
JCRS-0042A	10/10/03	3.5'	Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene **Tetrachloroethene**	0.011 J 0.001 J 0.1 0.62 D **1.7 D**	Soil Boring No. JCRS-0042
JCRS-0042B	10/10/03	7.0'	**Acetone** **Methylene Chloride** **Trichloroethene** **Tetrachloroethene**	**12 DJ** **7.7 DJB** **17 DJ** **330 D**	Soil Boring No. JCRS-0042
JCRS-0080H	10/10/03	7.0'	**Methylene Chloride** **Trichloroethene** **Tetrachloroethene**	**8.7 DJB** **11 DJ** **190 D**	Duplicate of JCRS-0042B
JCRS-0042C	10/10/03	12.0'	Dichlorodifluoromethane 1,1-Dichloroethene 1,1,2-Trichloro-1,2,2-trifluoroethane Carbon Disulfide cis-1,2-Dichloroethene Cyclohexane Trichloroethene Methylcyclohexane Tetrachloroethene	0.0009 J 0.0005 J 0.002 J 0.0006 J 0.007 J 0.0006 J 0.003 J 0.0005 J 0.007 J	Soil Boring No. JCRS-0042

TABLE 4

SOIL SAMPLE RESULTS
SOIL MONITORING WELLS MW-1, MW-2 & MW-6
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0042D	10/10/03	16.0'	Vinyl Chloride 1,1-Dichloroethene **Acetone** Carbon Disulfide Methyl Acetate cis-1,2-Dichloroethene Cyclohexane Benzene **Trichloroethene** Toluene **Tetrachloroethene**	0.025 0.006 J **17 DJ** 0.002 J 1.6 DJ 1.9 DJ 0.03 J 0.001 J **1.2 DJ** 0.03 BJ **5.6 DJ**	Soil Boring No. JCRS-0042
JCRS-0042E	10/10/03	22.5'	VOCs	U	Soil Boring No. JCRS-0042
JCRS-0042F	10/10/03	32.0'	Tetrachloroethene	0.001 J	Soil Boring No. JCRS-0042
JCRS-0042G	10/10/03	39.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Trichloroethene Toluene	0.002 J 0.068 J 0.001 J 0.004 J	Soil Boring No. JCRS-0042

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 5

SOIL SAMPLE RESULTS
WESTERN SIDE OF DRIVEWAY
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0047A	10/13/03	3.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Toluene	0.003 J 0.24 J	Soil Boring No. JCRS-0047
JCRS-0047B	10/13/03	6.5'	VOCs	UJ	Soil Boring No. JCRS-0047
JCRS-0047C	10/13/03	12.0'	**Acetone** **Methylene Chloride**	**0.51 DJ** **0.39 DJB**	Soil Boring No. JCRS-0047
JCRS-0048A	10/13/03	2.5'	**Acetone** **Methylene Chloride**	**1.8 D** **0.31 DJB**	Soil Boring No. JCRS-0048
JCRS-0048B	10/13/03	7.5'	VOCs	UJ	Soil Boring No. JCRS-0048
JCRS-0048C	10/13/03	12.0'	VOCs	UJ	Soil Boring No. JCRS-0048
JCRS-0049A	10/14/03	3.5'	VOCs	U	Soil Boring No. JCRS-0049
JCRS-0049B	10/14/03	8.0'	VOCs	U	Soil Boring No. JCRS-0049
JCRS-0049C	10/14/03	12.0'	VOCs	U	Soil Boring No. JCRS-0049

TABLE 5

SOIL SAMPLE RESULTS
WESTERN SIDE OF DRIVEWAY
JOHNNY CAKE ROAD, DANUBE, NEW YORK

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 6

SOIL SAMPLE RESULTS
POOL AREA
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0044A	10/10/03	3.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Trichloroethene Tetrachloroethene	0.001 J 0.006 J 0.017	Soil Boring No. JCRS-0044
JCRS-0044B	10/10/03	7.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene Toluene **Tetrachloroethene**	0.001 J 0.01 0.0006 J 0.031 0.14 0.001 J **1.9 D**	Soil Boring No. JCRS-0044
JCRS-0044C	10/10/03	12.0'	VOCs	U	Soil Boring No. JCRS-0044
JCRS-0045A	10/10/03	0.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Trichloroethene Toluene Tetrachloroethene	0.002 J 0.13 0.016 0.001 J 0.068 B	Soil Boring No. JCRS-0045
JCRS-0045B	10/10/03	7.0'	Vinyl Chloride 1,1-Dichloroethene 1,1,2-Trichloro-1,2,2-trifluoroethane Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Cyclohexane Benzene **Trichloroethene** Toluene Tetrachloroethene	0.054 0.002 J 0.002 J 0.015 0.015 2.0 D 0.003 J 0.0005 J **17 D** 0.007 J 0.084 B	Soil Boring No. JCRS-0045

TABLE 6

SOIL SAMPLE RESULTS
POOL AREA
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0045C	10/10/03	11.5'	Dichlorodifluoromethane 1,1,2-Trichloro-1,2,2-trifluoroethane cis-1,2-Dichloroethene	0.0004 J 0.001 J 0.001 J	Soil Boring No. JCRS-0045

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 7

SOIL SAMPLE RESULTS
NORTHERN DRAINAGE DITCH
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0040A	10/09/03	3.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Trichloroethene Tetrachloroethene	0.001 J 0.014 0.0009 J 0.001 J	Soil Boring No. JCRS-0040
JCRS-0040B	10/09/03	8.0'	Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.003 J 0.003 J 0.02 0.026	Soil Boring No. JCRS-0040
JCRS-0040C	10/09/03	10.5'	Vinyl Chloride 1,1,2-Trichloro-1,2,2-trifluoroethane Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.002 J 0.0005 J 0.03 0.001 J 0.042 0.094 0.067	Soil Boring No. JCRS-0040
JCRS-0080G	10/09/03	10.5'	VOCs	U	Duplicate of JCRS-0040C
JCRS-0040D	10/09/03	14.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.0008 J 0.15 0.011 0.022 0.0025	Soil Boring No. JCRS-0040
JCRS-0040E	10/09/03	19.0'	Vinyl Chloride 1,1,2-Trichloro-1,2,2-trifluoroethane Acetone cis-1,2-Dichloroethene	0.003 J 0.0007 J 0.093 0.02	Soil Boring No. JCRS-0040
JCRS-0040F	10/09/03	29.0'	VOCs	U	Soil Boring No. JCRS-0040

TABLE 7

SOIL SAMPLE RESULTS
NORTHERN DRAINAGE DITCH
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0040G	10/09/03	40.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone cis-1,2-Dichloroethene	0.0009 J 0.058 0.0008 J	Soil Boring No. JCRS-0040
JCRS-0051A	10/14/03	2.5'	**Acetone** cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	**5.7 DJ** 0.024 0.06 0.038	Soil Boring No. JCRS-0051
JCRS-0051B	10/14/03	7.5'	Vinyl Chloride Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.01 J 0.027 0.13 0.11 0.01 J	Soil Boring No. JCRS-0051
JCRS-0051C	10/14/03	10.5'	Dichlorodifluoromethane Vinyl Chloride 1,1-Dichloroethene Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.006 J 0.011 J 0.002 J 0.081J 0.009 J 3.2 D 0.011 J 0.002 J	Soil Boring No. JCRS-0051
JCRS-0052A	10/14/03	3.5'	Acetone cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.026 0.003 J 0.022 0.083	Soil Boring No. JCRS-0052
JCRS-0052B	10/14/03	6.5'	Acetone Trichloroethene Tetrachloroethene	0.11 0.019 0.064	Soil Boring No. JCRS-0052

TABLE 7

SOIL SAMPLE RESULTS
NORTHERN DRAINAGE DITCH
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0052C	10/14/03	10.5'	Acetone cis-1,2-Dichloroethene Trichloroethene	0.18 J 0.12 0.022	Soil Boring No. JCRS-0052

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 8

SOIL SAMPLE RESULTS
STABLE AREA
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0030A	10/01/03	4.0'	**Acetone** Tetrachloroethene	**8.1 J** 0.0009 J	Soil Boring No. JCRS-0030
JCRS-0030B	10/01/03	6.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone cis-1,2-Dichloroethene Trichloroethene Toluene Tetrachloroethene	0.0006 J 0.046 B 0.02 0.045 0.0007 J 0.039	Soil Boring No. JCRS-0030
JCRS-0030C	10/01/03	12.0'	Vinyl Chloride 1,1-Dichloroethene trans-1,2-Dichloroethene cis-1,2-Dichloroethene Benzene Trichloroethene Tetrachloroethene	0.001 J 0.001 J 0.002 J 0.028 DJ 0.0008 J 0.074 0.001 J	Soil Boring No. JCRS-0030
JCRS-0031A	10/02/03	1.5'	**Acetone** cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	**1.0 JB** 0.002 J 0.029 0.023	Soil Boring No. JCRS-0031
JCRS-0031B	10/02/03	8.0'	Acetone trans-1,2-Dichloroethene cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.045 JB 0.002 J 0.18 0.23 J 0.030	Soil Boring No. JCRS-0031

TABLE 8

SOIL SAMPLE RESULTS
STABLE AREA
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0031C	10/02/03	12.0'	Bromomethane Acetone Methyl Acetate cis-1,2-Dichloroethene **2-Butanone**	0.0056 DJ 0.2 J 0.088 DJ 0.21 DJ **0.35 J**	Soil Boring No. JCRS-0031
JCRS-0035A-1	11/03/03	3.0'	Acetone	0.14 J	Soil Boring No. JCRS-0035
JCRS-0035B-1	11/03/03	8.0'	cis-1,2-Dichloroethene **Trichloroethene** Tetrachloroethene	0.31 J **0.93 J** 0.45 J	Soil Boring No. JCRS-0035
JCRS-0035C-1	11/03/03	12.0'	Acetone Methylene Chloride cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.14 J 0.002 J 0.088 0.19 0.09	Soil Boring No. JCRS-0035
JCRS-0035D-1	11/03/03	12.5'	Dichlorodifluoromethane Acetone cis-1,2-Dichloroethene	0.003 J 0.052 J 0.039	Soil Boring No. JCRS-0035
JCRS-0035E-1	11/03/03	18.5'	**Acetone**	**1.8**	Soil Boring No. JCRS-0035
JCRS-0035F	10/06/03	29.5'	cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	0.003 J 0.004 J 0.002 J	Soil Boring No. JCRS-0035

TABLE 8

SOIL SAMPLE RESULTS
STABLE AREA
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0035G	10/06/03	40.0'	1,1,2-Trichloro- 1,2,2-trifluoroethane Acetone Toluene 1,2-Dichlorobenzene	0.0008 J 0.18 0.003 J 0.0003 J	Soil Boring No. JCRS-0035

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 9

SOIL SAMPLE RESULTS
DISCHARGE PIPE
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0046A	10/13/03	1.0'	Dichlorodifluoromethane 1,1,2-Trichloro-1,2,2-trifluoroethane Methylcyclohexane Toluene Tetrachloroethene	0.0006 J 0.003 J 0.0006 J 0.001 J 0.0007 J	Soil Boring No. JCRS-0046
JCRS-0080I	10/13/03	1.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Toluene	0.002 J 0.0009 J	Duplicate of JCRS-0046A
JCRS-0046B	10/13/03	6.5'	1,1,2-Trichloro-1,2,2-trifluoroethane Toluene	0.002 J 0.001 J	Soil Boring No. JCRS-0046
JCRS-0046C	10/13/03	9.0'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Toluene	0.002 J **0.76 DJ** 0.0009 J	Soil Boring No. JCRS-0046
JCRS-0046D	10/13/03	15.0'	1,1,2-Trichloro-1,2,2-trifluoroethane Carbon Disulfide	0.0007 J 0.0003 J	Soil Boring No. JCRS-0046
JCRS-0046E	10/13/03	18.5'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Carbon Disulfide Toluene	0.002 J **0.75 DJ** 0.001 J 0.001 J	Soil Boring No. JCRS-0046
JCRS-0046F	10/13/03	30.5'	Dichlorodifluoromethane 1,1,2-Trichloro-1,2,2-trifluoroethane Carbon Disulfide Methylcyclohexane Toluene	0.0009 J 0.003 J 0.0006 J 0.0005 J 0.002 J	Soil Boring No. JCRS-0046
JCRS-0046G	10/13/03	36.0'	Carbon Disulfide Tetrachloroethene	0.0004 J 0.0009 J	Soil Boring No. JCRS-0046

TABLE 9

SOIL SAMPLE RESULTS
DISCHARGE PIPE
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0050A	10/14/03	3.0'	Acetone	0.15	Soil Boring No. JCRS-0050
JCRS-0050B	10/14/03	4.5'	**Acetone**	**13 DJ**	Soil Boring No. JCRS-0050
JCRS-0050C	10/14/03	10.5'	Acetone	0.016	Soil Boring No. JCRS-0050

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 10

SOIL SAMPLE RESULTS
NORTHERN BOUNDARY OF JOHNNY CAKE ROAD
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0029A	10/01/03	2.5'	Styrene	0.0004 J	Soil Boring No. JCRS-0029
JCRS-0029B	10/01/03	8.0'	cis-1,2-Dichloroethene	0.0009 J	Soil Boring No. JCRS-0029
JCRS-0029C	10/01/03	9.0'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** cis-1,2-Dichloroethene Trichloroethene	0.001 JB **0.29 BD** 0.002 J 0.0006 J	Soil Boring No. JCRS-0029
JCRS-0032A	10/02/03	4.0'	**Acetone**	**1.7 BD**	Soil Boring No. JCRS-0032
JCRS-0080A	10/02/03	4.0'	1,1,2-Trichloro- 1,2,2-trifluoroethane **Acetone**	0.0005 J **0.76 DJ**	Duplicate of JCRS-0032A
JCRS-0032B	10/02/03	7.5'	**Acetone** cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	**1.5 BD** 0.039 0.057 0.008 J	Soil Boring No. JCRS-0032
JCRS-0032C	10/02/03	11.5'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** Toluene	0.0004 J **1.1 DJ** 0.001 J	Soil Boring No. JCRS-0032
JCRS-0033A	10/02/03	4.0'	**Acetone** cis-1,2-Dichloroethene Trichloroethene Tetrachloroethene	**0.34 J** 0.016 0.009 J 0.0007 J	Soil Boring No. JCRS-0033

TABLE 10

SOIL SAMPLE RESULTS
NORTHERN BOUNDARY OF JOHNNY CAKE ROAD
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0033B	10/02/03	8.0'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** cis-1,2-Dichloroethene Trichloroethene Toluene	0.0006 J **5.6 DJB** 0.009 J 0.001 J 0.0006 J	Soil Boring No. JCRS-0033
JCRS-0033C	10/02/03	9.0'	**Acetone** Toluene	**3.3 DJB** 0.002 J	Soil Boring No. JCRS-0033
JCRS-0033D	10/02/03	16.0'	**Acetone** Toluene	**7.6 DB** 0.001 J	Soil Boring No. JCRS-0033
JCRS-0033E	10/02/03	17.5'	1,1,2-Trichloro-1,2,2-trifluoroethane **Acetone** 2-Butanone	0.48 DJ **16 DJ** 0.25 DJ	Soil Boring No. JCRS-0033
JCRS-0033F	10/02/03	29.0'	**Acetone** 2-Butanone	**1.5 DJ** 0.26 DJ	Soil Boring No. JCRS-0033
JCRS-0033G	10/02/03	37.5'	1,1,2-Trichloro- 1,2,2-trifluoroethane **Acetone** Methyl Acetate **Methylene chloride** **2-Butanone**	0.12 DJ **4.4 D** 0.64 DJ **0.2 DJ** **0.53 DJ**	Soil Boring No. JCRS-0033
JCRS-0034A	10/02/03	0.5'	1,1,2-Trichloro- 1,2,2-trifluoroethane **Acetone**	0.001 J **0.86 D**	Soil Boring No. JCRS-0034
JCRS-0080B	10/02/03	0.5'	1,1,2-Trichloro- 1,2,2-trifluoroethane Acetone Tetrachloroethene	0.001 J 0.066 DJ 0.001 J	Duplicate of JCRS-0034A
JCRS-0034B	10/02/03	8.0'	VOCs	U	Soil Boring No. JCRS-0034

TABLE 10

SOIL SAMPLE RESULTS
NORTHERN BOUNDARY OF JOHNNY CAKE ROAD
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
JCRS-0034C-1	11/03/03	11.0'	Methylene Chloride	0.002 J	Soil Boring No. JCRS-0034
JCRS-0034D-1	11/03/03	16.0'	VOCs	U	Soil Boring No. JCRS-0034
JCRS-0034E-1	11/03/03	23.5'	**Acetone**	**0.69 D**	Soil Boring No. JCRS-0034
JCRS-0080C-1	11/03/03	23.5'	**Acetone** 2-Butanone	**0.86 J** 0.2 J	Duplicate of JCRS-0034E-1
JCRS-0034F-1	11/03/03	30.5'	**Acetone** Methylene Chloride	**0.61 D** 0.002 J	Soil Boring No. JCRS-0034
JCRS-0034G-1	11/03/03	40.0'	VOCs	U	Soil Boring No. JCRS-0034

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

TABLE 11

QA - FIELD BLANK SAMPLE RESULTS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
RB092303	09/23/03	N/A	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Methylene Chloride Chloroform Toluene	0.0006JB 0.008 JB 0.002 JB 0.0006 J 0.0004 JB	Field Blank
RB092403	09/24/03	N/A	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Methylene Chloride cis-1,2-Dichloroethene Chloroform Trichloroethene Toluene 1,2-Dichlorobenzene	0.0008 JB 0.004 JB 0.003 JB 0.001 J 0.0009 J 0.0003 J 0.0004 JB 0.001 JB	Field Blank
RB092503	09/25/03	N/A	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Methylene Chloride Chloroform Toluene	0.0009 JB 0.003 JB 0.003 JB 0.0007 J 0.0004 JB	Field Blank
RB092603	09/26/03	N/A	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Methylene Chloride Chloroform Toluene	0.0008 JB 0.002 JB 0.002 JB 0.0006 J 0.0004 JB	Field Blank
RB092903	09/29/03	N/A	Acetone Methylene Chloride 2-Butanone Chloroform	0.004 J 0.001 JB 0.004 JB 0.001 J	Field Blank

TABLE 11

QA - FIELD BLANK SAMPLE RESULTS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
RB093003	09/30/03	N/A	Acetone Methylene Chloride 2-Butanone Chloroform	0.01 J 0.002 BJ 0.005 BJ 0.0008 J	Field Blank
RB100203	10/02/03	N/A	Acetone Methylene Chloride 2-Butanone	0.004 J 0.002 JB 0.002 JB	Field Blank
RB100303	10/03/03	N/A	Acetone Methylene Chloride 2-Butanone	0.005 J 0.001 JB 0.002 JB	Field Blank
RB110303	11/03/03	N/A	Acetone 2-Butanone Toluene	0.004 J 0.003 J 0.001 J	Field Blank
RB100603	10/06/03	N/A	Acetone Methylene Chloride 2-Butanone Toluene	0.01 0.003 JB 0.005JB 0.0009 J	Field Blank
RB100703	10/07/03	N/A	1,1,2-Trichloro-1,2,2-trifluoroethane Acetone Methylene Chloride 2-Butanone Toluene	0.001 J 0.007 J 0.002 JB 0.005 JB 0.006 J	Field Blank
RB100803	10/08/03	N/A	VOCs	U	Field Blank
RB100903	10/09/03	N/A	VOCs	U	Field Blank
RB101003	10/10/03	N/A	Methylene Chloride	0.004 JB	Field Blank

TABLE 11

QA - FIELD BLANK SAMPLE RESULTS
JOHNNY CAKE ROAD, DANUBE, NEW YORK

Sample ID	Date	Depth (below grade)	Analytical Parameters	Results (ppm)	Location
RB101303	10/13/03	N/A	Methylene Chloride	0.004 JB	Field Blank
RB101403	10/14/03	N/A	Methylene Chloride	0.004 JB	Field Blank

J: Indicates an estimated value.
D: Identifies all compounds identified in an analysis of a diluted sample.
B: Analyte found in the associated blank as well as in the sample.
U: Indicates that the compound was analyzed for but not detected.
E: Identifies compounds whose concentrations exceed the calibration range of the instrument.

Compounds in **bold** indicate results above NYSDEC TAGM #4046 Recommended Soil Clean-Up Objective.

APPENDIX 5

GPS DATA TABLE

TABLE 12 - GPS DATA

JOHNNY CAKE ROAD SITE
DANUBE, NY

October 14, 2003

Table Reference North/East Coordinates for Universal Transverse Mercator, 18 North, WGS 1984 Datum

LOCATION ID	NORTH (m)	EAST (m)	ALTITUDE (m) (MSL)	COMMENTS
MW-16	4757246.377	511679.797	238.113*	Groundwater monitoring well
MW-17	4757246.271	511678.367	238.046*	Groundwater monitoring well
MW-18	4757240.290	511657.038	238.890*	Groundwater monitoring well
MW-19	4757224.257	511624.344	240.069*	Groundwater monitoring well
MW-20	4757280.234	511634.312	234.510*	Groundwater monitoring well
JCRS-029	4757255.629	511618.363	234.399	Soil boring
JCRS-030	4757260.770	511637.922	235.899	Soil boring
JCRS-031	4757263.007	511645.359	235.906	Soil boring
JCRS-032	4757291.190	511675.318	230.511	Soil boring
JCRS-033	4757277.829	511681.285	232.276	Soil boring
JCRS-034	4757266.103	511668.529	235.858	Soil boring
JCRS-035	4757256.340	511641.826	235.969	Soil boring
JCRS-036	4757242.478	511692.323	236.805	Soil boring
JCRS-037	4757236.415	511694.202	237.907	Soil boring
JCRS-038	4757225.848	511692.692	239.362	Soil boring
JCRS-039	4757232.055	511681.332	239.301	Soil boring
JCRS-040	4757243.501	511666.606	237.493	Soil boring
JCRS-041	4757233.112	511653.415	238.946	Soil boring
JCRS-042	4757213.058	511657.582	240.514	Soil boring
JCRS-043	4757220.914	511671.142	240.336	Soil boring

TABLE 12 - GPS DATA

JOHNNY CAKE ROAD SITE
DANUBE, NY

October 14, 2003

Table Reference North/East Coordinates for Universal Transverse Mercator, 18 North, WGS 1984 Datum

LOCATION ID	NORTH (m)	EAST (m)	ALTITUDE (m) (MSL)	COMMENTS
JCRS-044	4757223.306	511677.379	241.069	Soil boring
JCRS-045	4757219.372	511681.715	240.481	Soil boring
JCRS-046	4757220.856	511626.582	239.908	Soil boring
JCRS-047	4757196.919	511639.273	242.446	Soil boring
JCRS-048	4757207.043	511630.653	241.245	Soil boring
JCRS-049	4757218.021	511638.173	239.711	Soil boring
JCRS-050	4757230.261	511631.242	239.024	Soil boring
JCRS-051	4757238.427	511650.488	237.840	Soil boring
JCRS-052	4757246.121	511673.339	236.580	Soil boring
JCRS-053	4757235.710	511666.784	240.079	Soil boring
JCRS-054	4757229.994	511668.049	239.792	Soil boring
JCRS-055	4757224.643	511665.811	240.161	Soil boring

m = meters

MSL = Mean Sea Level

* = top of well casing

United States Environmental Protection Agency
EPA REGION 2 New Jersey, New York, Puerto Rico & U.S. Virgin Islands

SUPERFUND CONTRACT SUPPORT TEAM

SAMPLING REPORT

August 14-15, 2000
JOHNNY CAKE FARM ROAD SITE
Danube, New York

Participating Personnel: United States Environmental Protection Agency
Keith C. Glenn, Environmental Scientist
Pat Sheridan, Quality Assurance Officer

Report Prepared By: ______________________________
Keith C. Glenn, Environmental Scientist

Approved for the Director By: ______________________________
Robert Runyon, Chief, Hazardous Waste Support Branch

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1.0 BACKGROUND

The Johnny Cake Farm Road site is located in Danube, Herkimer County, New York. The site encompasses approximately 377 acres of farmland. During a 14-month period, an illicit cocaine refining laboratory was operating on the site. Throughout the operation, unknown amounts of solvents were spilled, dumped or deposited into the unpaved areas of the site or into the building septic system. Additional spills appear to have included releases from drummed solvents within the garage. The property was seized by the U.S. Marshal's Service in 1987. Approximately 250 people live within three miles of the site and get their drinking water from private wells. The closest home is 500 feet from the site.

In April and May 1990, C.T. Male Associates, P.C. conducted a preliminary site investigation on behalf of the U.S. Marshal's Office. Six soil borings were completed, nine groundwater monitor wells were installed, and surface water samples were taken. The results indicated that toluene, trichloroethene (TCE) and tetrachloroethene (PCE) were present in both the stream and in the pond area along the east of the property. Soil levels were as high as 34,000 ppb PCE. Groundwater contamination was found to include 25,400 ppb toluene and 56,000 ppb PCE.

The site has been listed in New York State's Registry of Inactive Hazardous Waste Sites as a Class 2 site. In 1990, the Registry reported that: "Toluene, trichloroethene, and tetrachloroethene (in the groundwater and surface water) are in excess of New York State Ambient Water Quality Standards and NYSDOH ground-water/drinking water standards and/or guidance values."

In August 1990, the U.S. Marshal's Office and U.S. Attorney's Office requested assistance from the U.S. EPA Region II Removal Action Branch for support to assess and rededicate the site. In September and November, 1990, the U.S. EPA Environmental Response Team (ERT) and its contractor, Response Engineering and Analytical Contract (REAC), conducted an extent of contamination investigation by soil gas methods and analysis of groundwater samples. A seismic refraction survey was also performed to identify possible preferential pathways for lateral contamination migration and potential vertical migration of contamination into the bedrock aquifer. The investigation concluded that: (1) one or two groundwater plumes of the target compounds originated in the areas adjacent to the garage and septic tank, (2) contamination from these source areas appeared to be migrating down-gradient as suggested by distribution of contamination and the apparent down-gradient decrease in concentrations, (3) the garage and septic system appeared to be source areas of contaminants, and (4) the presence of potential preferential pathways exist in the form of buried channels (incised in till) draining the site.

In May of 1991, ERT/REAC returned to the site to ascertain the specific area of soil contamination for removal purposes, and to determine whether contamination is migrating beyond those areas identified in previous investigations. During this investigation, five overburden monitor wells were installed (two deep borings and five shallow borings were made), 22 shallow soil borings were made, and 18 surface water and stream sediment samples were collected. The analytical findings of this investigation indicate that contamination of soil and groundwater is limited to the close proximity of the spill areas: the septic tank, the area in front of the two-bay garage, the driveway, and the area on the west side of the stall barn. The stream and drainage water flow located directly down-gradient of the spill areas contain relatively high levels of the target compounds: toluene, trichloroethene, tetrachloroethene, and methylene chloride. Surface water samples collected 100 feet down-gradient of the Johnny Cake Farm Road property indicate no detectable concentrations of solvents above the detection limits of 5 ppb.

A relatively thick (at least 90 feet) impervious layer of ground material, consisting of till and clay lies below the perched overburden aquifer. It does not appear likely that downward contaminant migration into the bedrock aquifer will occur. Instead, contamination probably will be released into the east side stream and the drainage ditch along Johnny Cake Farm Road when the water table rises to sufficient levels. The water table is relatively shallow with water levels being recorded at 0.5 to 9.75 feet deep on November 15, 1990 and 1.61 to 7.77 feet deep on May 22, 1991. In addition, it appears that the contamination will migrate down-gradient towards the stream valley in the shallow perched overburden aquifer at a rate upwards to 1.0 foot per day.

The Division of Environmental Science and Assessment (DESA), Hazardous Waste Support Branch (HWSB), Superfund Contract Support Team (SCST) was requested by the Environmental Remedial and Response Division (ERRD) to conduct a soil, residential water, and aqueous coliform sampling event of the Johnny Cake Farm Road Site. The purpose of this activity was to further investigate the migration and extent of contamination in the soil and residential water located at the Johnny Cake Farm Road Site and surrounding properties.

2.0 SAMPLING PROCEDURES

The sampling procedures were conducted in accordance with the guidelines set forth in the Quality Assurance Project Plan (QAPP). The QAPP is located in Appendix A of this document.

3.0 DESCRIPTION OF EVENTS

On August 14, 2000, a sampling team from EPA Region II conducted a soil sampling event as part of the Johnny Cake Farm Road Site activities. This team consisted of Keith Glenn, Environmental Scientist, of the U.S. EPA Region II, Division of Environmental Science and Assessment. Sample SS-01 was taken from the drainage swale located between two residential properties. Sample SS-02 was collected from the drainage swale located approximately 65 feet from the roadway. Sample SS-03 was collected along the embankment by the roadway. A blind field duplicate was taken from this location, presented as SS-04.

August 15, 2000 was dedicated towards the residential water sampling event. RS-01 was collected from the kitchen sink inside the property owner's home. This sample was lost during shipment of samples to the designated laboratory. However, a blind field duplicate of this sample was taken and analyzed. Sample RS-03 was collected from a spring located in the back of the property within the farm fields. All samples including laboratory Quality Control samples are listed in Table 1 of this document.

Samples collected from all soil location points and residential well points, with the exception of aqueous coliform, were sent to MITKEM Corporation located at 175 Metro Center Blvd. In Warwick, RI. All residential water samples to be analyzed for Coliform - Total and Fecal, were sent to the United States Environmental Protection Agency, Region II Laboratory located at 2890 Woodbridge Avenue in Edison, New Jersey. See the Sampling Trip Report for more information (Appendix D).

4.0 RESULTS

Contaminants were found in all soil samples collected at the Johnny Cake Farm Road Site. These contaminants, however, did not exceed neither New York State nor Federal Maximum Contaminant Levels. Total coliform was detected in all residential tap water samples. Levels for total coliform and fecal coliform found in sample RS-03 were determined "too numerous to count".

The summary of analytical results can be found in Table 2. The CLP Data Sheets are attached as Appendix B.

5.0 CONCLUSION

Elevated levels of Coliform - Total and Fecal, were found in residential tap water samples collected from the Johnny Cake Farm Road Site.

TABLE 1: QA/QC SAMPLE TABLE		
TYPE OF SAMPLE	**SAMPLE NUMBERS**	**SAMPLE LOCATION**
Tap Water	BZD40	RS-01
Tap Water	BZD41	RS-02 (Blind Duplicate of RS-01)
Tap Water	BZD42	RS-03 (MS/MSD)
Trip Blank 1	BZD43	N/A
Trip Blank 2	BZD44	N/A
Equipment Blank	BZL38	N/A
Soil	BZD36	SS-01
Soil	BZD37	SS-02
Soil	BZD38	SS-03 (MS/MSD)
Soil	BZD39	SS-04 (Blind Duplicate of SS-03)
Aqueous Coliform	JCRS01	RS-01
Aqueous Coliform	JCRS02	RS-02 (Blind Duplicate of RS-01)
Aqueous Coliform	JCRS03	RS-03 (MS/MSD)

N/A - The location is not applicable

<table>
<tr><th colspan="3">TABLE 2 : ANALYTICAL RESULTS</th></tr>
<tr><th rowspan="2">SAMPLE LOCATION / NUMBERS</th><th colspan="2">COMPOUNDS & CONCENTRATIONS (ug/L)</th></tr>
<tr><th>Compound</th><th>Concentration (ug/L)</th></tr>
<tr><td>SS-01/
BZD36</td><td>Acetone</td><td>80</td></tr>
<tr><td>SS-02/
BZD37</td><td>Acetone</td><td>53</td></tr>
<tr><td rowspan="3">SS-03/
BZD38</td><td>Acetone</td><td>37</td></tr>
<tr><td>cis-1,2-Dichloroethene</td><td>13</td></tr>
<tr><td>Trichloroethene</td><td>4</td></tr>
<tr><td rowspan="6">SS-04/
BZD39

Sample is a blind field duplicate of SS-03.</td><td>Acetone</td><td>110</td></tr>
<tr><td>cis-1,2-Dichloroethene</td><td>11</td></tr>
<tr><td>1,1,1-Trichloroethane</td><td>4</td></tr>
<tr><td>Trichloroethene</td><td>7</td></tr>
<tr><td>Toluene</td><td>4</td></tr>
<tr><td>Tetrachloroethene</td><td>5</td></tr>
<tr><td>RS-01/
BZD40/
JCRS01</td><td>Total Coliform</td><td>34 CFU/100mL</td></tr>
<tr><td rowspan="2">RS-02/
BZD41/
JCRS02

Sample is a blind field duplicate of RS-01.</td><td>Total Coliform</td><td>43 CFU/100mL</td></tr>
<tr><td>Fecal Coliform</td><td>2 MPN/100mL</td></tr>
<tr><td rowspan="2">RS-03/
BZD42/
JCRS03</td><td>Total Coliform</td><td>Too numerous to count</td></tr>
<tr><td>Fecal Coliform</td><td>Present</td></tr>
</table>

TABLE 2 *(CONTINUED)* : ANALYTICAL RESULTS		
SAMPLE LOCATION / NUMBERS	**COMPOUNDS & CONCENTRATIONS (ug/L)**	
	Compound	**Concentration (ug/L)**
Trip Blank 1/ BZD43	Chloroform	7
	Bromodichloromethane	0.7 J
Trip Blank 2/ BZD44	Chloroform	7
	Bromodichloromethane	0.6 J
Equipment Blank/ BZL38	Carbon Disulfide	2
	Chloroform	6
	Bromodichloromethane	0.6 J

* - Above the Federal and/or New York State MCL for drinking water
J - Estimated Value

APPENDIX A

QUALITY ASSURANCE PROJECT PLAN

APPENDIX B

LABORATORY DATA SHEETS

APPENDIX C

WELL DATA SHEETS

FIELD DATA SHEET

SOIL SAMPLING

****

SITE NAME: JOHNNY CAKE FARM ROAD DATE OF SAMPLE COLLECTION: 08/14/00

SAMPLE LOCATION/DESCRIPTION: SS-01
SAMPLE TAKEN WITHIN DRAINAGE SWALE BETWEEN PROPERTIES. SAMPLE COLLECTED 12 FEET EAST OF LARGE PINE TREE. SOIL CONSIST OF BROWN SILT AND ROOT MASS. STANDING WATER PRESENT.

PERSONNEL: Keith Glenn

LAB NUMBERS: BZD36

SAMPLE TYPE (C,G,H): G,H
(Composite, Grab, Homogenized)

DEPTHS TAKEN: Surface

SAMPLE ANALYSIS: VOAs

BOTTLE SIZE USED: En Core™

QC (IF TAKEN): ______

EQUIPMENT USED: En Core™ Sampler

SAMPLE CHARACTERISTICS: Brown silt and root mass and standing water

COMMENTS/WEATHER: ______

****

XRF USED: Y__ N ✔

CALIBRATION: ______ METHOD USED: ______

DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___
DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___
DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___

COMMENTS: ______

****

FIELD DATA SHEET

SOIL SAMPLING

****
****

SITE NAME: JOHNNY CAKE FARM ROAD DATE OF SAMPLE COLLECTION: 08/14/00

SAMPLE LOCATION/DESCRIPTION: SS-02
SAMPLE TAKEN WITHIN DRAINAGE SWALE. SAMPLE COLLECTED ~70 FEET DOWN SWALE FROM SS-01. SAMPLE LOCATION IS ~65 FEET FROM ROADWAY.

PERSONNEL: Keith Glenn

LAB NUMBERS: BZD37

SAMPLE TYPE (C,G,H): G,H
(Composite, Grab, Homogenized)

DEPTHS TAKEN: Surface

SAMPLE ANALYSIS: VOAs

BOTTLE SIZE USED: En Core™

QC (IF TAKEN): ____

EQUIPMENT USED: En Core™ Sampler

SAMPLE CHARACTERISTICS: Brown silt and root mass.

COMMENTS/WEATHER: ____

****
****

XRF USED: Y__ N ✔

CALIBRATION: ____

METHOD USED: ____

DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___
DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___
DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___

COMMENTS: ____

****
****

FIELD DATA SHEET

SOIL SAMPLING

****
****

SITE NAME: JOHNNY CAKE FARM ROAD DATE OF SAMPLE COLLECTION: 08/14/00

SAMPLE LOCATION/DESCRIPTION: SS-03
SAMPLE TAKEN DOWNGRADIENT OF OTHER LOCATIONS. SAMPLE LOCATION IS IN EMBANKMENT ALONG THE ROADWAY.

PERSONNEL: Keith Glenn

LAB NUMBERS: BZD38

SAMPLE TYPE (C,G,H): G,H
(Composite, Grab, Homogenized)

DEPTHS TAKEN: Surface

SAMPLE ANALYSIS: VOAs

BOTTLE SIZE USED: En Core™

QC (IF TAKEN): ______

EQUIPMENT USED: En Core™ Sampler

SAMPLE CHARACTERISTICS: Brown silt

COMMENTS/WEATHER: ______

****
****

XRF USED: Y__ N ✔

CALIBRATION: ______ METHOD USED: ______

DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___
DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___
DEPTH: ___ INITIAL WEIGHT: ___ FINAL WEIGHT: ___ RESULT: ___

COMMENTS: ______

****
****

FIELD DATA SHEET

SOIL SAMPLING

****

SITE NAME: JOHNNY CAKE FARM ROAD DATE OF SAMPLE COLLECTION: 08/14/00

SAMPLE LOCATION/DESCRIPTION: SS-04
SAMPLE TAKEN DOWNGRADIENT OF OTHER LOCATIONS. SAMPLE LOCATION IS IN EMBANKMENT ALONG THE ROADWAY.

PERSONNEL: Keith Glenn

LAB NUMBERS: BZD38

SAMPLE TYPE (C,G,H): G,H
(Composite, Grab, Homogenized)

DEPTHS TAKEN: Surface

SAMPLE ANALYSIS: VOAs

BOTTLE SIZE USED: En Core™

QC (IF TAKEN): This is a blind field duplicate of SS-03.

EQUIPMENT USED: En Core™ Sampler

SAMPLE CHARACTERISTICS: Brown silt

COMMENTS/WEATHER:

****

XRF USED: Y_ N ✔

CALIBRATION:

METHOD USED:

DEPTH: ___ INITIAL WEIGHT: _____ FINAL WEIGHT: ____ RESULT: ______
DEPTH: ___ INITIAL WEIGHT: _____ FINAL WEIGHT: _____ RESULT: ______
DEPTH: ___ INITIAL WEIGHT: _____ FINAL WEIGHT: _____ RESULT: ______

COMMENTS:

****

****

APPENDIX D

SAMPLING TRIP REPORT

APPENDIX 2

THIS INDENTURE made this ____day of _________, 20 __, between ***Name of title owner(s) of the site*** residing at (or having an office at) ***Title owner's address - no PO Boxes***, (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("brownfield sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of environmental easements as an enforceable means of ensuring the performance of maintenance, monitoring or operation requirements and of ensuring the potential restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to be effective, or which requires groundwater use restrictions; and

WHEREAS, the Legislature of the State of New York has declared that environmental easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a brownfield site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and;

WHEREAS, Grantor, is the owner of real property located in the City/Town/Village of ___________, ________County, New York known and designated on the tax map of the _________ of ____________ as ***insert tax map information***, being the same as that property conveyed to Grantor by deed on ______, and recorded in the Land Records of the _________ County Clerk at ***insert Liber and page or computerized system tracking/ identification number***, comprised of approximately ***#*** acres, and hereinafter more fully described in Schedule A attached hereto and made a part hereof (the " Controlled Property"); and;
Attach an adequate legal description of the property subject to the easement, or reference a recorded map. If the easement is on only a part of a parcel of land which is not subdivided into encumbered and unencumbered portions, a legal description needs to be created by a survey bearing the seal and signature of a licensed land surveyor with reference to a metes and bounds description.

WHEREAS, the Commissioner does hereby acknowledge that the Department accepts this

Environmental Easement in order to ensure the protection of human health and the environment and to achieve the requirements for remediation established at this Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36;and

NOW THEREFORE, in consideration of the covenants and mutual promises contained herein and the terms and conditions of **(STRIKE INAPPROPRIATE REFERENCE) Brownfield Cleanup Agreement Number_________/State Assistance Contract Number_______/Order on Consent Number___________**, Grantor grants, conveys and releases to Grantee a permanent Environmental Easement pursuant to Article 71, Title 36 of the ECL in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of maintenance, monitoring or operation requirements; and to ensure the potential restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The following controls apply to the use of the Controlled Property, run with the land are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees, and any person using the Controlled Property:

A. The Controlled Property may be used for **STRIKE INAPPROPRIATE LANGUAGE residential/commercial/industrial use as long as the following the long-term engineering controls are employed:**

STATE THE CONTROLS. FOR EXAMPLE:

(i) any soil on the property must be covered by a demarcation layer and a barrier layer approved by NYSDEC such as concrete, asphalt or structures or must be covered with a _______layer of clean soil and this demarcation layer and barrier layer must be maintained; and

(ii) any proposed soil excavation on the property below the _____ cover or below the demarcation layer requires prior notification and prior approval of NYSDEC in accordance with the Site Management Plan approved by NYSDEC for this Controlled Property and the excavated soil must be managed, characterized, and properly disposed of in accordance with NYSDEC regulations and directives.

B. The Controlled Property may not be used for a higher level of use such as **STRIKE INAPPROPRIATE LANGUAGE residential/commercial use** and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an environmental easement held by the New York State Department of Environmental Conservation pursuant of Title 36 to Article 71 of the Environmental Conservation Law.

C. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

D. Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury that the controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls employed at the Controlled Property were approved by the NYSDEC, and that nothing has occurred that would impair the ability of such control to protect the public health and environment or constitute a violation or failure to comply with any Site Management Plan for such controls and giving access to such Controlled Property to evaluate continued maintenance of such controls.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Controlled Property, including:

1. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

2. The right to give, sell, assign, or otherwise transfer the underlying fee interest to the Controlled Property by operation of law, by deed, or by indenture, subject and subordinate to this

Environmental Easement;

5. Enforcement.

A. This environmental easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this environmental easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person intentionally violates this environmental easement, the Grantee may revoke the Certificate of Completion provided under ECL Article 27, Title 14, or the Satisfactory Completion of Project provided under ECL Article 56, Title 5 with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach. Grantor shall then have a reasonable amount of time from receipt of such notice to cure. At the expiration of said second period, Grantee may commence any proceedings and take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement in accordance with applicable law to require compliance with the terms of this Environmental Easement.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar its enforcement rights in the event of a subsequent breach of or noncompliance with any of the terms of this Environmental easement.

6. Notice. Whenever notice to the State (other than the annual certification) or approval from the State is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the its County tax map number or the Liber and Page or computerized system tracking/ identification number and address correspondence to:

Division of Environmental Enforcement
Office of General Counsel
New York State Department of Environmental Conservation
625 Broadway
Albany New York 12233-5500

Such correspondence shall be delivered by hand, or by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. This environmental easement may be amended only by an amendment executed by the Commissioner of the New York State Department of Environmental Conservation and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This environmental easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Costs and Liabilities. Grantor shall retain all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Property, including but not limited to the obligation to maintain adequate liability insurance coverage.

12. Taxes. Grantor shall pay before delinquency all taxes, assessments, fees, and charges of whatever description levied on or assessed against the Property by competent authority.

13. Successors. The term "Grantor", wherever used herein, shall include the persons and/or entities named at the beginning of this document, identified as "Grantor" and their personal representatives, heirs, successors, and assigns.

14. Compliance with Law. This Environmental easement shall not remove the necessity of Grantor to obtain any permit and/or approval from any governmental agency having jurisdiction over any activity conducted or to be conducted on the Controlled Property.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Grantor's Name

By:________ ___________________

Title:____________________________

Date:____________________________

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Thriugh the Department of Environmental Conservation

By: ____________________________________
Erin M. Crotty, Commissioner

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the _______ day of _________, in the year 200_, before me, the undersigned, personally appeared ________________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public - State of New York

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the _______ day of _________, in the year 200_, before me, the undersigned, personally appeared ________________, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

____
Notary Public - State of New York

APPENDIX 3

Soils Management Plan
Johnny Cake Road Site
Danube, Herkimer County, New York

1. Overview and objectives

The site encompasses a total of 37.9-acres, of which, 4.02-acre has been impacted by subsurface contaminants. The impacted area addressed by this Soil Management Plan (SMP) includes those areas affected by both soil and groundwater contamination. The extent of the affected area is depicted in Attachment E, Site Survey, of the Removal Action Report. Currently, the vacant farmland property is owned by the United States Marshal's Service (USMS). The location of the property is shown on Figure 1. In the late 1980's, the USMS seized the property in connection with on-site cocaine manufacturing. The site has been characterized during several previous investigations. The user should refer to the previous investigation reports for more detail, as needed.

The objective of this SMP is to set guidelines for management of site soil during any future activities which would breach the cover system at the site. This SMP addresses environmental concerns related to soil management and has been reviewed and approved by the New York State Department of Environmental Conservation (NYSDEC).

2. Nature and extent of contamination

Based on data obtained from previous investigations and the remediation conducted at the site, a Final Removal Action Report (RAR) - dated October 2006 was developed by the United States Environmental Protection Agency (EPA).

The constituents of potential concern (COPC) for soil consist of volatile organic compounds (VOCs), primarily cis-1,2-dichloroethene, vinyl chloride, trichloroethene, tetrachloroethene, toluene and trans-1,2-dichloroethene. As summarized on tables provided in the RAR, the concentrations of individual contaminants only slightly exceed their associated cleanup criteria under most circumstances. Results of ground water sampling indicate that constituents in the soil have impacted ground water quality slightly with regard to the compounds provided above. However, toluene has not been identified within Site groundwater samples collected to date. As a result of the presence of VOCs within the groundwater, treatment will be necessary prior to use. The contaminant properties and possible persistence in the environment can be found in Appendix 5 (Natural Attenuation of Site Contaminants Report) of the RAR.

In the 12-months following the source removal program, EPA has monitored the groundwater in the vicinity of remediated areas. Overall, contaminant concentrations have decreased, in some cases to below Federal and State guidelines. However, residual concentrations continue to exist within soil and groundwater which may represent or pose a future risk. In the case of soils, residual contamination above State guideline was documented at a depth of 1.5 to 2.0-feet below grade along the north side of the Area 2 excavation (see Table 2/Figure 3.2 of the RAR). This sample location represents the closest sample location to the ground surface and where contaminants might be encountered during Site soil disturbance. The next depth to which contaminants may be encountered is at 7.5 to 8.0-feet below grade along the western and northern perimeter of the Area 1 excavation (see Table 1/Figure 3.1 of the RAR).

In each area, potential exposure risks may exist should excavation within these areas occur. Possible excavation activities could include installation of building footings and/or building basement, in-ground swimming pool, underground utilities (i.e. piping, electrical, sewer) and septic system and associated leach field.

3. Contemplated use

As part of any redevelopment project, the property has been identified for residential/farmland uses. Specific uses for this zoning category are as follows

-agricultural; and
-residential;

Use of on-site groundwater within the area affected by Site contaminants may represent a potential exposure risk. Actual exposure will depend on the physical location of the well (up or down gradient), its depth and anticipated use (i.e. irrigation, human consumption or livestock watering). The actual exposure risk will need to be evaluated in consultation with local Department of Health representatives before consumption.

Should the area affected by Site contaminants be used for the construction of a residential dwelling, engineering controls may be necessary in order to prevent subsurface vapors from entering the structure. Actual exposure will depend on the physical location of the dwelling, construction method (i.e. slab on grade, basement or crawl-space). The actual exposure risk will need to be evaluated in consultation with local Department of Health representatives before occupancy.

4. Purpose and description of surface cover system

The purpose of the surface cover system is to eliminate the potential for human contact with fill material and eliminate the potential for contaminated runoff from the property.

In its current condition, no contaminated materials are located upon the ground surface. The closest identified contaminated material is located 1.5 to 2.0-feet below grade. Should the material above 1.5-feet be removed, a cover system consisting of one of the following types of clean material by be placed upon the affected area:

- Soil: 12-inches of vegetated soil cover underlain by a demarcation layer, in outdoor vegetated areas.

· Asphalt: a minimum of 6 inches of material (asphalt and sub-base material) in areas that will become roads, sidewalks, and parking lots. Actual cross sections will be determined based on the intended use of the area.

· Concrete: a minimum of 6 inches of material (concrete and sub-base material) in areas that will become slab-on-grade structures or for roads, sidewalks, and parking lots in lieu of asphalt. For slab-on-grade structures, an 8-mil polyethylene vapor barrier will be placed beneath the concrete (for sites impacted by VOC contamination only). Actual cross sections will be determined based on the intended use of the area.

5. Management of soils/fill and long term maintenance of cover system

The purpose of this section is to provide environmental guidelines for management of subsurface soils/fill and the long-term maintenance of the cover system during any future intrusive work which breaches the cover system.

The SMP includes the following conditions:

- Any breach of the cover system, including for the purposes of construction or utilities work, must be replaced or repaired using an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination. The repaired area must be covered with clean soil and reseeded or covered with impervious product such as concrete or asphalt, as described in Section 4, to prevent erosion in the future.

- Control of surface erosion and run-off of the entire property at all times, including during construction activities. This includes proper maintenance of the vegetative cover established on the property.

- Site soil that is excavated and is intended to be removed from the property must be managed, characterized, and properly disposed of in accordance with NYSDEC regulations and directives.

- Soil excavated at the site may be reused as backfill material on-site provided it contains no visual or olfactory evidence of contamination, and it is placed beneath a cover system component as described in Section 4.

- Prior to any construction activities, workers are to be notified of the site conditions with clear instructions regarding how the work is to proceed. Invasive work performed at the property will be performed in accordance with all applicable local, state, and federal regulations to protect worker health and safety.

- The Owner shall complete and submit to the Department an annual report by January 15th of each year. Such annual report shall contain certification that the institutional controls put in place, pursuant to *name of legal document*, are still in place, have not been altered and are still effective; that the remedy and protective cover have been maintained; and that the conditions at the site are fully protective of public health and the environment.

If the cover system has been breached during the year covered by that Annual Report, the owner of the property shall include the following in that annual report:

- A certification that all work was performed in conformance with this SMP.

5.1. Excavated and stockpiled soil/fill disposal

Soil/fill that is excavated as part of development which can not be used as fill below the cover system will be further characterized prior to transportation off-site for disposal at a permitted facility. For excavated soil/fill with visual evidence of contamination (i.e., staining or elevated PID measurements), one composite sample and a duplicate sample will be collected for each 100 cubic yards of stockpiled soil/fill. For excavated soil/fill that does not exhibit visual evidence of contamination but must be sent for off-site disposal, one composite sample and a duplicate sample will be collected for 2000 cubic yards of stockpiled soil, and a minimum of 1 sample will be collected for volumes less than 2000 cubic yards.

The composite sample will be collected from five locations within each stockpile. A duplicate composite sample will also be collected. PID measurements will be recorded for each of the five individual locations. One grab sample will be collected from the individual location with the highest PID measurement. If none of the five individual sample locations exhibit PID readings, one location will be selected at random. The composite sample will be analyzed by a NYSDOH ELAP-certified laboratory for pH (EPA Method 9045C), Target Compound List (TCL) SVOCs, pesticides, and PCBs, and TAL metals, and cyanide. The grab sample will be analyzed for TCL VOCs.

Soil samples will be composited by placing equal portions of fill/soil from each of the five composite sample locations into a pre-cleaned, stainless steel (or Pyrex glass) mixing bowl. The soil/fill will be thoroughly homogenized using a stainless steel scope or trowel and transferred to pre-cleaned jars provided by the laboratory. Sample jars will then be labeled and a chain-of-custody form will be prepared.

Additional characterization sampling for off-site disposal may be required by the disposal facility. To potentially reduce off-site disposal requirements/costs, the owner or site developer may also choose to characterize each stockpile individually. If the analytical results indicate that concentrations exceed the standards for RCRA characteristics, the material will be considered a hazardous waste and must be properly disposed off-site at a permitted disposal facility within 90 days of excavation. If the analytical results indicate that the soil is not a hazardous waste, the material will be properly disposed off-site at a non-hazardous waste facility. Stockpiled soil cannot be transported on or off-site until the analytical results are received.

5.2. Sub-grade material

Sub-grade material used to backfill excavations or placed to increase site grades or elevation shall meet the following criteria.

- Excavated on-site soil/fill which appears to be visually impacted shall be sampled and analyzed. If analytical results indicate that the contaminants, if any, are present at concentrations below the Technical and Administrative Guidance Memoradum #4046 (TAGM).

- Any off-site fill material brought to the site for filling and grading purposes shall be from an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination.

- Off-site soils intended for use as site backfill cannot otherwise be defined as a solid waste in accordance with 6 NYCRR Part 360-1.2(a).

- If the contractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material from areas not having supported any known prior industrial or commercial development or agricultural use.

- Virgin soils should be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and cyanide. The soil will be acceptable for use as backfill provided that all parameters meet the SSALs.

- Non-virgin soils will be tested via collection of one composite sample per 500 cubic yards of material from each source area. If more than 1,000 cubic yards of soil are borrowed from a given off-site non-virgin soil source area and both samples of the first 1,000 cubic yards meet SSALs, the sample collection frequency will be reduced to one composite for every 2,500 cubic yards of additional soils from the same source, up to 5,000 cubic yards. For borrow sources greater than 5,000 cubic yards, sampling frequency may be reduced to one sample per 5,000 cubic yards, provided all earlier samples met the SSALs.

APPENDIX 4

JOHNNY CAKE ROAD MONITORING WELLS
Conc.in BOLD exceed TAGM Value

PCE-ppb

Sample Date	TAGM Standard **5ppb**	MW 1	MW 2	MW 3	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12A	MW 13	MW 14	MW 15	MW 16	MW 17	MW 18	MW 19	MW 20
Nov. 1990		**25.1**	**40000**	**6000**	**30000**	0 ND	0 ND	0 ND	0 ND	NS		NS	NS	NS	*	*	*	*	*
May 1991		0 ND	**470**	**730**	**28000**	0 ND	0 ND	0 ND	0 ND	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
Oct. 1993		**140**	**19000**	**510**	**13000**	NS	NS	NS	NS	0 ND		NS	NS	0 ND	*	*	*	*	*
Nov 12,1993		NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
Nov.29,1993		0 ND	**39000**	NS	**18000**	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
Aug 1995		NS	**1300**	**620**	**<6200**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
April 2000		**10**	**34000**	4	**620**	NS	NS	NS	NS	3	NS	0 ND	0 ND	**6**	*	*	*	*	*
May 2001		1	**5200**	**40**	**210**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
May 2002		**9.8**	**5300**	**23**	**680**	NS	NS	NS	NS	0 ND		0.4	0 ND	0 ND	*	*	*	*	*
Dec. 2003		2.4	**12000**	**17**	**240**	NVD	NS-frozen	0 ND	0.56	NVD	2.7	1.1	**5.4**	0 ND	NVD	0 ND	0 ND	4	4.6
Mar 2005		0.9	**5400**	NS-frozen	**67**	NS-frozen	NS-frozen	NVD	NVD	NS-frozen	1.1	0.9	0 ND	NVD	NVD	NVD	0 ND	NVD	0 ND

TCE-ppb

Sample Date	TAGM Standard **5ppb**	MW 1	MW 2	MW 3	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12A	MW 13	MW 14	MW 15	MW 16	MW 17	MW 18	MW 19	MW 20
Nov 1990		**51.2**	**870**	**360**	**6600**	0 ND	0 ND	0 ND	0 ND	NS		NS	NS	NS	*	*	*	*	*
May 1991		**26**	**1200**	**150**	**8300**	**0 ND**	**0 ND**	0 ND	0 ND	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
Oct. 1993		**190**	**5400**	**58**	**13000**	NS	NS	NS	NS	0 ND		NS	NS	0 ND	*	*	*	*	*
Nov.12,1993		NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
Nov.29,1993		NS	**4700**	NS	**24000**	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
Aug 1995		NS	**620**	**170**	**5300**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
April 2000		**28**	**4900**	0 ND	**290**	NS	NS	NS	NS	0 ND		0 ND	2	0 ND	*	*	*	*	*
May 2001		**11**	**710**	**21**	**300**	NS	NS	NS	NS	0 ND		1	**11**	0 ND	*	*	*	*	*
May 2002		**14**	**1900**	**5.2**	**1200**	NS	NS	NS	NS	0 ND		2.1	**7.6**	0 ND	*	*	*	*	*
Dec. 2003		**8.1 J**	**1500**	4.6	**650**	NVD	NS-frozen	0 ND	0 ND	NVD	0 ND	1.9	**5.1**	0 ND	NVD	0 ND	0 ND	0.4	0.56
Mar 2005		**8.4**	**710**	NS-frozen	**360**	NS-frozen	NS-frozen	NVD	NVD	NS-frozen	0 ND	2.7	4.6	NVD	NVD	NVD	0 ND	NVD	0.9

Vinyl Chloride-ppb

Sample Date	TAGM Standard **2ppb**	MW 1	MW 2	MW 3	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12A	MW 13	MW 14	MW 15	MW 16	MW 17	MW 18 NEW	MW 19	MW 20
Nov 1990		0 ND	0 ND	0 ND	**3.4**	NS	NS	NS	NS	NS		NS	NS	NS	*	*	*	*	*
May 1991		0 ND	0 ND	0 ND	0 ND	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
Oct. 1993		0 ND	0 ND	0 ND	**44**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
Nov 12,1993		NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
Nov.29,1993		NS	0 ND	0 ND	**28**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
Aug 1995		NS	0 ND	0 ND	**3000**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
April 2000		**65**	0 ND	0 ND	**7**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
May 2001		**30**	0 ND	0 ND	**16**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
May 2002		**8.5**	0 ND	0.3	**26**	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
Dec. 2003		**4.6**	0 ND	0.88	**350 D**	NVD	NS-frozen	0 ND	0 ND	NVD	1	0 ND	0 ND	0 ND	NVD	0 ND	**16**	0 ND	0 ND
Mar 2005		**30**	0 ND	NS-frozen	**72**	NS-frozen	NS-frozen	NVD	NVD	NS-frozen	0 ND	0 ND	0 ND	NVD	NVD	NVD	**11**	NVD	0.6

uene-ppb

nple te	TAGM Standard 5ppb	MW 1	MW 2	MW 3	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12A	MW 13	MW 14	MW 15	MW 16	MW 17	MW 18	MW 19	MW 20
v 1990		28	13000	49.2	34000	0 ND	0 ND	0 ND	0 ND	NS		NS	NS	NS	*	*	*	*	*
y 1991		0 ND	36	0 ND	31000	0 ND	0 ND	0 ND	0 ND	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
l 1993		0 ND	3100	0 ND	11000	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
v.12,1993		NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
v.29,1993		NS	3700	NS	16000	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
g 1995		NS	0 ND	0 ND	<6200	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
ril 2000		0 ND	53	0 ND	8	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
y 2001		0 ND	0 ND	0 ND	1	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
y 2002		0 ND	1	0 ND	2	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
c. 2003		0 ND	0 ND	0 ND	12	0 ND	NS-frozen	2.9	0 ND	NVD	0 ND	0 ND	0 ND	0 ND	NVD	0.31	0 ND	0.57	0 ND
r 2005		0 ND	0 ND	NS-frozen	8.3	NS-frozen	NS-frozen	NVD	NVD	NS-frozen	0 ND	0 ND	0 ND	NVD	NVD	NVD	0 ND	NVD	0 ND

-1,2-Dichlorethylene-ppb

mple te	TAGM Standard 5ppb	MW 1	MW 2	MW 3	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12A	MW 13	MW 14	MW 15	MW 16	MW 17	MW 18	MW 19	MW 20
v 1990		0 ND	0 ND	0 ND	0 ND	0 ND	NA	NA	NA	NS		NS	NS	NS	*	*	*	*	*
y 1991		0 ND	0 ND	0 ND	0 ND	0 ND	0 ND	0 ND	0 ND	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
t 1993		2200	3200	13	23000	NS	NS	NS	NS	0 ND		NS	NS	0 ND	*	*	*	*	*
v 12,1993		NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
v.29,1993		NS	3400	NS	32000	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
g 1995		NS	TOT 400	TOT 37	TOT ND	NS	NS	NS	NS	0 ND		TOT 14	TOT 88	0 ND	*	*	*	*	*
ril 2000		98	495	0 ND	190	NS	NS	NS	NS	0 ND		86	29	0 ND	*	*	*	*	*
y 2001		38	110	4	280	NS	NS	NS	NS	0 ND		57	60	0 ND	*	*	*	*	*
y 2002		27	180	2.1	660	NS	NS	NS	NS	0 ND		39	48	0 ND	*	*	*	*	*
c. 2003		16	440	1.4	1600	NVD	NS-frozen	0 ND	0 ND	NVD	0.59	64	29	0 ND	NVD	0 ND	6.2	0 ND	1
r 2005		36	210	NS-frozen	670	NS-frozen	NS-frozen	NVD	NVD	NS-frozen	0 ND	44	33	NVD	NVD	NVD	4.6	NVD	16

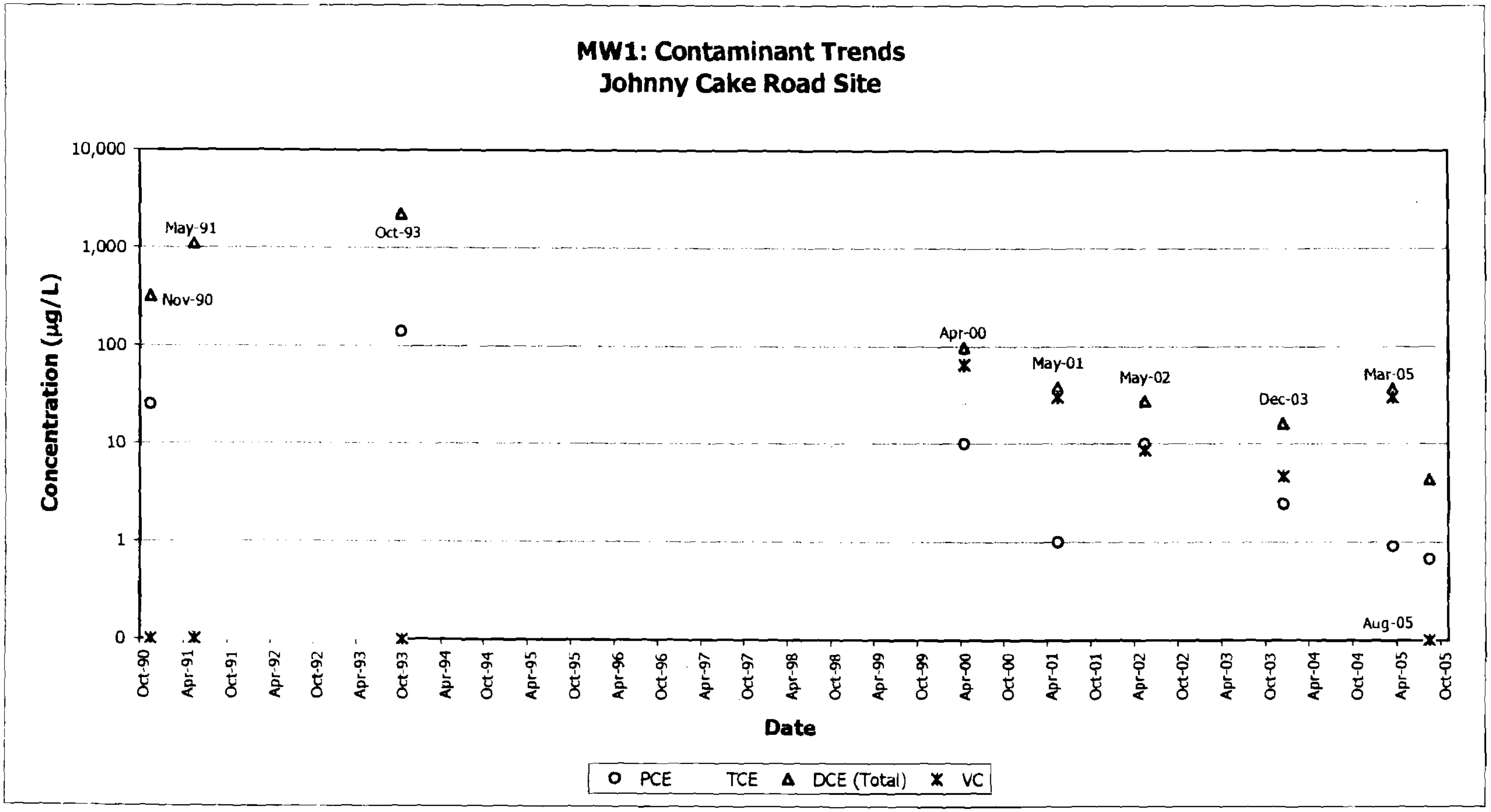
ns-1,2-Dichlorethylene-ppb

nple e	TAGM Standard 5ppb	MW 1	MW 2	MW 3	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12A	MW 13	MW 14	MW 15	MW 16	MW 17	MW 18	MW 19	MW 20
1990		320	980	0 ND	6400	NS	NS	NS	NS	NS		NS	NS	NS	*	*	*	*	*
1991		1100	630	80	10000	NS	NS	NS	NS	0 ND		0 ND	3.5	0 ND	*	*	*	*	*
1993		9.8	32	0 ND	1200	NS	NS	NS	NS	0 ND		NS	NS	0 ND	*	*	*	*	*
.12,1993		NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
29,1993		NS	31	NS	0 ND	NS	NS	NS	NS	NS		NS	NS	0 ND	*	*	*	*	*
1995		NS	TOT 400	TOT 37	TOT ND	NS	NS	NS	NS	0 ND		TOT 14	TOT 88	0 ND	*	*	*	*	*
l 2000		0 ND	0 ND	0 ND	0 ND	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
2001		0 ND	0 ND	0 ND	0 ND	NS	NS	NS	NS	0 ND		0 ND	0 ND	0 ND	*	*	*	*	*
2002		0.3	3.8	0 ND	4.6	NS	NS	NS	NS	0 ND		0 ND	1	0 ND	*	*	*	*	*
2003		0 ND	11	0 ND	0 ND	NVD	NS-frozen	0 ND	0 ND	NVD	0 ND	0.41	0 ND	0 ND	NVD	0 ND	0 ND	0 ND	0 ND
2005		0.6	12	NS-frozen	16	NS-frozen	NS-frozen	NVD	NVD	NS-frozen	0 ND	1.1	0.7	NVD	NVD	NVD	0 ND	NVD	0 ND

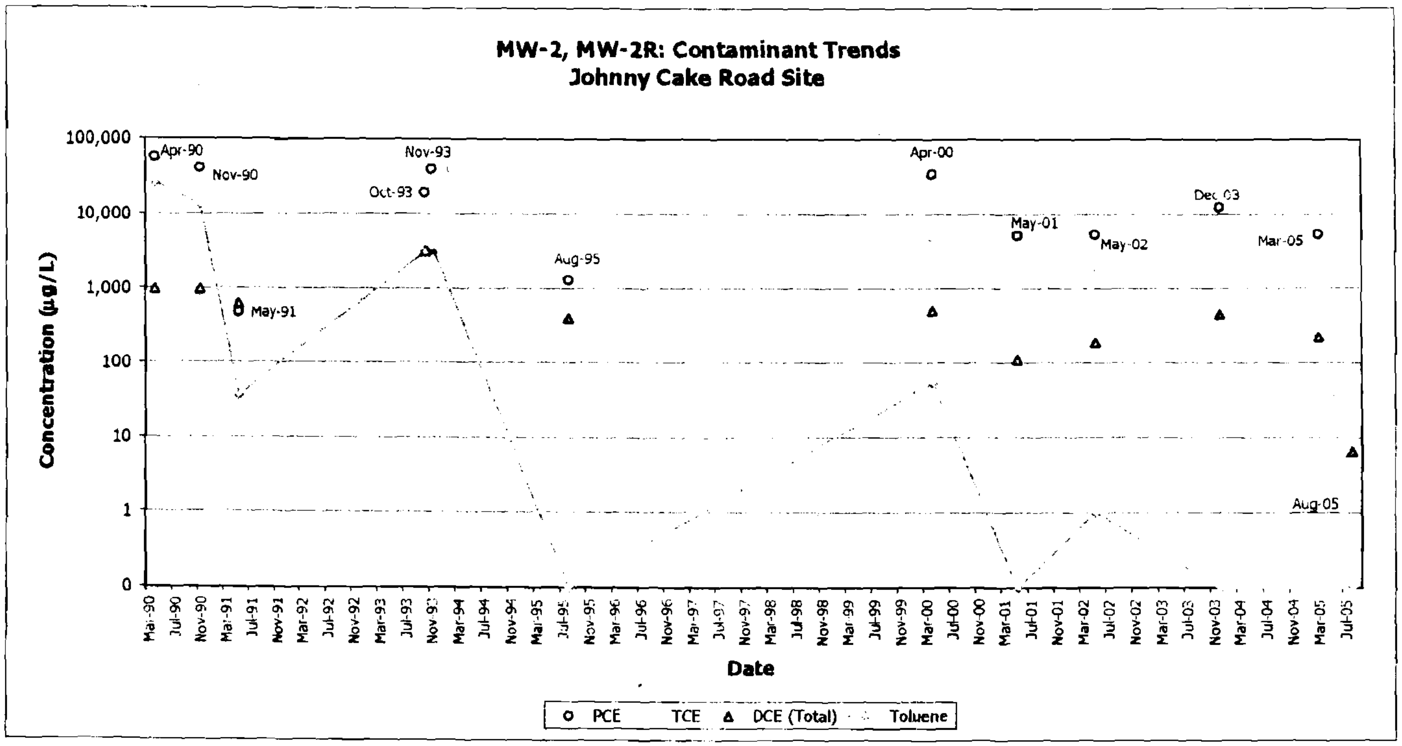
-No volatile detected
w well, not installed at time of sampling
Not sampled

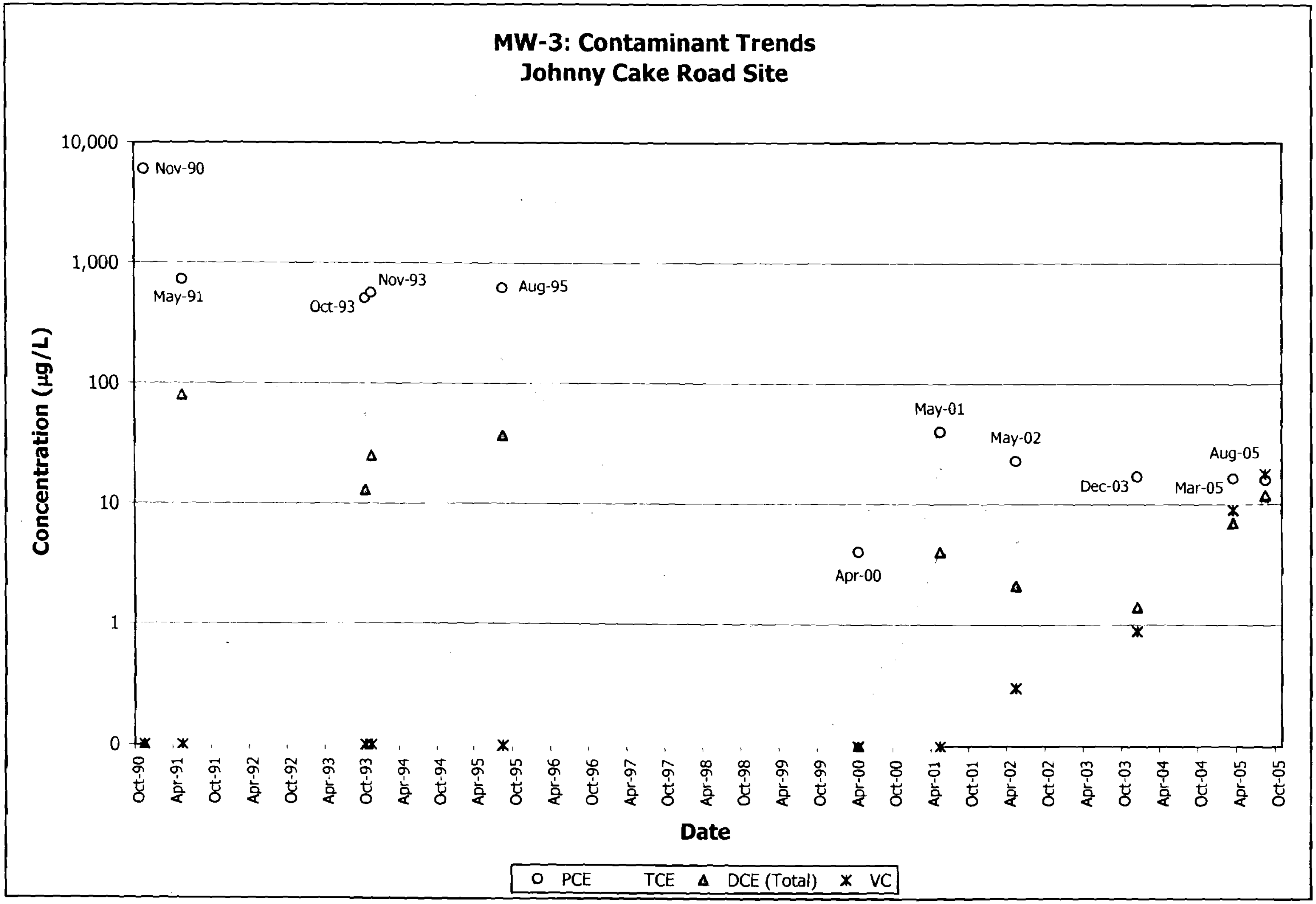
ND-Not detected

Date	PCE	TCE	DCE (Total)	VC
Nov-90	25.1	51.2	320	0
May-91	0.1	26	1,100	0
Oct-93	140	190	2,210	0
Apr-00	10	28	98	65
May-01	1	11	38	30
May-02	9.8	14	27.3	8.5
Dec-03	2.4	8.1	16	4.6
Mar-05	0.9	8.4	36.6	30
Aug-05	0.67	2.4	4.3	0

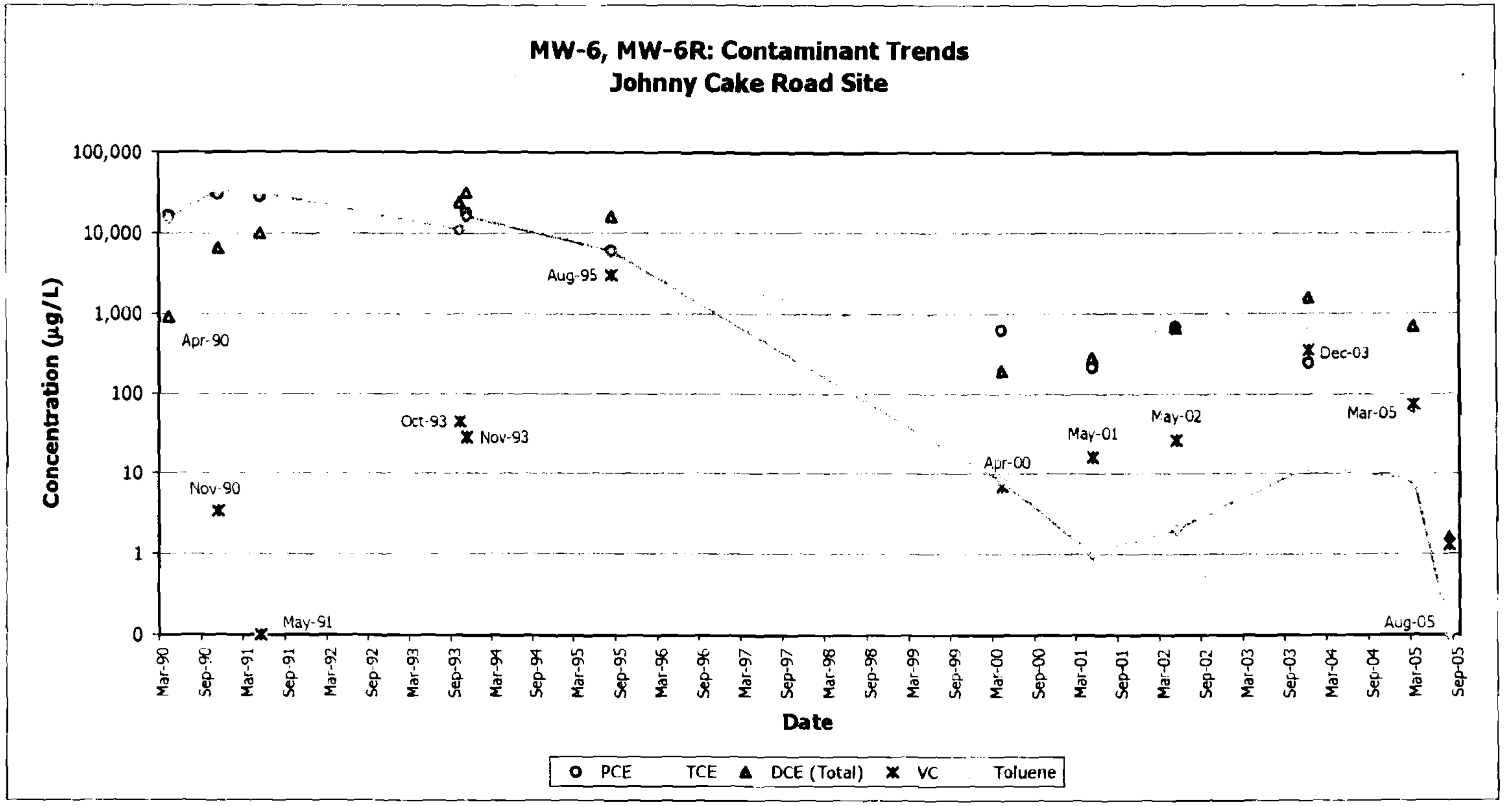


Date	PCE	TCE	DCE (Total)	Toluene
Apr-90	56,000	490	960	25,400
Nov-90	40,000	870	980	13,000
May-91	470	1,200	630	36
Oct-93	19,000	5,400	3,232	3,100
Nov-93	39,000	4,700	3,431	3,700
Aug-95	1,300	620	400	0
Apr-00	34,000	4,900	495	53
May-01	5,200	710	110	0
May-02	5,300	1,900	184	1
Dec-03	12,000	1,500	451	0
Mar-05	5,400	710	222	0
Aug-05	1.3	1.3	6.6	0

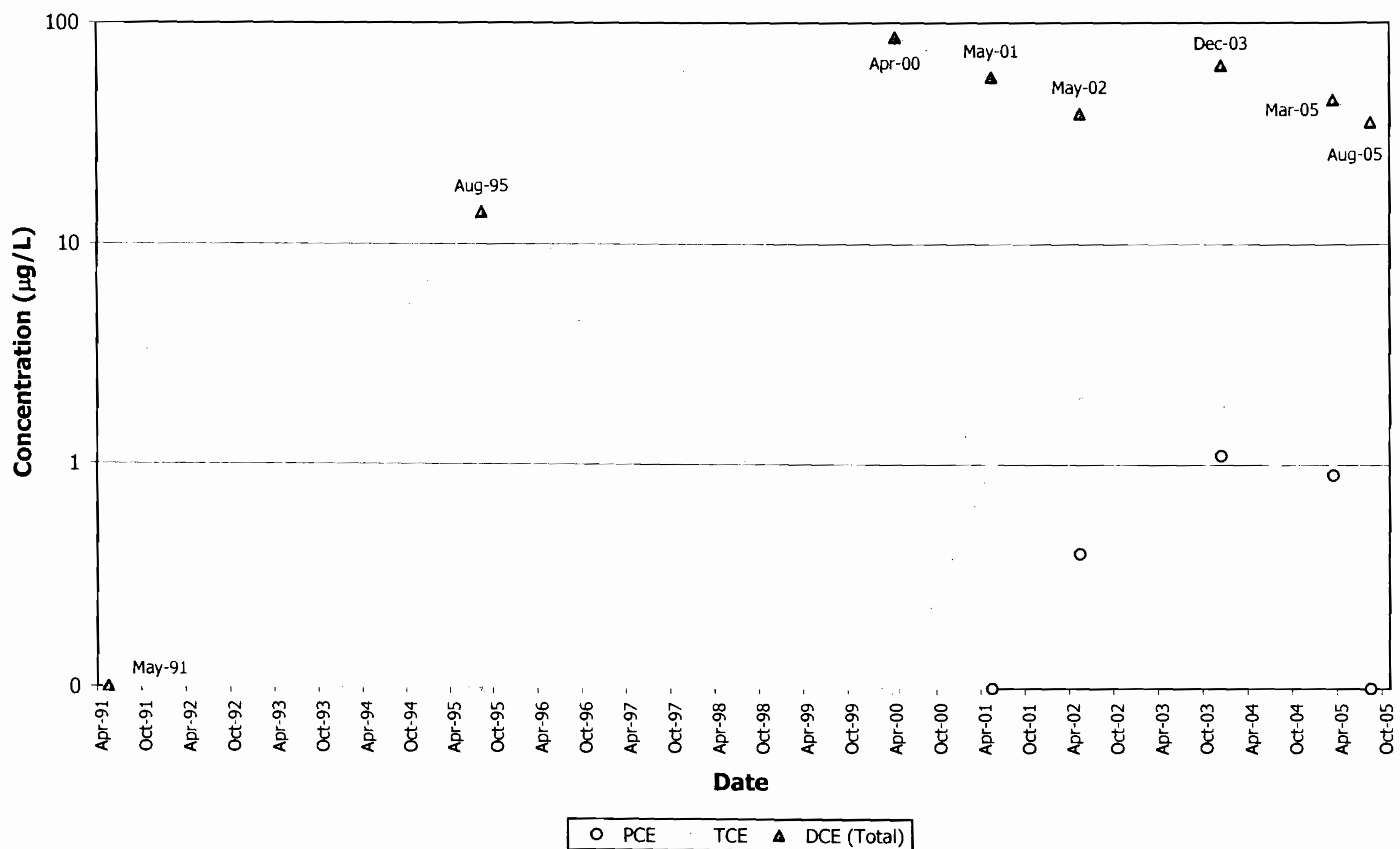


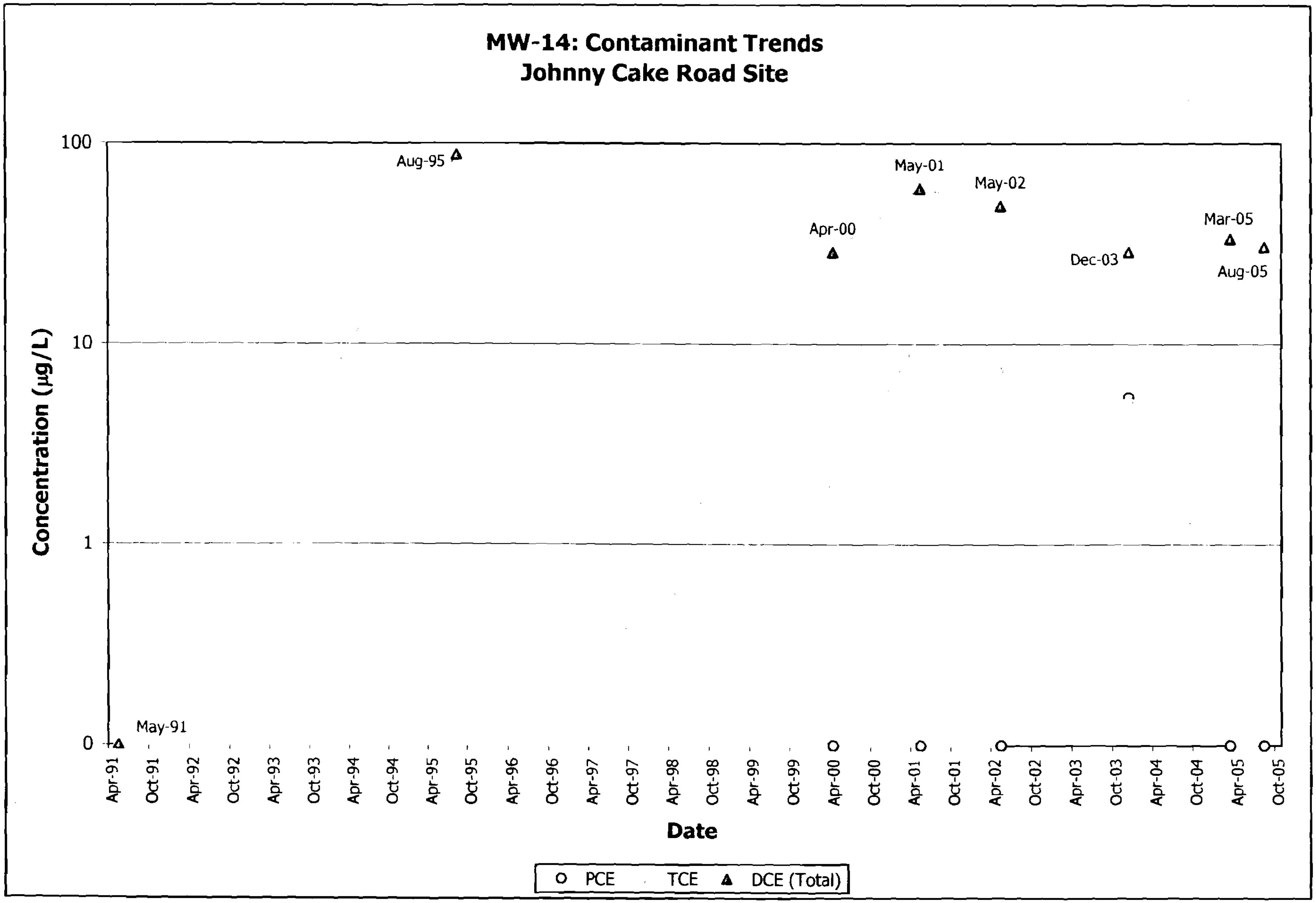

MW-3: Contaminant Trends
Johnny Cake Road Site
Concentration (µg/L)
10,000
1,000
100
10
1
0
Nov-90
May-91
Oct-93
Nov-93
Aug-95
Apr-00
May-01
May-02
Dec-03
Mar-05
Aug-05
Oct-90
Apr-91
Oct-91
Apr-92
Oct-92
Apr-93
Oct-93
Apr-94
Oct-94
Apr-95
Oct-95
Apr-96
Oct-96
Apr-97
Oct-97
Apr-98
Oct-98
Apr-99
Oct-99
Apr-00
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Apr-04
Oct-04
Apr-05
Oct-05
Date
PCE
TCE
DCE (Total)
VC

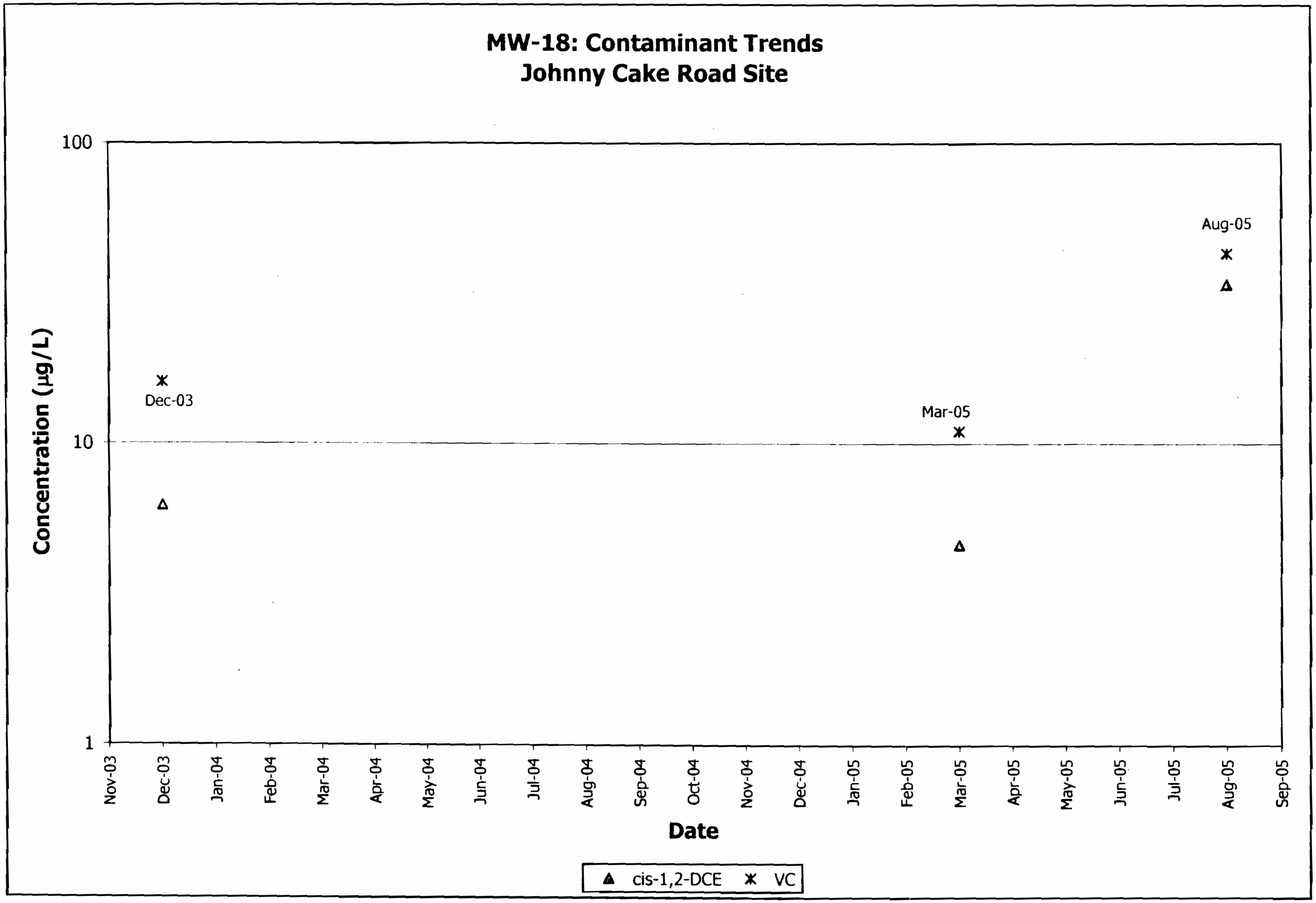
Date	PCE	TCE	DCE (Total)	VC	Toluene
Apr-90	16,300	450	900		15,200
Nov-90	30,000	6,600	6,400	3.4	34,000
May-91	28,000	8,300	10,000	0	31,000
Oct-93	13,000	13,000	24,200	44	11,000
Nov-93	18,000	24,000	32,000	28	16,000
Aug-95	6,000	5,300	16,000	3,000	6,000
Apr-00	620	290	190	7	8
May-01	210	300	280	16	1
May-02	680	1,200	665	26	2
Dec-03	240	650	1,600	350	12
Mar-05	67	360	686	72	8.3
Aug-05	0	0	1.6	1.3	0



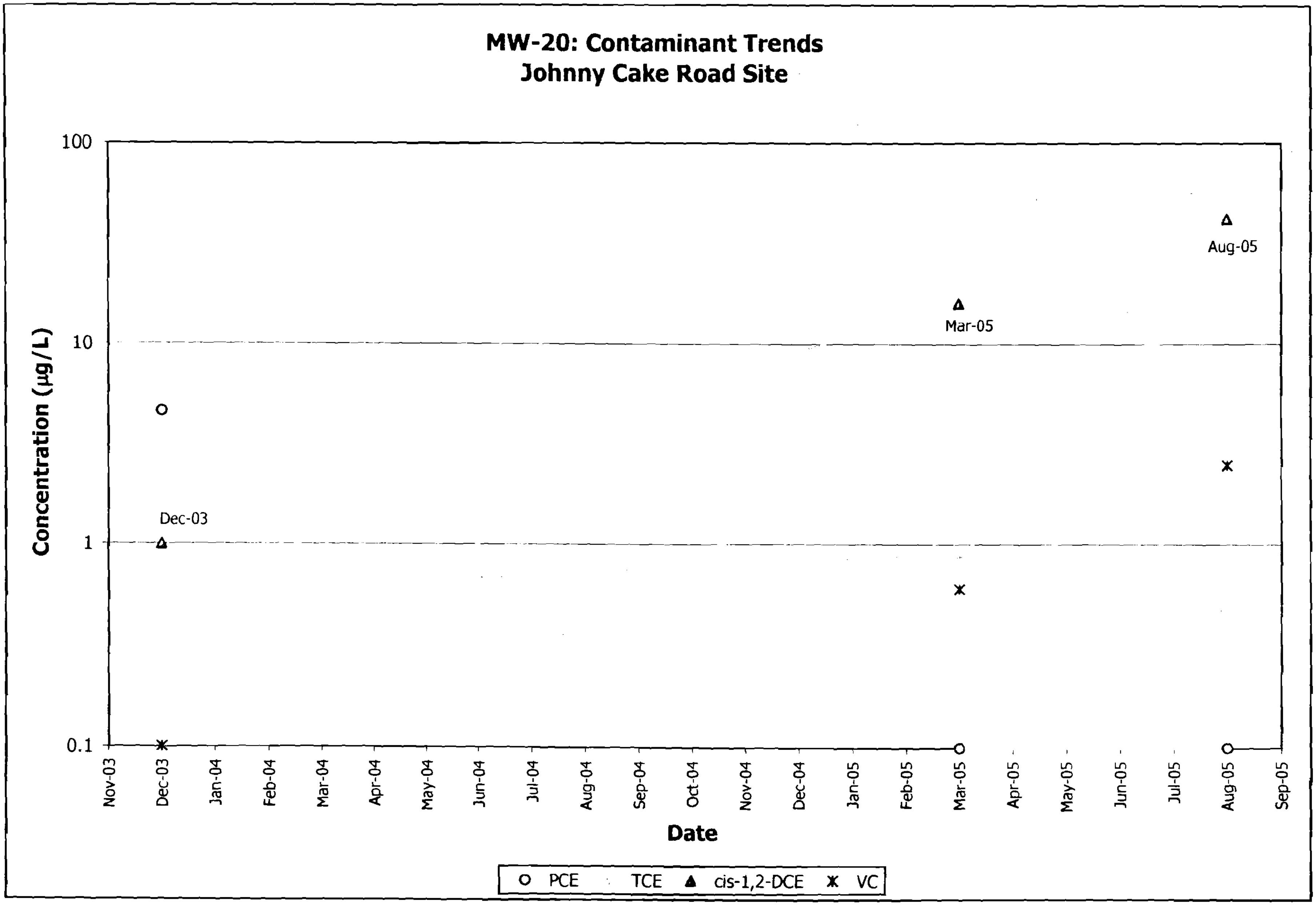
MW-13: Contaminant Trends
Johnny Cake Road Site




MW-14: Contaminant Trends
Johnny Cake Road Site
Concentration (µg/L)
100
10
1
0
Aug-95
May-01
May-02
Apr-00
Mar-05
Dec-03
Aug-05
May-91
Apr-91
Oct-91
Apr-92
Oct-92
Apr-93
Oct-93
Apr-94
Oct-94
Apr-95
Oct-95
Apr-96
Oct-96
Apr-97
Oct-97
Apr-98
Oct-98
Apr-99
Oct-99
Apr-00
Oct-00
Apr-01
Oct-01
Apr-02
Oct-02
Apr-03
Oct-03
Apr-04
Oct-04
Apr-05
Oct-05
Date
PCE
TCE
DCE (Total)



MW-18: Contaminant Trends
Johnny Cake Road Site
Concentration (µg/L)
100
10
1
Dec-03
Mar-05
Aug-05
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Date
cis-1,2-DCE
VC



MW-20: Contaminant Trends
Johnny Cake Road Site
Concentration (µg/L)
100
10
1
0.1
Dec-03
Mar-05
Aug-05
Nov-03
Dec-03
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
May-05
Jun-05
Jul-05
Aug-05
Sep-05
Date
PCE
TCE
cis-1,2-DCE
VC

APPENDIX 5

TECHNICAL MEMORANDUM:
NATURAL ATTENUATION ASSESSMENT
OF SITE CONTAMINANTS
JOHNNY CAKE ROAD
DANUABE, NEW YORK
OCTOBER 2006

U.S. EPA Work Assignment No.: 0-084
Lockheed Martin Work Order No.: EAC00084
U.S. EPA Contract No.: EP-C-04-032

LOCKHEED MARTIN

Lockheed Martin Technology Services
Environmental Services REAC
2890 Woodbridge Avenue, Building 209 Annex
Edison, NJ 08837-3679
Telephone 732-321-4200 Facsimile 732-494-4021

DATE: October 26, 2006

TO: Andre Zownir, EPA/ERT Work Assignment Manager

THROUGH: Parry Bhambra, REAC Operations Section Leader Kw for PB

FROM: Dave Aloysius, REAC Task Leader

SUBJECT: NATURAL ATTENUATION ASSESSMENT OF SITE CONTAMINANTS
JOHNNY CAKE ROAD, DANUBE, NEW YORK
WORK ASSIGNMENT 0-084: TECHNICAL MEMORANDUM

INTRODUCTION

This technical memorandum presents the results of a preliminary assessment of the fate and transport of chlorinated solvent contaminants at the Johnny Cake Road Site. At the request of the Environmental Protection Agency (EPA) Region II, the EPA/Environmental Response Team (ERT) tasked the Response Engineering and Analytical Contract (REAC) to perform this assessment in support of post-soil excavation groundwater monitoring activities at the site. The results of this study expand on data previously generated by the EPA/ERT, REAC, EPA Region II, and the Region II Removal Support Team (RST) contractor.

Background

The Johnny Cake Road site (Figure 1) is located on approximately 377 acres of farmland along the north and south sides of Johnny Cake Road in the towns of Stark, Danube, and Little Falls, New York (NY). The site was a former dairy farm that became contaminated with organic solvents from illegal cocaine manufacturing processes (Weston, 1991).

The site slopes moderately downward to the north across Johnny Cake Road and further downward to Nowadaga Creek. The creek is approximately 365 feet north of Johnny Cake Road and is topographically downgradient from known spill (source) areas. The topographic relief from the road to the creek is approximately 60 feet.

During September/October 2003, a number of soil borings were drilled at the site (Weston, 2004a) to characterize the nature and extent of solvent contamination in subsurface soils. Within the known source areas (south of Johnny Cake Road), a number of contaminants were detected in subsurface soil samples at concentrations above soil cleanup levels, as established by the New York State Department of Environmental Conservation (NYSDEC). The primary contaminants included tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), and vinyl chloride (VC). Soil cleanup levels for these four volatile organic compounds (VOCs) are as follows:

- PCE 1,400 parts per million (ppm)
- TCE 700 ppm
- DCE 300 ppm
- VC 200 ppm

Although a total of 19 soil borings were drilled within the known source areas, the lateral and vertical extent of contamination within subsurface soils remained questionable. In May 2005, nine additional boreholes were drilled at the site under the supervision of ERT and REAC personnel to further define the extent of residual contamination in subsurface soils (Lockheed Martin REAC, 2005). Borehole depths ranged from 17 to 24 feet below ground surface (bgs). The results of this investigation further defined the limits of residual contamination in subsurface soils at the site. In June/July 2005, excavation and off-site removal of contaminated soils from known source areas proceeded under the direction of EPA Region II.

At present, a total of 20 groundwater monitor wells are located throughout the entire site, both to the north and south of Johnny Cake Road (Figure 2). Well depths range from approximately 12.5 feet (MW-1) to 101 feet (MW-15) bgs and are constructed with either 2-inch or 4-inch inside diameter PVC pipe with 10 slot (0.010 inch) screens (refer to Table 1). A number of the wells (MW-1, 2, 3, 4, and 6) have been sampled and monitored since 1990 for contaminants of concern (including PCE, TCE, DCE, and VC) and the historical data indicated that concentrations for all contaminants were decreasing over time. Subsequent to soil excavation and removal activities during June/July 2005, contaminant concentrations in selected wells that were being monitored (14 of the 20 wells) showed further decreases; however, contaminant concentrations in a number of wells remain above site clean-up standards (refer to Table 2).

Site Hydrogeology

Observations of soil samples collected during the ERT/REAC investigation in May 2005 revealed the presence of a surficial layer (ablation till) of brown silt and clay, with minor amounts of sand and gravel, averaging 10 feet in thickness (Lockheed Martin REAC, 2005). Beneath this layer, harder or stiffer material was encountered (gray lodgement till), comprised primarily of silt and clay with varying amounts of angular gravel. Additionally, minor permeable lenses or layers (wet to saturated) were encountered at depths greater then 10 feet bgs in a number of the borings, containing appreciable amounts of sand and/or gravel. In May 2005, the average depth to groundwater was approximately three feet bgs (north of Johnny Cake Road).

The average groundwater gradient across the site is approximately 0.115 foot per foot (ft/ft) as derived from previously constructed groundwater contour maps (Weston, 2004b). Based on groundwater inflow data from an interceptor trench that was constructed to divert seepage during soil excavation, an average hydraulic conductivity for subsurface materials (within a 3- to 12-foot interval bgs) was estimated to be approximately 1.37 feet per day (ft/d). Using an estimated porosity of 0.35, an average groundwater flow velocity was calculated to be approximately 0.45 ft/d or 164 feet per year (ft/yr). Note: Previous slug tests performed in a limited number of monitor wells (MW-12A, MW-13, MW-17, MW-19, and MW-20) indicated that the mean hydraulic conductivity of overburden materials within an average 15- to 25-foot depth interval bgs was approximately 0.37 ft/d (Weston, 2004b).

METHODOLOGY

Calculations were performed for deriving first-order rate constants to evaluate natural attenuation of contaminants of concern in groundwater at the site. The methodology is described in Appendix A, pages 9 and 10 (EPA, 2002).

Degradation rate constants (k_{point}) were derived by using contaminant concentration vs. time data to estimate how long it would take for remediation goals to be met at the site. A number of monitor wells and contaminants were evaluated as follows:

MW-4R:	PCE, TCE, and DCE	(November 1990 – June 2006)
MW-6R:	VC	(December 2003 – June 2006)
MW-13:	DCE	(April 2000 – June 2006)
MW-14:	DCE	(August 1995 – June 2006)
MW-18:	VC	(August 2005 – June 2006)

Bulk attenuation rate constants (k) were derived by using contaminant concentration vs. distance data to estimate if current contaminant plumes are expanding, showing relatively little change, or shrinking due to the combined effects of dispersion, biodegradation, and other attenuation processes. Two contaminants of concern were investigated: DCE and VC.

For DCE, the former septic tank area was used as a source location because post-excavation samples within this area indicated the presence of DCE (up to 60 ppm) at approximately 17 feet bgs. A concentration in groundwater was estimated using historical data (i.e., pre-soil excavation) from MW-6, positioned approximately 12 feet northeast of the former septic tank. The concentration of DCE in MW-6 in December 2003 was 1,600 parts per billion (ppb) and in March 2005, the concentration was 686 ppb. A conservative average of 1,200 ppb was therefore used as an estimated recent concentration of DCE in groundwater around the former septic tank area (considered to be an overestimated value). In addition, recent average DCE concentrations (refer to Table 2) in MW-4R and MW-20 were used along with the 1,200 ppb source concentration to construct a DCE concentration vs. distance graph. Wells MW-4R and MW-20 are located hydraulically downgradient of the former septic tank area, as shallow groundwater generally flows from south to north toward Nowadaga Creek.

For VC, recent average concentrations in MW-18, MW-4R, and MW-20 were used to construct a concentration vs. distance graph. In this case, MW-18 was used as an upgradient source location (Figure 2), because it currently has the highest average VC concentration compared to other monitor wells.

For calculating k, retardation factors (R) also needed to be estimated for the contaminants of interest in the groundwater using the following equation (EPA, 2000):

$$R = 1 + [(Koc)(foc)(\rho)/n]$$

where

Koc = organic carbon:water partitioning coefficient for the contaminant (milliliters per gram)
n = subsurface material porosity (assumed to be 0.35)
ρ = subsurface material density (assumed to be 1.75 grams per cubic centimeter)
foc = fraction organic carbon in subsurface materials (assumed to be 0.001 [low])

Values that were used for Koc are as follows: DCE = 45; VC = 19 (EPA, 1996).

Finally, a contaminant velocity was estimated by using the following equation:

$$V_c = V/R$$

where

V = groundwater flow velocity (164 ft/yr, which is considered to be a conservative number)
R = retardation factor for the contaminant of interest

RESULTS

All calculations were based on the following groundwater cleanup standards: PCE, TCE, and DCE – 5 ppb; VC – 2 ppb.

Concentration vs. Time

Contaminant concentration vs. time graphs are presented in Appendix B. Note: All DCE concentrations refer to total DCE (i.e., *cis*-1,2 DCE + *trans*-1,2 DCE).

An example calculation and final results are presented below for MW-4/4R using historical DCE concentrations in groundwater:

A graph was constructed by plotting natural log concentrations of DCE vs. time. Time data were converted to years using January as an arbitrary starting point (in this case, January 1990 since the first data were from November 1990). An exponential trend line was fitted to the data using a spreadsheet program and an equation was generated that mathematically describes the line. The equation indicates that the slope of the line is -0.2541. Therefore, the degradation rate constant (k_{point}) is +0.2541 per year. The y-intercept at time zero equals 6,529.8 ppb. The time (t) it would take for DCE concentrations to reach 5 ppb at this location was determined as follows:

$$t = -\ln[5 \text{ ppb}/6529.8 \text{ ppb}]/0.2541 = 28 \text{ years (from 1990 = approximately 2018)}$$

Similar calculations were performed for the remaining data sets and the results are summarized below:

MW-4R:	PCE	18 years (from 1990 = approximately 2008)
MW-4R:	TCE	27 years (from 1990 = approximately 2017)
MW-6R:	VC	5 years (from 2003 = approximately 2008)
MW-13:	DCE	28 years (from 2000 = approximately 2028)
MW-14:	DCE	32 years (from 1995 = approximately 2027)
MW-18:	VC	2 years (from 2005 = approximately 2007)

A couple of points are noted in reference to the data sets in Appendix B and the resulting time estimates: 1) in a number of cases, the data are either widely scattered (especially for MW-13 and MW-14) or very limited (MW-18), which can have a significant impact on the calculated estimates. 2) Because most of the contaminated soils have since been removed from the identified sources, some of the time estimates could be high (especially for DCE and TCE).

Concentration vs. Distance

Contaminant concentration vs. distance graphs for DCE and VC are presented in Appendix C. As an example, calculations and final results are presented below for DCE concentrations vs. distance:

A graph was constructed by plotting natural log concentrations of DCE vs. distance. Distances from MW-4R and MW-20 to the former septic tank area were scaled on a site map. An exponential trend line was fitted to the data using a spreadsheet program and an equation was generated that mathematically describes the line. The equation indicates that the slope of the line is -0.0156. Therefore, the degradation rate constant (k_{point}) is +0.0156 per year. The y-intercept at distance zero equals 1,209.7 ppb.

The retardation factor (R) for DCE was calculated to be 1.225 with a transport velocity (V_c) of 134 ft/ yr.

The bulk attenuation rate (k) for DCE = 134 ft/yr x 0.0156 = 2.1 per year.

The travel time (T) to reach 5 ppb at the downgradient margin of the DCE plume was determined as follows:

$$T = -\ln[5 \text{ ppb}/1{,}200 \text{ ppb}]/2.1 = 2.6 \text{ years}$$

where 1,200 ppb is the DCE concentration at the source location (i.e., the former septic tank area).

The maximum distance (x) that DCE should extend from the source is:

$$x = 134 \text{ ft/yr} \times 2.6 \text{ years} = 350 \text{ feet}$$

Based on the above distance (x), the leading edge of the DCE plume (i.e., at a concentration of 5 ppb) would extend to approximately 125 feet south of Nowadaga Creek.

Similar calculations for VC vs. distance resulted in the following values:

R = 1.1
V_c = 149 ft/yr
k = 1.97 per year
T = 1.2 years
x = 180 feet (from MW-18)

Based on the above distance (x), the leading edge of the VC plume (i.e., at a concentration of 2 ppb) would extend to approximately 240 feet south of Nowadaga Creek. Since the previous calculations suggested that the DCE plume would extend to some greater distance to the creek, it is reasonable to assume that the VC plume would also have to extend to at least the same distance because VC is a breakdown product of DCE. The combined results thus suggest that VC could extend to some closer distance to the creek; however, the concentrations would likely be less than 2 ppb.

Due to limited VC data and the low to non-detect recent concentrations of VC in most wells (refer to Table 2), no further analysis can reasonably be made at this time regarding the long-term migration of VC in site groundwater. Nevertheless, because most of the contaminated soils have since been removed from the identified sources, it is believed that plume migration should be very limited over time.

CONCLUSIONS

An evaluation of site groundwater monitoring data indicates that contaminant concentrations are generally decreasing over time in most of the monitor wells. The general decrease in concentrations can be attributed to the combined effects of dispersion, biodegradation, and other natural attenuation processes. Rough estimates suggest that contaminant concentrations could persist for at least another ten years and that contaminant plumes may be slowly migrating northward. However, concentrations above groundwater cleanup standards are not expected to reach Nowadaga Creek. The prior removal of contaminated soils from source areas should greatly assist in further limiting the migration of contaminants in groundwater at the site.

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Table 1
Monitor Well Information
Johnny Cake Road
October 2006

Monitor Well	Ref. Point Elevation (feet-AMSL)	Diameter (inches)	Screen Interval (feet-bgs)
MW-1	782.49	2	2 - 12
* MW-2 *	793.01	2	3 - 13
MW-2R	NA	2	3 - 23
MW-2RR	NA	2	4.5 - 24.5
MW-3	791.16	2	3 - 13
* MW-4 *	NA	NA	NA
MW-4R	NA	2	3.5 - 23.5
* MW-6 *	789.55	2	3 - 13
MW-6R	NA	2	3 - 23
MW-7	791.27	NA	4 - 24
MW-8	768.87	NA	NA
MW-9	769.27	NA	2 - 12
MW-10	752.25	NA	2.5 - 17.5
MW-11	750.29	4	5 - 20
MW-12A	768.91	4	10 - 20
MW-13	768.25	4	5 - 15
MW-14	768.91	4	6 - 21
MW-15	746.65	2	91 - 101
MW-16	781.21	4	15 - 25
MW-17	780.99	4	30 - 40
MW-18	783.76	4	15 - 25
MW-19	787.63	4	15 - 25
MW-20	769.39	4	14 - 24

AMSL - above mean sea level
bgs - below ground surface
NA - data not available
MW-15 - sand packed to 83 feet bgs

* Note: MW-2 and MW-6 no longer exist. They were removed during soil excavation activities in June/July 2005. MW-4 could not be found. The preceding wells were replaced with the "R" series wells in July 2005.

TABLE 4
JOHNNY CAKE FARM ROAD SITE
GROUNDWATER SUMMARY-POST SOIL REMEDIATION

Contaminant----->ppb	Acetone	carbon disulfide	cis-1,2-dichloroethene	trans-1,2-dichloroethene	2-butanone	trichloroethene	tetrachloroethene	vinyl chloride	dichlorofluoromethane
DEC 703 Standard			5	5		5	5	2	5
Fed. DW Standard			70	100		5	5	2	
MW-1 (Aug. 29, 2005)	1.6	ND	4.3	ND	ND	2.4	0.67	ND	ND
MW-1 (Nov. 29, 2005)	1.5	ND	8.4	ND	ND	1	ND	18	0.56
MW-1 (March 07, 2006)	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-1 (June 08, 2006)	1.6	ND	11	ND	ND	4.3	ND	4.5	0.53
MW-2R (Aug. 29, 2005)	1.6	ND	6.6	ND	3.7	1.3	1.3	ND	ND
MW-2R (Nov. 29, 2005)	1	ND	4.8	ND	ND	0.84	ND	ND	ND
MW-2R (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2R (June 08, 2006)	0.74	ND	4.5	ND	ND	ND	ND	3.2	ND
MW-2RR (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2RR (Nov. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2RR (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2RR (June 08, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-3 (Aug. 29, 2005)	6.2	ND	12	ND	ND	11	16	18	ND
MW-3 (Nov. 29, 2005)	ND	ND	0.6	ND	ND	1.7	11	ND	ND
MW-3 (March 07, 2006)	ND	ND	ND	ND	ND	8.6	38 J	ND	ND
MW-3 (June 08, 2006)	ND	ND	2.5	ND	ND	5.5	27	ND	ND
MW-4R (Aug. 29, 2005)	1.6	ND	57	0.91	ND	35	0.69	0.65	0.96
MW-4R (Nov. 29, 2005)	1.6	ND	50	ND	ND	20	1.3	3	0.78
MW-4R (March 07, 2006)	ND	ND	280/320	2.1/4.5	ND	190/210	8.1/8.1	ND	ND
MW-4R (June 08, 2006)	ND	ND	170	1.8	ND	110	7.3	5.4	0.8
MW-6R (Aug. 29, 2005)	3.3/3.7 (Dupl)	ND	1.6	ND	ND	ND	ND	1.3	ND
MW-6R (Nov. 29, 2005)	1.1	ND	1.5/4.8 (dupl)	ND	ND	0.84 (Dupl.)	ND	ND	ND
MW-6R (March 07, 2006)	ND	ND	2.1	ND	ND	ND	ND	ND	ND
MW-6R (June 08, 2006)	ND	ND	2.4	ND	ND	ND	ND	12	ND
MW-12A (Aug. 29, 2005)	1.2	ND	0.83	ND	ND	ND	ND	2.5	ND
MW-12A (Nov. 29, 2005)	1.6	ND	ND	ND	ND	ND	ND	0.77	ND
MW-12A (March 07, 2006)	3.3 J	ND	ND	ND	ND	ND	ND	ND	ND
MW-12A (June 08, 2006)	ND	ND	ND	ND	ND	ND	Nd	1.5	ND
MW-13 (Aug. 29, 2005)	ND	ND	35	0.57	ND	0.63	ND	ND	ND
MW-13 (Nov. 29, 2005)	ND	ND	19	ND	ND	1.3	ND	ND	ND
MW-13 (March 07, 2006)	ND	ND	100	ND	ND	1.2	ND	ND	ND
MW-13 (June 08, 2006)	2.7	ND	31	ND	ND	2.2	ND	ND	ND
MW-14 (Aug. 29, 2005)	ND	ND	30	0.71	ND	4.3	ND	ND	ND
MW-14 (Nov. 29, 2005)	ND	ND	96	ND	ND	2.8	ND	ND	ND
MW-14 (March 07, 2006)	ND	ND	19	ND	ND	2.5	ND	ND	ND
MW-14 (June 08, 2006)	ND	ND	20	ND	ND	3.4	ND	ND	ND

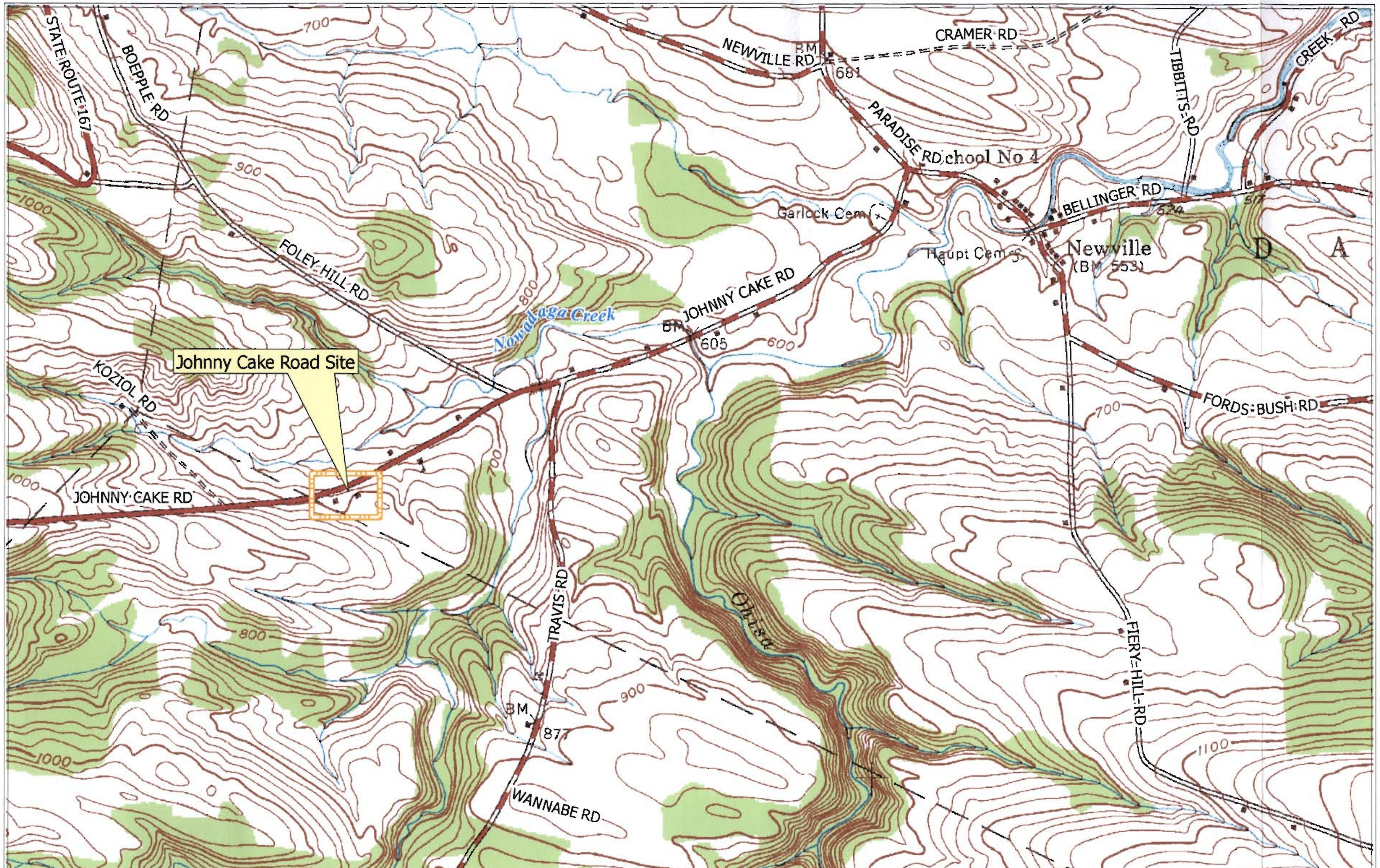
Contaminant----->ppb	Acetone	carbon disulfide	cis-1,2-dichloroethene	trans-1,2-dichloroethene	2-butanone	trichloroethene	tetrachloroethene	vinyl chloride	dichlorofluoromethane
DEC 703 Standard			5	5		5	5	2	5
Fed. DW Standard			70	100		5	5	2	
MW-16 (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16 (Nov. 29, 2005)	9.2	ND	ND	ND	ND	ND	ND	ND	ND
MW-16 (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-16 (June 08, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (Nov. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (March 07, 2006)	3.4 J	ND	ND	ND	ND	ND	ND	ND	ND
MW-17 (June 08, 2006)	4.6	ND	ND	ND	ND	ND	ND	ND	ND
MW-18 (Aug. 29, 2005)	ND	ND	34	ND	ND	ND	ND	43	1.1
MW-18 (Nov. 29, 2005)	ND	ND	5.6	ND	ND	ND	ND	14	ND
MW-18 (March 07, 2006)	ND	ND	2.6	ND	ND	ND	ND	ND	ND
MW-18 (June 08, 2006)	3.1	ND	2.1	ND	ND	ND	ND	6	ND
MW-19 (Aug. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19 (Nov. 29, 2005)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19 (March 07, 2006)	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-19 (June 08, 2006)	0.59	ND	ND	ND	ND	ND	ND	ND	ND
MW-20 (Aug. 29, 2005)	2	ND	42	ND	ND	7.4	ND	2.5	ND
MW-20 (Nov. 29, 2005)	ND	ND	35	ND	ND	10	0.78	2.4	ND
MW-20 (March 07, 2006)	ND	ND	34	ND	ND	8.6	0.24 J	ND	ND
MW-20 (June 08, 2006)	1.7	ND	22	0.81	ND	4.9	ND	2.1	ND

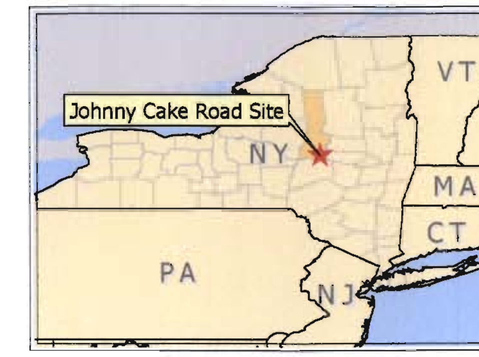
result exceeds 6 NYCRR Part 703 GWS

result exceeds Federal DW Standards

NS - no sample collected due to well water being frozen.

J - Below method detection limit, estimated concentration.





N
W E
S
Magnetic North

Map created using NYS Office of Cyber Security and Critical Infrastructure Coordination (OSCIC)
2 foot orthophotography and site-survey GPS Data.
GPS Collected in Lat, Lon, Decimal Degrees

Map Creation Date: 30June2003

Coordinate system:	UTM
Zone:	18N
Units:	Meters
Datum:	NAD83

1,000 0 1,000 2,000 Feet

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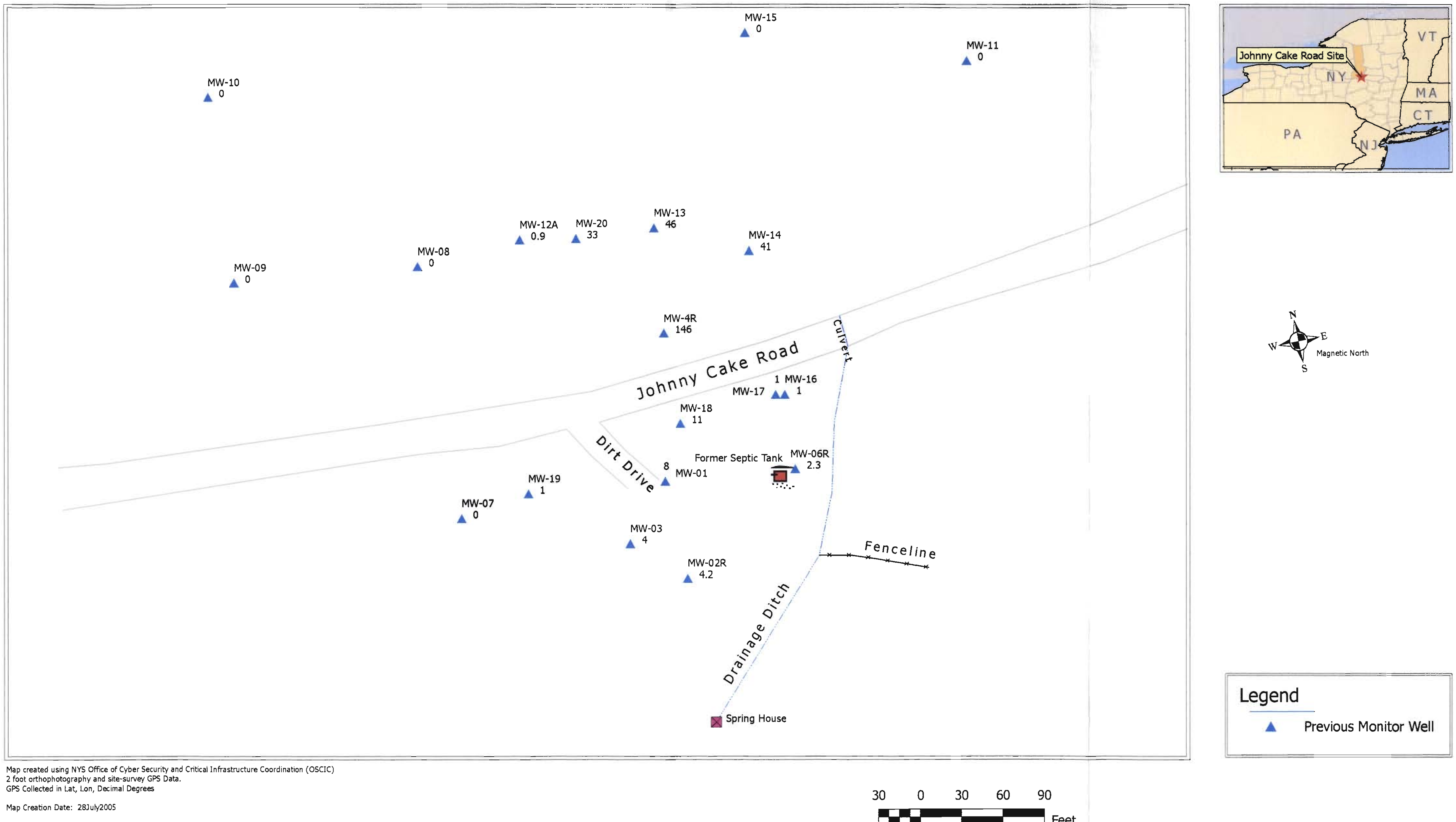
MXD file: g:\arcinfoprojects\reac4\EAC00084_JohnnyCake\084_sitemap_f1rev005
Revision Number: 005

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-04-032
W.A.# 0-084

Figure 1
Site Map
Johnny Cake Road
Danube, NY
October 2006



Map created using NYS Office of Cyber Security and Critical Infrastructure Coordination (OSCIC)
2 foot orthophotography and site-survey GPS Data.
GPS Collected in Lat, Lon, Decimal Degrees

Map Creation Date: 28July2005

Coordinate system:	UTM
Zone:	18N
Units:	Meters
Datum:	NAD83

U.S. EPA Environmental Response Team
Response Engineering and Analytical Contract
EP-C-04-032
W.A.# 0-084

Figure 2
Monitor Well Locations
Johnny Cake Road
Danube, NY
October 2006

Data: g:\arcviewprojects\reac4\00-084
MXD file: g:\arcinfoprojects\reac4\EAC00084_JohnnyCake\084_monitorwells_f2rev003
Revision Number: 003

APPENDIX A

Reference: Calculation of First-Order Rate Constants (Partial Document)
Johnny Cake Road
Technical Memorandum
October 2006

EPA Ground Water Issue

Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies

Charles J. Newell[1], Hanadi S. Rifai[2], John T. Wilson[3], John A. Connor[1], Julia A. Aziz[1], and Monica P. Suarez[2]

Introduction

This issue paper explains when and how to apply first-order attenuation rate constant calculations in monitored natural attenuation (MNA) studies. First-order attenuation rate constant calculations can be an important tool for evaluating natural attenuation processes at ground-water contamination sites. Specific applications identified in U.S. EPA guidelines (U.S. EPA, 1999) include use in characterization of plume trends (shrinking, expanding, or showing relatively little change), as well as estimation of the time required for achieving remediation goals. However, the use of the attenuation rate data for these purposes is complicated as different types of first-order rate constants represent very different attenuation processes:

Concentration vs. time rate constants (k_{point}) are used for estimating how quickly remediation goals will be met at a site.

Concentration vs. distance bulk attenuation rate constants (k) are used for estimating if a plume is expanding, showing relatively little change, or shrinking due to the combined effects of dispersion, biodegradation, and other attenuation processes.

Biodegradation rate constants (λ) are used in solute transport models to characterize the effect of biodegradation on contaminant migration.

Correct use of attenuation rate constants requires an understanding of the different attenuation processes that different first-order rate constants represent.

For further information contact John T. Wilson (580) 436-8534 at the Subsurface Protection and Remediation Division of the National Risk Management Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Ada, Oklahoma.

Why Are Attenuation Rate Constants Important?

Monitored natural attenuation (MNA) refers to the reliance on natural attenuation processes to achieve site-specific remediation objectives within a reasonable time frame. Natural attenuation processes include a variety of physical, chemical, and/or biological processes that act without human intervention to reduce the mass or concentration of contaminants in soil and ground water. These in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants (U.S. EPA, 1999).

The overall impact of natural attenuation processes at a given site can be assessed by evaluating the rate at which contaminant concentrations are decreasing either spatially or temporally. Recent guidelines issued by the U.S. EPA (U.S. EPA, 1999) and the American Society for Testing and Materials (ASTM, 1998) have endorsed the use of site-specific attenuation rate constants for evaluating natural attenuation processes in ground water. The U.S. EPA directive on the use of Monitored Natural Attenuation (MNA) at Superfund, RCRA, and UST sites (U.S. EPA, 1999) includes several references to the application of attenuation rates:

> Once site characterization data have been collected and a conceptual model developed, the next step is to evaluate the potential efficacy of MNA as a remedial alternative. This involves collection of site-specific data sufficient to estimate with an acceptable level of confidence both the rate of attenuation processes and the anticipated time required to achieve remediation objectives.
>
> At a minimum, the monitoring program should be sufficient to enable a determination of the rate(s) of attenuation and how that rate is changing with time.
>
> Site characterization (and monitoring) data are typically used for estimating attenuation rates.

The ASTM Standard Guide for Remediation of Groundwater by Natural Attenuation at Petroleum Release Sites (ASTM, 1998) also identifies site-specific attenuation rates as a secondary line of evidence of the occurrence and rate of natural attenuation. In addition, technical guidelines issued by various state environmental regulatory agencies recommend estimation of rate constants to evaluate contaminant plume trends and duration (New Jersey DEP, 1998; Wisconsin DNR, 1999). For example, the New Jersey Department of Environmental Protection (DEP) now requires such calculations for establishing "Classification Exception Areas (CEAs)" at sites where ground-water quality standards are or will be exceeded for an extended time period.

The technical literature contains numerous guidelines regarding methods for derivation of site-specific attenuation rate constants based upon observed plume concentration trends (e.g., ASTM, 1998; U.S. EPA, 1998a; 1998b; Wiedemeier et al. 1995; 1999; Wilson and Kolhatkar, 2002). Other resources, such as the

[1]Groundwater Services, Inc., Houston, Texas

[2]University of Houston, Texas

[3]U.S. Environmental Protection Agency, Office of Research and Development, National Risk Management Research Laboratory, Subsurface Protection and Remediation Division, Ada, Oklahoma

BIOSCREEN and BIOCHLOR natural attenuation models (Newell et al., 1996; Aziz et al., 2000), include use of first-order rate constants for simulating the attenuation of dissolved contaminants once they leave the source and the attenuation of the source itself. However, many of these references do not clearly distinguish between the different types of rate constants and their appropriate application in evaluation of natural attenuation processes. The objective of this paper is to address this gap by briefly describing the derivation, significance, and appropriate use of three key types of attenuation rate constants commonly employed in natural attenuation studies.

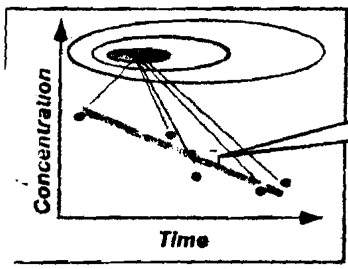
Key Point:

Rate calculations can help those performing MNA studies evaluate the contribution of attenuation processes and the anticipated time required to achieve remediation objectives. There are different types of rate calculations, however, and it is important to use the right kind of rate constant for the right application.

Types of First-Order Attenuation Rate Constants

In general, there are three different types of first-order attenuation rate constants that are in common use:

Concentration vs. Time Attenuation Rate Constant, where a rate constant, in units of inverse time (e.g., per day), is derived as the slope of the natural log concentration vs. time curve measured at a selected monitoring location (Figure 1).



·ermining concentration vs. time rate constant ,).

Concent· ion vs. Distance Attenuation Rate Constant, where a rate constant, in units of inverse time (e.g., per day), is derived by plotting the natural log of the concentration vs. distance and (if determined to match a first-order pattern) calculating the rate as the product of the slope of the transformed data plot and the ground-water seepage velocity (Figure 2).

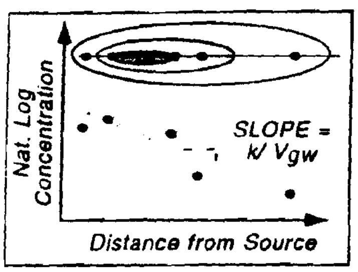


Figure 2. Determining concentration vs. distance rate constant (*k*).

Biodegradation Rate Constant. The "biodegradation rate constant" (λ) in units of inverse time (e.g., per day) can be derived by a variety of methods, such as comparison of contaminant transport vs. transport of a tracer, or more commonly, calibration of solute transport model to field data (Figure 3).

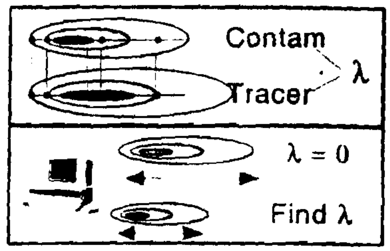


Figure 3. Determining biodegradation rate constant (λ).

Distinctions Between Rate Constants

To interpret the past behavior of plumes, and to forecast their future behavior, it is necessary to describe the behavior of the plume in both space and time. It is necessary to collect long-term monitoring data from wells that are distributed throughout the plume. *Concentration vs. Time Rate Constants* describe the behavior of the plume at one point in space; while *Concentration vs. Distance Rate Constants* describe the behavior of the entire plume at one point in time. The *Biodegradation Rate Constant* is usually applied over both time and space, but only applies to one attenuation mechanism. Standard practice for the environmental industry finds applications for each of these rate constants. Under appropriate conditions, each of the three constants can be employed to assist in site-specific evaluation and quantification of natural attenuation processes. Each of these terms is identified as an "attenuation rate." Because they differ in their significance and appropriate application, it is important to understand the potential for misapplication of each type of rate as summarized below:

Concentration vs. Time Rate Constants: A rate constant derived from a concentration vs. time (C vs. T) plot at a single monitoring location provides information regarding the potential plume lifetime at that location, but cannot be used to evaluate the distribution of contaminant mass within the ground-water system. The C vs. T rate constant at a location within the source zone represents the persistence in source strength over time and can be used to estimate the time required to reach a remediation goal at that particular location. To adequately assess an entire plume, monitoring wells must be available that adequately delineate the entire plume, and an adequate record of monitoring data must be available to calculate a C vs. T plot for each well. At most sites, the rate of attenuation in the source area (due to weathering of residual source materials such as NAPLs) is slower than the rate of attenuation of materials in ground water, and concentration profiles in plumes tend to retreat back toward the source over time. In this circumstance, the lifecycle of the plume is controlled by the rate of attenuation of the source, and can be predicted by the C vs. T plots in the most contaminated wells. At some sites, the rate of attenuation of the source is rapid compared to the rate of attenuation in ground water. This pattern is most common when contaminants are readily soluble in ground water and when contaminants are not biodegraded in ground water. In this case, the rate of attenuation of the source as predicted by a C vs. T plot will underestimate the lifetime of the plume.

Concentration vs. Distance Rate Constants: Attenuation rate constants derived from concentration vs. distance (C vs. D) plots serve to characterize the distribution of contaminant mass within *space* at a given point in time. A single C vs. D plot provides no information with regard to the variation of dissolved contaminant mass over *time* and, therefore, cannot be employed to estimate the time required for the dissolved plume concentrations to be reduced to a specified remediation goal. This rate constant incorporates all attenuation parameters (sorption, dispersion, biodegradation) for dissolved constituents after they leave the source. Use of the rate constant derived from a C vs. D plot (i.e., characterization of contaminant mass over space) for this purpose (i.e., to characterize contaminant mass over time) will provide erroneous results. The C vs. D-based rate constant indicates how quickly dissolved contaminants are attenuated once they leave the source but provides no information on how quickly a residual source zone is being attenuated. Note that most sites with organic contamination will have some type of continuing residual source zone, even after active remediation (Wiedemeier et al., 1999), making the C vs. D rate constant inappropriate for estimating plume lifetimes for most sites.

Biodegradation Rate Constant: Another type of error occurs if a C vs. D rate constant is used as the biodegradation rate term (λ) in a solute transport model. The attenuation rate constant derived from the C vs. D plot already reflects the combined effects of contaminant sorption, dispersion, and biodegradation. Consequently, use of a C vs. D rate constant as the biodegradation rate within a model that separately accounts for sorption and dispersion effects will significantly overestimate attenuation effects during ground-water flow.

These examples serve to illustrate the need to ensure an appropriate match between the significance and use of each rate constant. Further guidelines regarding derivation and use of attenuation rate constants are provided below.

Key Point:

There are three general types of first-order rate constants that are commonly used for MNA studies: (1) Concentration vs. Time, (2) Concentration vs. Distance, and (3) Biodegradation.

Rate Constants vs. Half-Lives

Both first-order rate constants and attenuation half-lives represent the same process, first-order decay. Some environmental professionals prefer to use rate constants (in units of per time) to describe the first-order decay process, while others prefer half-lives. These two terms are linearly related by:

Rate constant = 0.693 / [half-life] and
Half-life = 0.693 / [rate constant]

For example, a 2 year half-life is equivalent to a first-order rate constant of 0.35 per year. This document describes the first-order decay process in terms of rate constants instead of half-lives.

Key Point:

Rate constants and half-lives represent the same first-order decay process, and are inversely related.

Appropriate Use of Attenuation Rate Constants in Natural Attenuation Studies

Attenuation rate constants may be used for the following three purposes in natural attenuation studies:

Plume Attenuation: Demonstrate that contaminants are being attenuated within the ground-water flow system;

Plume Trends: Determine if the affected ground-water plume is expanding, showing relatively little change, or shrinking; and

Plume Duration: Estimate the time required to reach ground-water remediation goals by natural attenuation alone.

Appropriate use of the various attenuation rate constants for evaluation of plume attenuation, trends, and duration is shown in Table 1.

As described in the U.S. EPA MNA Directive (U.S. EPA, 1999):

> Site characterization (and monitoring) data are typically used for estimating attenuation rates. These calculated rates may be expressed with respect to either time or distance from the source. Time-based estimates are used to predict the time required for MNA to achieve remediation objectives and distance-based estimates provide an evaluation of whether a plume will expand, remain stable, or shrink.

To clarify the applicability of the various first-order decay rate constants, appropriate nomenclature is useful to indicate the significance of each term. For example, **point decay rates** (defined

Table 1. Summary of First-Order Rate Constants for Natural Attenuation Studies

Rate Constant	Method of Analysis	Significance	Use of Rate Constant: Plume Attenuation?	Plume Trends?	Plume Duration?
Point Attenuation Rate (Fig. 1) (k_{point}, time per year)	C vs. T Plot	Reduction in contaminant concentration over time at a single point	NO*	NO*	YES
Bulk Attenuation Rate (Fig. 2) (k; time per year)	C vs. D Plot	Reduction in dissolved contaminant concentration with distance from source	YES	NO*	NO
Biodegradation Rate (Fig. 3) (λ, time per year)	Model Calibration, Tracer Studies, Calculations	Biodegradation rate for dissolved contaminants after leaving source, exclusive of advection, dispersion, etc.	YES	NO	NO

* Note: Although assessment of an attenuation rate constant at a single location does not yield plume attenuation information, or plume trend information, an assessment of general trends of multiple wells over the entire plume is useful to assess overall plume attenuation and plume trends.

as k_{point}), derived from single well concentration vs. time plot, may be used to determine how long a plume will persist (Plume Duration). While concentration vs. time data at a single point in the plume are useful for determining trends at that location (i.e., are concentrations increasing, showing relatively little change, or declining), a rate constant calculated from concentration vs. time data at a single location cannot be used to estimate the trend of an entire plume.

Bulk attenuation rates (defined as k), derived from concentration vs. distance plots, can be used to indicate if a plume is expanding, showing relatively little change, or shrinking (Plume Trends).

Biodegradation rates (λ), modeling parameters which are specific to biodegradation effects and exclusive of dispersion, etc., can be used in appropriate solute transport models to indicate if a plume is expanding, showing relatively little change, or shrinking (Plume Trends).

For each of these first-order decay rate parameters, Table 2 summarizes information on the derivation and appropriate use as well as providing representative values. In summary, different types of first-order attenuation rate calculations are available to help evaluate natural attenuation processes at contaminated ground-water sites. These different types of rate constants represent different types of attenuation processes, therefore, the right type of rate constant should be used for the right purpose.

Examples 1-3 illustrate how the three types of rate constants are calculated and applied.

Key Point:

In general, all three types of rate constants are useful indicators that attenuation is occurring. Concentration vs. time rate constants (k_{point}) can be used to estimate the duration of contamination at a particular location. Concentration vs. time rate constants for wells encompassing the entire plume can be used to identify overall trends and predict the duration of the plume. Concentration vs. distance rate constants (k) and biodegradation rate constants (λ) can be used to project the rate of attenuation of contaminants along the flow path in ground water, and predict the spatial extent of the plume.

Tables 1 and 2 provide more detail on use, calculations, and analysis of the three types of rate constants. Examples 1-3 illustrate the use and application of the three types of rate constants.

Other Types of Rate Constants

Mass-Based Rate Constants. The previous discussion focused on concentration-based rates. It is also possible to calculate mass vs. time rate constants and mass vs. distance rate constants. In practice, these rates would be very similar to the concentration-based rates.

Mass vs. Time Rate Constant. This constant compares changes in the total mass of contaminants in the plume over time. A Thiessen polygon network can be used to weight the concentration data from all the available wells at a site to derive a comprehensive estimate of the mass of contaminants in the plume at any particular round of sampling. Mass vs. time decay rates (in units of inverse time) are estimated by plotting the natural log of total dissolved mass as a function of time and estimating the slope of the line. This rate is similar to the concentration vs. time rate and since it accounts for the entire plume, it is a good indicator of how long a plume will persist. Many plumes change flow direction over time, making it difficult to identify a stable centerline. Estimates based on the entire plume are less subject to errors caused by changes in flow direction. See Hyman and DuPont, 2001 and DuPont et al.,1998 for discussion and details of the methods.

Mass Flux vs. Distance Rate Constant. A mass vs. distance decay rate (in units of inverse time) can be calculated by plotting the natural log of mass flux through different transects perpendicular to the flow as a function of distance from the source and multiplying the slope of the best-fit line by the seepage velocity. Comparable to the bulk attenuation rate, this type of rate can be used to indicate if a plume is expanding, showing relatively little change, or shrinking. See Einarson and Mackay, 2001 for examples of mass flux calculations. Another method for calculating mass loss rates is described by the Remediation Technologies Development Forum (RTDF, 1997).

Mass Flux-Based Biodegradation Rate Constant. Mass fluxes across plume transects can be further analyzed to determine whether the observed mass loss spatially and temporally can be attributed to biodegradation and/or source decay. For this purpose, the mass flux across the source area is compared to the mass flux through the next downgradient section. Theoretically, mass fluxes at the downgradient transect should mimic the trends observed in the source transect if source decay, sorption, and dispersion were the only mass reduction attenuation mechanisms. If there is additional mass loss, it can only be attributed to biodegradation since the other processes are already accounted for in the mass flux calculation. Once the actual mass loss attributable to biodegradation has been determined, it is plotted as a function of time and a biodegradation rate is estimated using linear regression or a first-order decay model fit to the data. See Borden et al. (1997) and Semprini et al. (1995) for examples of biodegradation rates calculated from mass flux across transects.

Mass-based rate constants are not often used in practice due to the data needs for mass estimates including a dense well network as well as localized gradients, conductivity measurements, and aquifer thickness at monitoring points.

Average-Plume Concentration Rate Constants. Some researchers and practitioners have calculated rate constants for the change in average plume concentration. This rate constant reflects primarily the change in source strength over time.

Effect of Residual NAPL on Point Decay Rate Constant

When a monitoring well is screened across an interval that contains residual NAPL, and when the rate of weathering of the NAPL is slow, the well water may sustain high concentrations of contaminants over long periods of time.

Effect of NA Processes on Rate Constants

Natural attenuation processes include a variety of physical, chemical, or biological processes that act without human intervention to reduce the mass or concentration of contaminants in soil and ground water. These in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization, radioactive decay, and chemical or biological stabilization, transformation, or destruction of contaminants (U.S. EPA, 1999).

Each of these processes influences contaminant concentrations in soil and ground water both spatially and temporally at a site. Contaminant concentrations in ground water are reduced as they travel downgradient from the source. Subject to source degradation, contaminant concentrations will also be reduced with time at any given distance downgradient from the source. These concepts are illustrated in Appendices II and III. The data in Appendix II illustrate the change in contaminant concentrations downgradient from the source at a hypothetical site in response to the different attenuation processes. It can be clearly seen from Appendix II that contaminant concentrations downgradient from source areas are attenuated due to dispersion, sorption, biodegradation and source decay. The data in Appendix III illustrate the change in contaminant concentrations with time at two points downgradient from the source at the hypothetical site (one point near the source and the other point at the leading edge of the plume). As can be seen from Appendix III, contaminant concentrations near the source will attenuate with time only if source decay is occurring. While source decay is also important for the leading edge of the plume, maximum contaminant concentrations in that zone are significantly attenuated from their source concentration counterparts due to biodegradation, sorption, and dispersion.

Uncertainty in Rate Calculations

Rate calculations can be affected by uncertainty from a number of sources, such as the design of the monitoring network, seasonal variations, uncertainty in sampling methods and lab analyses, and the heterogeneity in most ground-water plumes. Appendix I discusses uncertainty in rate calculations and provides methods for managing this uncertainty.

ORD has developed software (RaCES) to extract rate constants from field data. This software is intended to facilitate an evaluation of the uncertainty associated with the projections made by computer models of the future behavior of plumes of contamination in ground water. The software is available from The Ecosystem Research Division of the National Exposure Research Laboratory in Athens, Georgia (Budge et al., 2003).

Notice

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Quality Assurance Statement

All research projects making conclusions or recommendations based on environmental data and funded by the U.S. Environmental Protection Agency are required to participate in the Agency Quality Assurance Program. This project did not involve the collection or use of environmental data and, as such, did not require a Quality Assurance Project Plan.

Table 2. Quick Reference Summary of Three Types of Attenuation Rate Constants

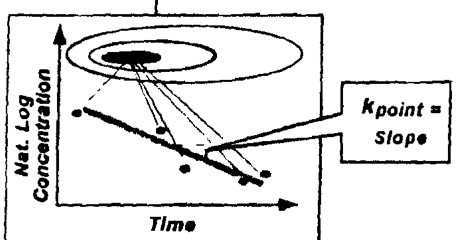
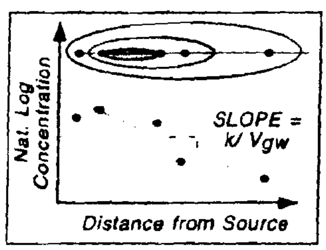
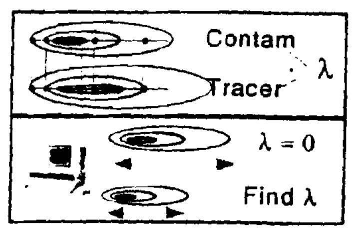
USED FOR:	***Plume Duration Estimate.*** Used to estimate time required to meet a remediation goal at a particular point within the plume. If wells in the source zone are used to derive k_{point}, then this rate can be used to estimate the time required to meet remediation goals for the entire site. k_{point} should not be used for representing biodegradation of dissolved constituents in ground-water models (use λ as described in the right hand column).	***Plume Trend Evaluation.*** Can be used to project how far along a flow path a plume will expand. This information can be used to select the sites for monitoring wells and plan long-term monitoring strategies. Note that k should not be used to estimate how long the plume will persist except in the unusual case where the source has been completely removed, as the source will keep replenishing dissolved contaminants in the plume.	***Plume Trend Evaluation.*** Can be used to indicate if a plume is still expanding, or if the plume has reached a dynamic steady state. First calculate λ, then enter λ into a fate and transport model and run the model to match existing data. Then increase the simulation time in the model and see if the plume grows larger than the plume simulated in the previous step. Note that λ should not be used to estimate how long the plume will persist except in the unusual case where the source has been completely removed.
REPRESENTS:	Mostly the change in source strength over time with contributions from other attenuation processes such as dispersion and biodegradation. k_{point} is not a biodegradation rate as it represents how quickly the source is depleting. In the rare case where the source has been completely removed (for a discussion of source zones, see Wiedemeier et al., 1999), k_{point} will approximate k.	Attenuation of dissolved constituents due to all attenuation processes (primarily sorption, dispersion, and biodegradation).	The biodegradation rate of dissolved constituents once they have left the source. It does not account for attenuation due to dispersion or sorption.
HOW TO CALCULATE:	Plot natural log of concentration vs. time for a single monitoring point and calculate k_{point} = slope of the best-fit line (ASTM, 1998). This calculation can be repeated for multiple sampling points and for average plume concentration to indicate spatial trends in k_{point} as well.  Note this calculation *does not* account for any changes in attenuation processes, particularly Dual-Equilibrium Desorption (availability) which can reduce the apparent attenuation rate at lower concentrations (e.g., see Kan et al., 1998).	Plot natural log of conc. vs. distance. If the data appear to be first-order, determine the slope of the natural log-transformed data by: 1. Transforming the data by taking natural logs and performing a linear regression on the transformed data, or 2. Plotting the data on a semi-log plot, taking the natural log of the y intercept minus the natural log of the x intercept and dividing by the distance between the two points. Multiply this slope by the contaminant velocity (seepage velocity divided by the retardation factor R) to get k. 	Adjust contaminant concentration by comparison to existing tracer (e.g., chloride, tri-methyl benzenes) and then use method for bulk attenuation rate (see Wiedemeier et al., 1999); or Calibrate a ground-water solute transport computer model that includes dispersion and retardation (e.g., BIOSCREEN, BIOCHLOR, BIOPLUME III, MT3D) by adjusting λ; or Use the method of Buscheck and Alcantar (1995) (plume must be at steady-state to apply this method). Note this method is a hybrid between k and λ as the Buscheck and Alcantar method removes the effects of longitudinal dispersion, but does not remove the effects of transverse dispersion from their λ. 

Table 2. Continued...

HOW TO USE:	*To estimate plume lifetime:* The time (t) to reach the remediation goal at the point where K_{point} was calculated is: $t = \frac{-Ln\left[\frac{C_{goal}}{C_{start}}\right]}{k_{point}}$	*To estimate if a plume is showing relatively little change:* Pick a point in the plume but downgradient of any source zones. Estimate the time needed to decay these dissolved contaminants to meet a remediation goal as these contaminants move downgradient: $t = \frac{-Ln\left[\frac{C_{goal}}{C_{start}}\right]}{k}$ Calculate the distance L that the dissolved constituents will travel as they are decaying using V_s as the seepage velocity and R is the retardation factor for the contaminant: $L = \frac{V_s}{R} \cdot t$ If the plume currently has not traveled this distance L then this rate analysis suggests the plume may expand to that point. If the plume has extended beyond point L, then this rate analysis suggests the plume may shrink in the future. Note that an alternative (and probably easier method) is to merely extrapolate the regression line to determine the distance where the regression line reaches the remediation goal.	*To estimate if a plume is showing relatively little change:* Enter λ in a solute transport model that is calibrated to existing plume conditions. Increase the simulation time (e.g. by 100 years, or perhaps to the year 2525), and determine if the model shows that the plume is expanding, showing relatively little change, or shrinking.
TYPICAL VALUES:	Reid and Reisinger (1999) indicated that the mean point decay rate constant for benzene from 49 gas station sites was 0.46 per year (half-life of 1.5 years). For MTBE they reported point decay rate constants of 0.44 per year (half-life of 1.6 years). In contrast, Peargin (2002) calculated rates from wells that were screened in areas with residual NAPL; the mean decay rate for MTBE was 0.04 per year (half life of 17 years) the rate for benzene was 0.14 per year (half life of 5 years). Newell (personal communication) calculated the following median point decay rate constants: 0.33 per year (2.1 year half-life) for 159 benzene plumes at service station sites in Texas; and 0.15 per year (4.7 year half-life) for 37 TCE plumes around the U.S.	For many BTEX plumes, *k* will be similar to biodegradation rates λ (on the order of 0.001 to 0.01 per day; see Figure 4) as the effects of dispersion and sorption will be small compared to biodegradation.	For BTEX compounds, 0.1 - 1 %/day (half-lives of 700 to 70 days)(Suarez and Rifai, 1999). Chlorinated solvent biodegradation rates may be lower than BTEX biodegradation rates at some sites (Figures 4 and 5). For more information about biodegradation rates for a variety of compounds, see Wiedemeier et al., 1999 and Suarez and Rifai, 1999.

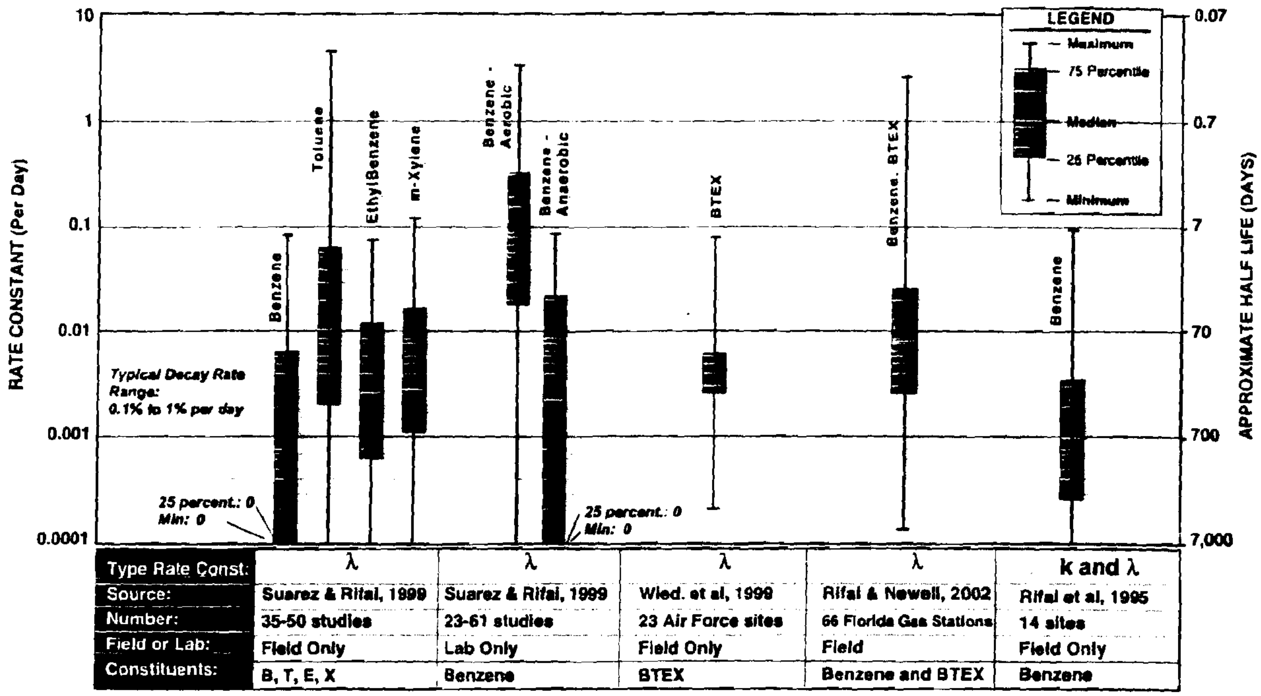


Figure 4. Biodegradation Rate Constants (λ) and Bulk Attenuation Rate Constants (*k*) for BTEX compounds from the literature. Source: Rifai and Newell, 2001.

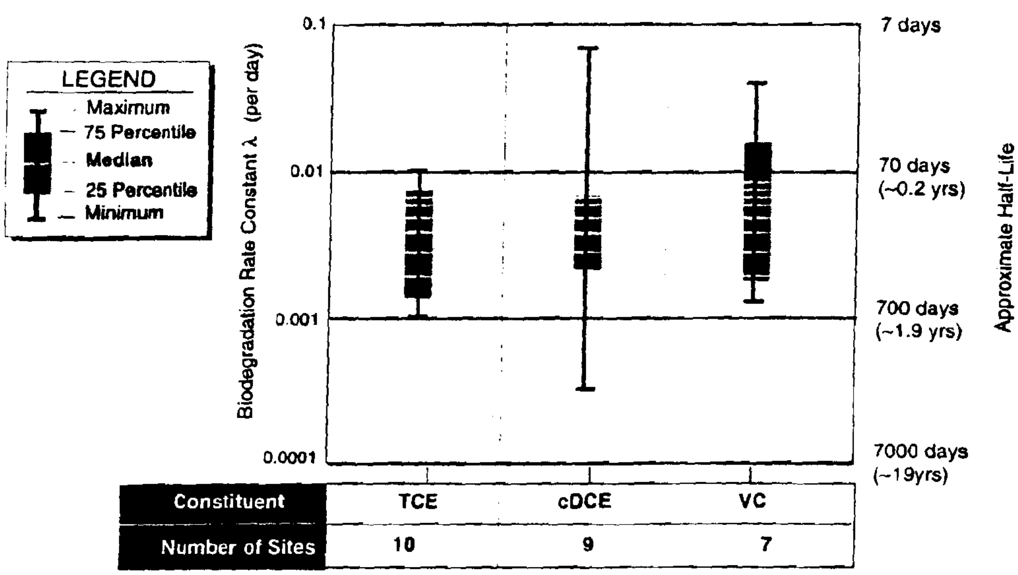


Figure 5. Biodegradation Rate Constants (λ) for Trichloroethene (TCE), cis-Dichloroethene (cDCE), and Vinyl Chloride (VC) compounds from BIOCHLOR modeling studies. Source: Aziz et al., 2000.

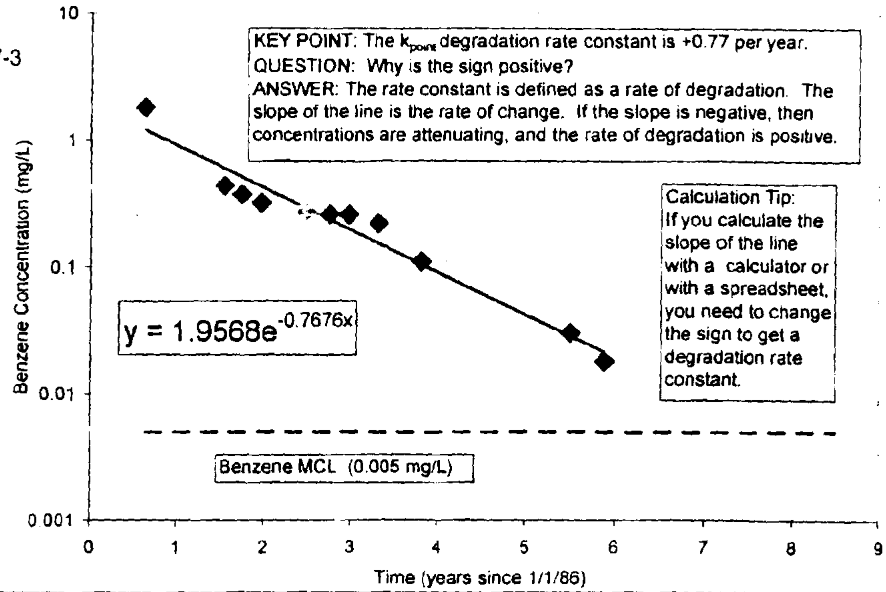
EXAMPLE 1. *Use of Concentration vs. Time Rate Constants (k_{point})*

INTRODUCTION: A leaking underground storage tank site in Elbert, Anystate, has a maximum source concentration of 1.800 mg/L of benzene at well MW-3. A remediation goal of 0.005 mg/L of benzene has been established. How long will it take for this site to reach the remediation goal using MNA with no active remediation? *(Data source: Mace et al. 1997)*

DATA:

The following are data from well MW-3 for the period 1986 to 1991.

DATE	Years Since 1/1/86	MW-3 Benzene (mg/L)
8/19/86	0.63	1.800
7/17/87	1.54	0.440
9/29/87	1.74	0.370
12/19/87	1.96	0.320
6/25/88	2.48	0.270
9/30/88	2.75	0.260
12/21/88	2.97	0.260
4/25/89	3.31	0.220
10/23/89	3.81	0.110
7/4/91	5.50	0.030
11/20/91	5.88	0.018



CALCULATION: Construct a plot of concentration vs. time. Although the plot can be developed in many ways, the clearest way is to convert the time data to years using an arbitrary starting point (for this example we chose 1/1/86). By transforming the concentrations to natural log concentration, and using a spreadsheet or calculator to get the slope (-0.77) and intercept (0.67), the following equation of the line was generated:

$$\text{Ln (Conc. Benzene)} = \exp^{(0.67-0.77x)} \quad \text{which resulted in the following rate equation:}$$

$$\text{Benzene concentration (mg/L)} = 1.96\ \text{mg/L}^{*} \exp^{(-0.77\ \text{yrs since 1/1/86})} \quad \text{where } k_{point} = +0.77 \text{ per year.}$$

Rearranging the equation:

$$\text{Time (years since 1/1/86)} = -\text{Ln [Conc. Benzene (mg/L) / 1.96] / 0.77}$$

For the case where the remediation goal is 0.005 mg/L benzene,

$$\text{Time (years since 1/1/86)} = -\text{Ln [0.005 / 1.96] / 0.77} = 7.7 \text{ years} = \textbf{late 1993}$$

A statistical analysis of the uncertainty involved in the calculation can be performed by determining the "one tailed" 90% confidence interval using the methods outlined in Appendix I. The "one tailed" 90% confidence limit on the time to remediation is a time that is no longer than 8.6 years from 1/1/86, or late 1994.

Plume Attenuation?

The concentration vs. time rate constant is positive, indicating that attenuation at this location (the source zone in this example) is occurring. The attenuation is probably due to weathering of the source caused by dissolution of benzene from a residual NAPL into flowing ground water. Raoult's Law predicts that weathering from dissolution will be a first-order process.

Plume Trends?

The concentration vs. time rate constant is positive, indicating that concentrations in this portion of the plume are going down and that at least a portion of the plume may be shrinking. However, from the information obtained at a single location, no conclusion can be drawn regarding the overall plume trend.

Plume Duration?

The concentration vs. time rate constant was used to show that if current trends hold then the plume will reach the clean-up goal in 1994. Note this assessment does not consider any other processes which could reduce the observed attenuation rate (i.e., changes in water levels, availability effects at low concentration as described by Kan et al., 1998, etc.).

Key Point

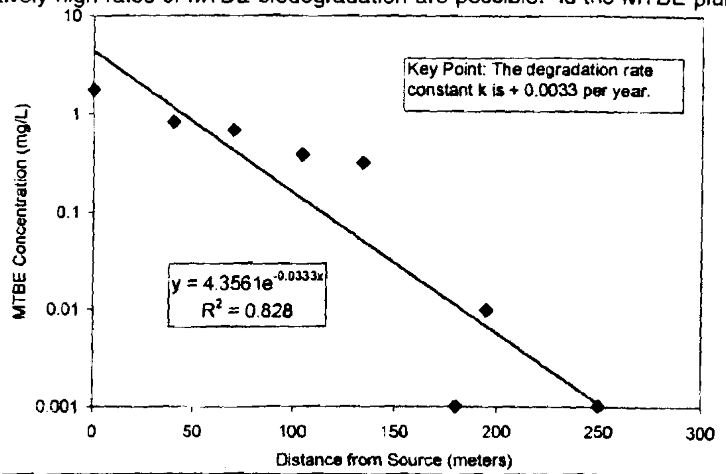
A concentration vs. time rate constant is one of the best ways to estimate how long MNA (or any type of remediation system) might take to reach a clean-up goal. A second method is to perform a mass-based approach (i.e., see DuPont et al., 1998; Hyman and DuPont, 2001; Newell et al., 1996 or Chapter 2 of Wiedemeier et al., 1999).

EXAMPLE 2. *Use of Concentration vs. Distance Rate Constants (k)*

INTRODUCTION: This constant is estimated between wells along the inferred centerline of the plume. An MTBE plume at a former fuel farm located at a U.S. Coast Guard Base has a maximum source zone concentration of 1.740 mg/L of MTBE. The average calculated seepage velocity at the site was calculated to be 82 meters per year and the retardation factor, R, is assumed to be equal to one. For the purpose of this example, a clean-up goal of 0.030 mg/L was assumed. Most importantly, the site is strongly anaerobic, indicating that relatively high rates of MTBE biodegradation are possible. Is the MTBE plume attenuating? How far should it extend?
(source: Wilson et al., 2000).

DATA:
The following is data from wells along the plume centerline:

Well	Distance from Source(m)	MTBE Conc.(mg/L)
CPT-1	0	1.74
CPT-3	40	0.823
CPT-5	70	0.672
ESM-14	104	0.383
ESM-3	134	0.319
ESM-9	180	0.001
ESM-10	195	0.0097
GP-1	250	0.001



CALCULATION: First, plot the natural log of concentration vs. distance at a point in time and calculate the slope of the best-fit line using linear regression analysis, as shown above. The slope of the C vs. D plot is -0.033 per meter of travel.

Next, calculate the bulk attenuation rate constant, k, by multiplying the negative of the slope of the regression by the contaminant velocity. The contaminant velocity equals the seepage velocity divided by the retardation factor. In this case the retardation factor is 1, and the contaminant velocity is 82 meters per year. The bulk attenuation rate is (+0.033 per meter) * (82 meter per year) = 2.7 per yr. This corresponds to a dissolved-phase half-life of 0.26 yrs (0.26 yrs = 0.69 / 2.7 per yr) after the MTBE leaves the source zone.

To estimate the travel time required for the concentration of MTBE to attenuate to the cleanup goal, use the equation in Table 2. The travel time to reach the remediation goal at the down gradient margin of the plume is 1.5 years (1.5 yr = - Ln [0.030 mg/L/ 1.74 mg/L] / 2.7 per y). Based on the calculated attenuation rate, an MTBE source concentration of 1.74 mg/L, and a cleanup goal of 0.030 mg/L, the MTBE plume should extend 123 meters from the source (123 meters = 82 meters per yr * 1.5 yr travel time).

A sensitivity analysis can be performed on the rate estimates. See Appendix I for a discussion of confidence intervals. The one-tailed 95% confidence interval on the slope is -0.021 per foot. At a seepage velocity of 82 meters per year, this is equivalent to a concentration vs. distance rate constant (k) of 1.7 per year. The plume would require 2.4 years of travel in the aquifer to attenuate to the cleanup goal. At 95% confidence, the plume boundary would be no more than 200 meters from the source. The estimate of seepage velocity is also subject to uncertainty. A reasonable upper boundary on the seepage velocity at this site is 150 meters per year (Wilson et al., 2000). At the upper bound on seepage velocity, and at the 95% confidence interval on the slope, the MTBE plume would extend no more than 360 meters.

Plume Attenuation?
The calculated concentration vs. distance rate constant is positive, indicating that attenuation of dissolved MTBE is occurring after the MTBE leaves the source zone. The rate constant of 2.7 per year indicates that dissolved MTBE concentrations will be reduced by 50% every 0.25 yrs after the MTBE leaves the source zone. It does not indicate the entire plume will be reduced in concentration by 50% in 0.25 yrs.

Plume Trends?
In theory, the concentration vs. distance rate constant can provide supporting evidence that the plume may be showing relatively little change or shrinking in the future. However, an analysis of concentration vs. time data for all locations within an adequately delineated plume is a much more direct and robust method for estimating plume trends.

Plume Duration?
A concentration vs. distance rate constant is not useful for estimating plume duration (i.e., the time to reach a clean-up goal). A mass-based analysis by Wilson et al., 2000 indicated that 60 years might be required to reach the clean-up goal.

Key Point:

Concentration vs. distance rate constants cannot be used for estimating remediation time frames, and are only marginally useful for estimating plume trends. This type of rate constant is most useful to predict the boundaries of a plume. It can be used to plan the location of monitoring wells or sentinel wells. This rate constant is also used with other information to calculate the rate of biodegradation.

Example 3. Use of Biodegradation Rate Constants (λ).

INTRODUCTION: A chlorinated solvent plume at the Cape Canaveral Air Force Base, Florida, has maximum source concentrations of 0.056 mg/L Tetrachloroethene (PCE), 15.8 mg/L Trichloroethene (TCE), 98.5 mg/L cis-Dichloroethene (DCE), and 3.08 mg/L Vinyl Chloride (VC), 33 years after the spill originally occurred. The calculated seepage velocity at the site is 111.7 ft per year. Based on the existing distribution of chlorinated solvents and degradation products, how far down the flow path will the plume extend when it eventually comes to a steady state? This example is based on the example in Appendix A.6 of the User's Manual for the BIOCHLOR natural attenuation decision support system (Aziz et al., 2000). This model and the user's guide can be downloaded at no cost from the EPA Center for Subsurface Modeling Support (CSMoS) at http://www.epa.gov/ada/csmos/models.html.

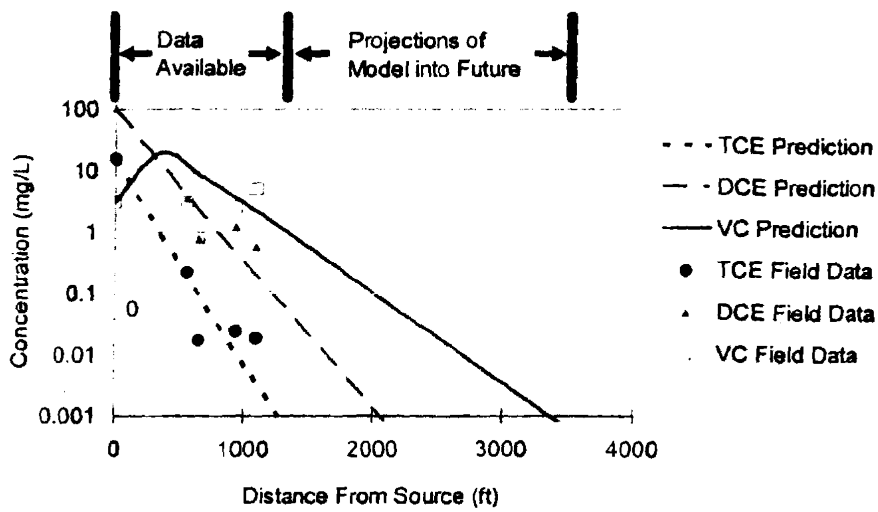
Well	*Distance from Source (feet)*	*PCE (mg/L)*	*TCE (mg/L)*	*cis-DCE (mg/L)*	*VC (mg/L)*
CCFTA2-9S	0	0.056	15.8	98.5	3.08
MP-3	560	<0.001	0.220	3.48	3.08
CPT-4	650	ND	0.0165	0.776	0.797
MP-6	930	<0.001	0.0243	1.2	2.52
MP-4s	1085	<0.001	<0.001	0.556	5.02

CALCULATION: The following approach was used to determine biodegradation rate constants for each of the chlorinated solvents using a solute transport model:

Step 1: Perform parameter estimation and enter data into model.

Step 2: By trial-and-error, adjust the first-order biodegradation rate constants (λ) to match the observed site data. The resulting first-order biodegradation rate constant for PCE was 2.0 per year (half-life of 0.34 years), for TCE was 1.0 per year (half-life was 0.7 years), for cis-DCE was 0.7 per year (half-life 1.0 years) and for VC was 0.4 per year (half- life of 1.7 years).

Step 3: Run the simulation forward in time until it comes to an apparent steady state.



Step 4: Compare the simulated distribution of contaminants to the existing data used to calibrate the model. As discussed in Example 1, attenuation rates for declining concentration are positive values. When compared to values in the literature (see Figures 4 and 5), the values appear to be reasonable. All plume lengths were projected to the boundary defined by the MCL for Vinyl Chloride. Available data to calibrate the model extended 1085 ft from the source. The model was calibrated to the first 33 years of the plume. When the simulation was extended to 100 years the projections reached a steady state. At steady-state, there was no significant increase in the length of the TCE plume, but the cis-DCE plume was approximately twice as long at the time data available for calibration were collected, and the VC plume was approximately three times as long.

Plume Attenuation?
The calculated biodegradation rate constant is positive, indicating that biodegradation of dissolved chlorinated solvents *is occurring after the solvents leave the source zone.* PCE and TCE had the highest rates, while VC had the lowest rate at this site.

Plume Trends?
The screening model used biodegradation rate constants to project the future distribution of PCE, TCE, cis-DCE, and VC. The model projects relatively little change in the PCE, and TCE plumes, but the model predicts that the cis-DCE and VC plumes are expanding. To confirm the true behavior of the cis-DCE and VC plume, it may be necessary to install more monitoring wells to adequately delineate the plume, and collect data on concentration vs. time in all the wells in the plume.

Plume Duration?
A biodegradation rate constant is not useful for estimating the duration of the plume (i.e., the time to reach a clean-up goal).

Key Point:

Biodegradation rate constants cannot be used for estimating remediation time frames, but are useful for identifying possible trends in the behavior of plumes using mathematical models.

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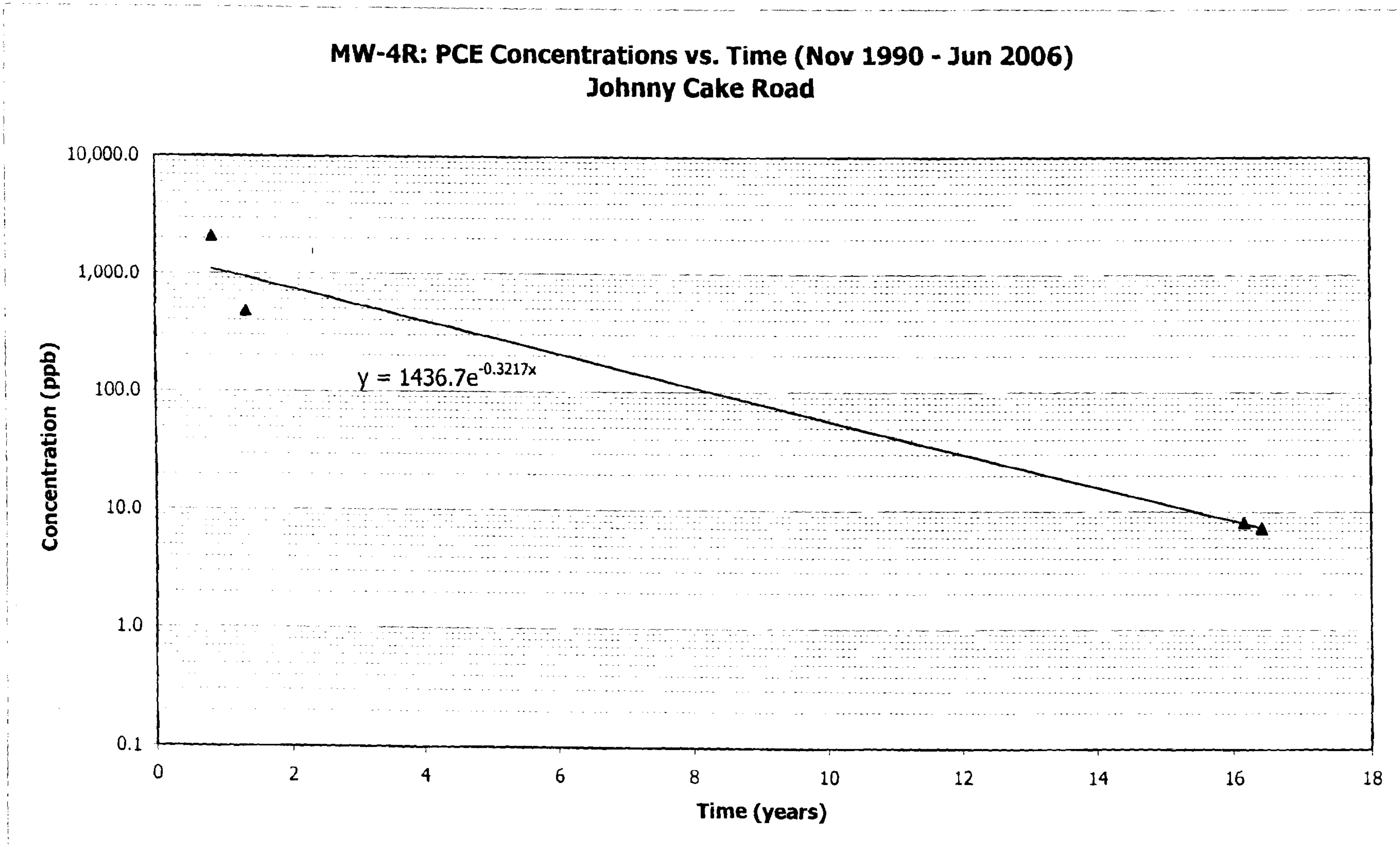
APPENDIX B

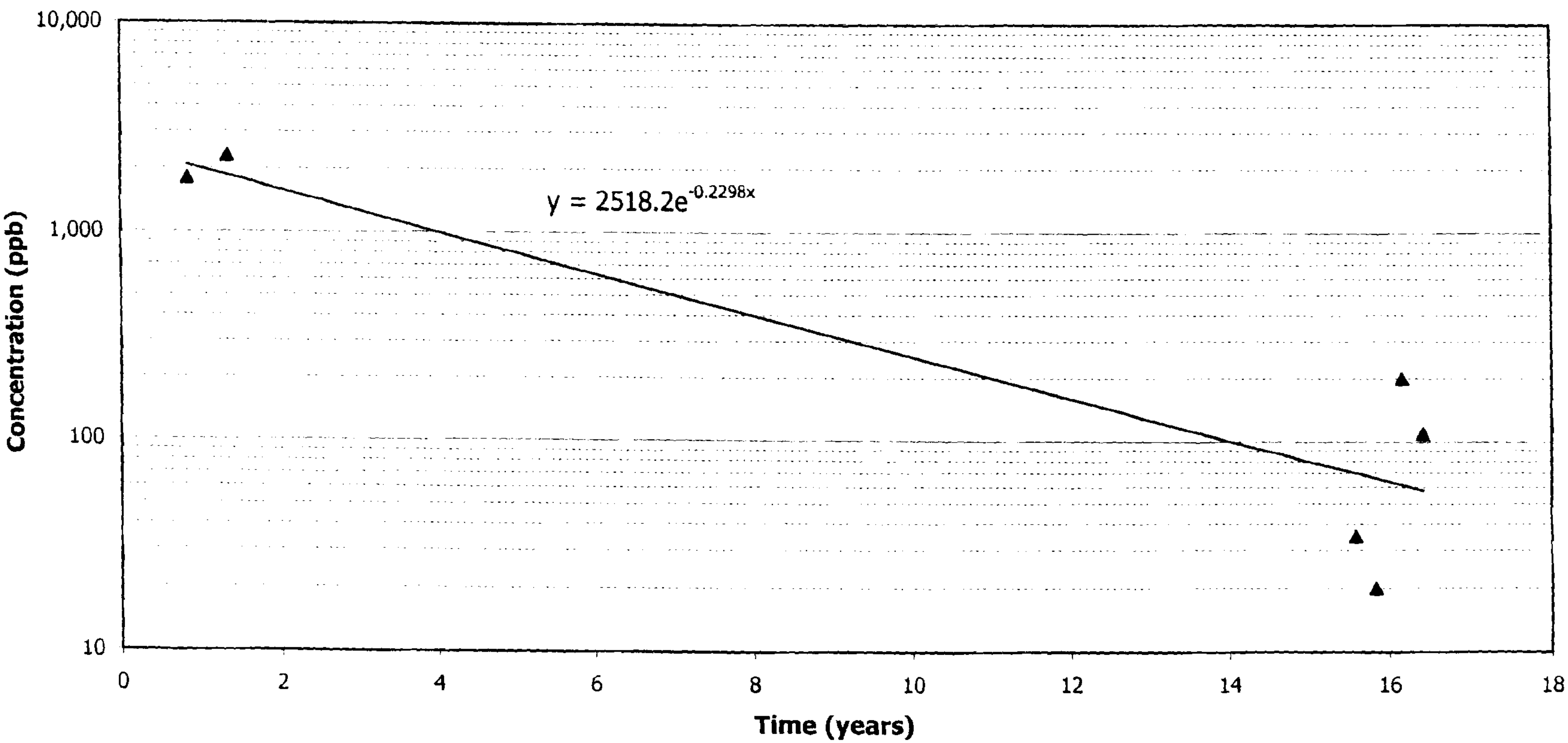
Contaminant Concentration vs. Time Graphs
Johnny Cake Road
Technical Memorandum
October 2006

Date	Time since 1/90	PCE (ppb)
Nov-90	0.83	2,100
May-91	1.33	480
Mar-06	16.16	8.1
Jun-06	16.42	7.3

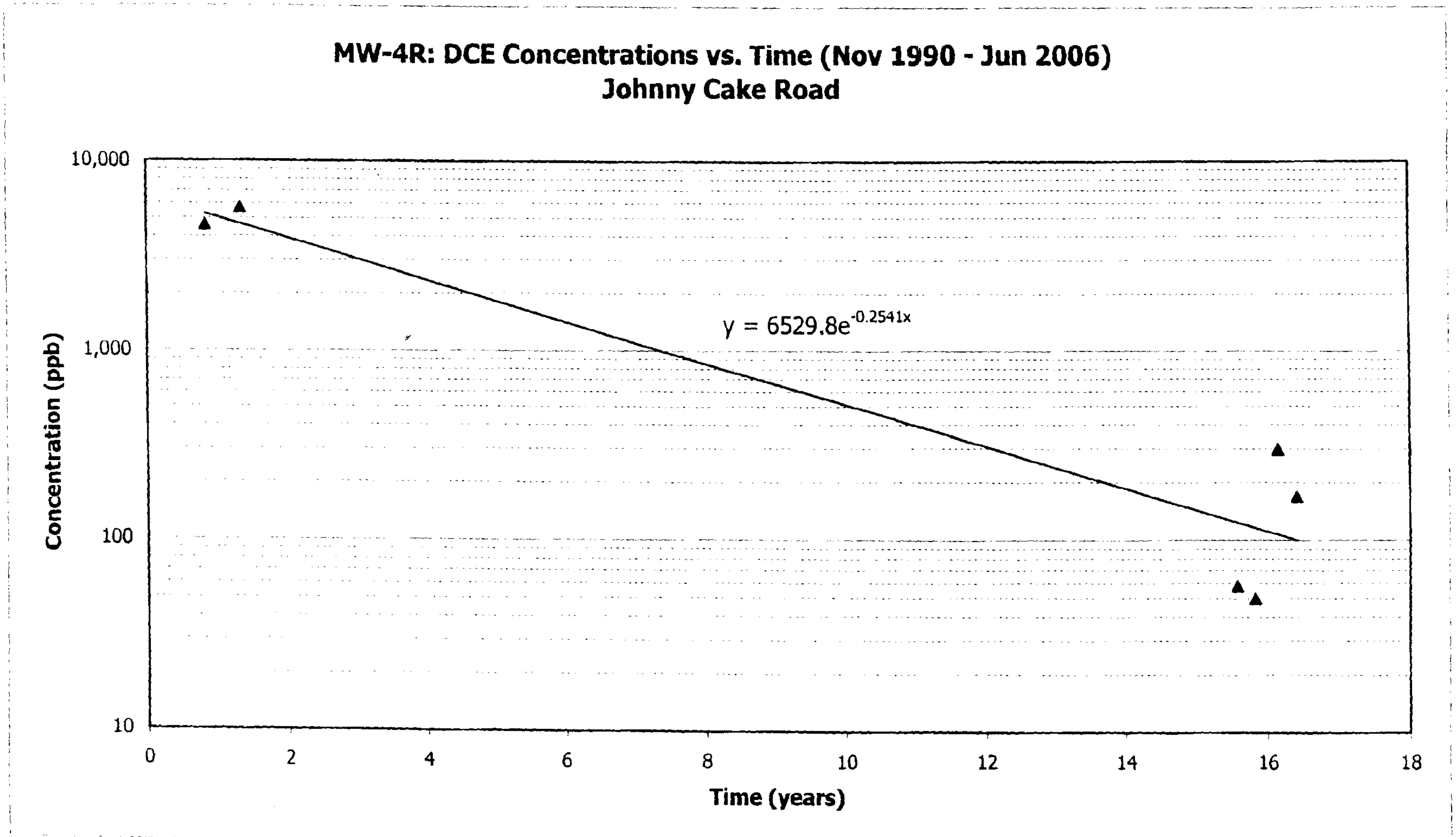


Date	Time since 1/90	TCE (ppb)
Nov-90	0.83	1,800
May-91	1.33	2,300
Aug-05	15.58	35
Nov-05	15.83	20
Mar-06	16.16	200
Jun-06	16.42	110

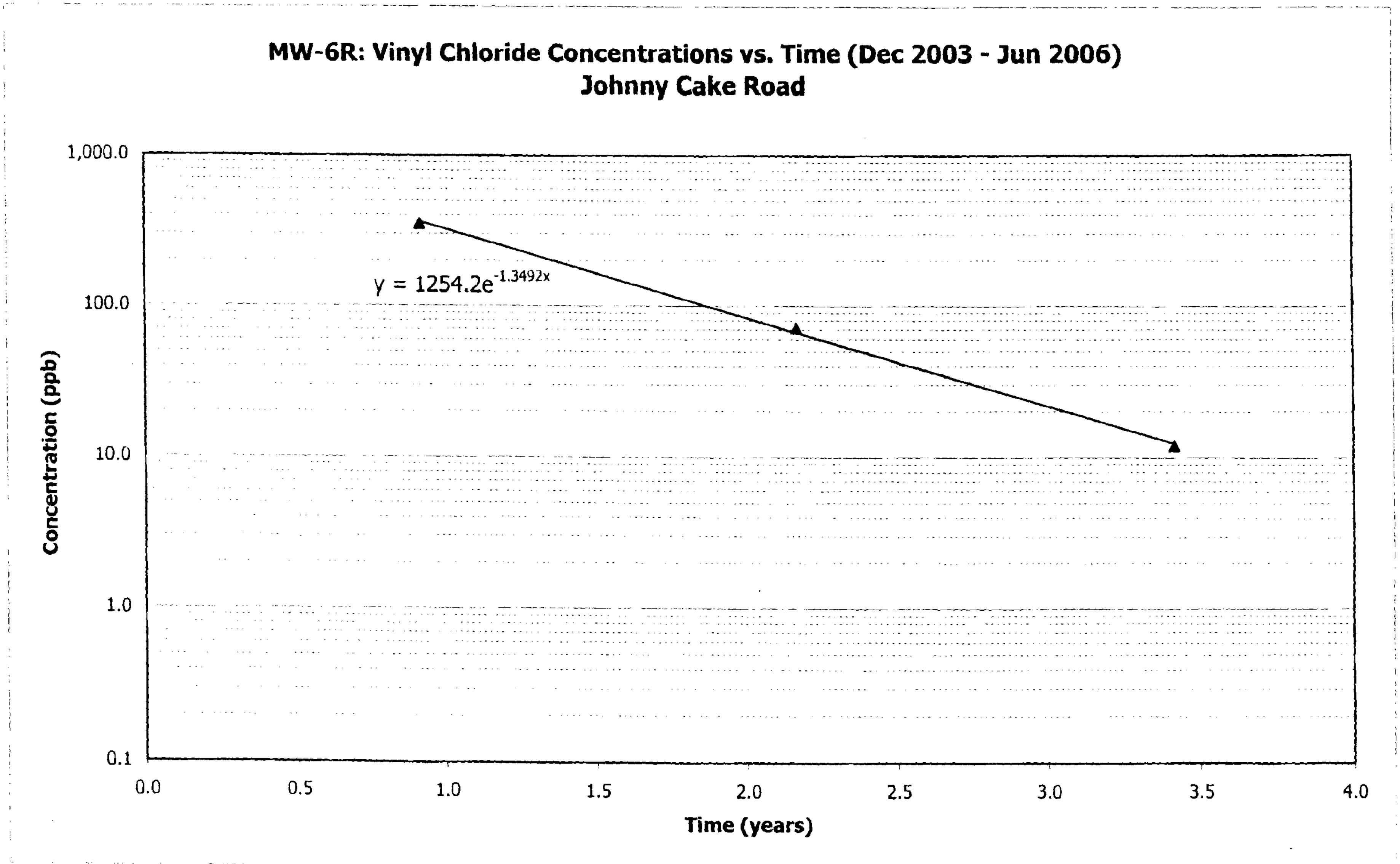
MW-4R: TCE Concentrations vs. Time (Nov 1990 - Jun 2006)
Johnny Cake Road



Date	Time since 1/90	DCE-total (ppb)
Nov-90	0.83	4,600
May-91	1.33	5,700
Aug-05	15.58	58
Nov-05	15.83	50
Mar-06	16.16	300
Jun-06	16.42	170

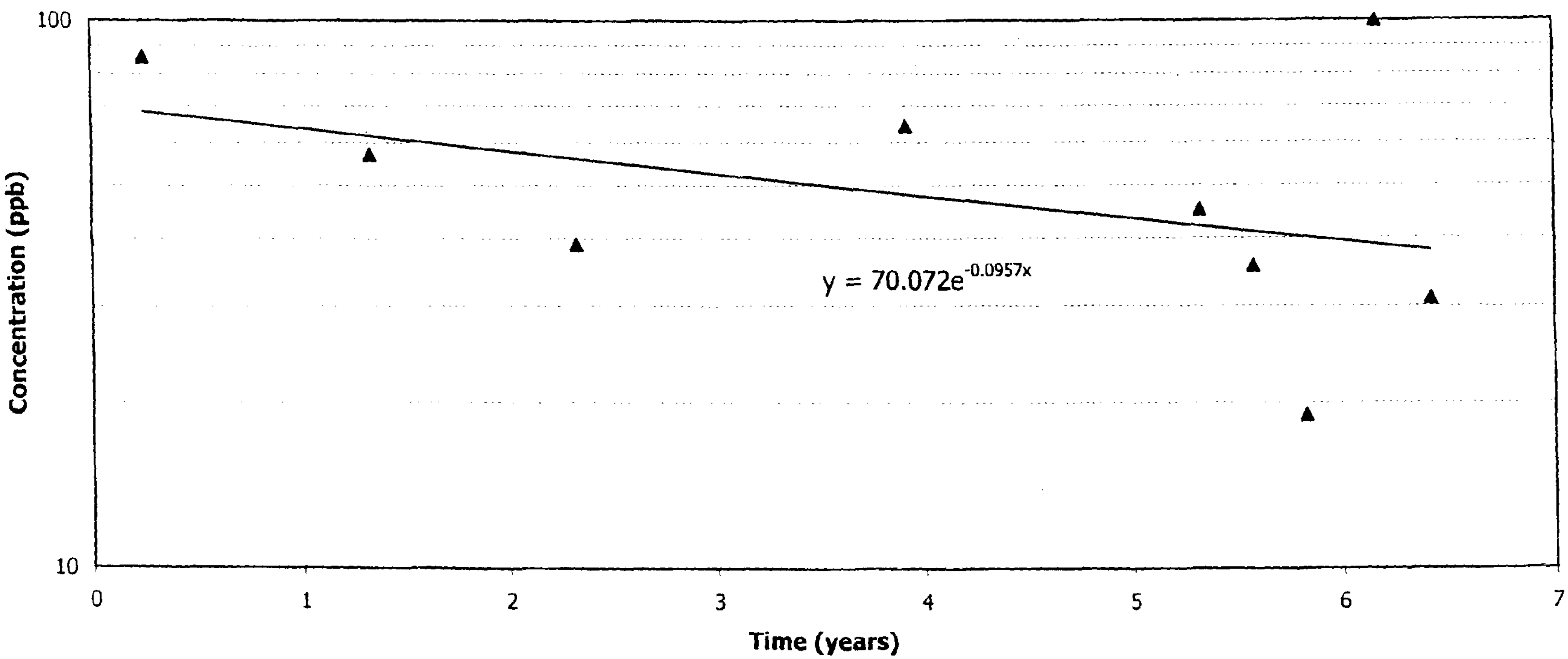


Date	Time since 1/03	VC (ppb)
Dec-03	0.92	350
Mar-05	2.17	72
Jun-06	3.42	12

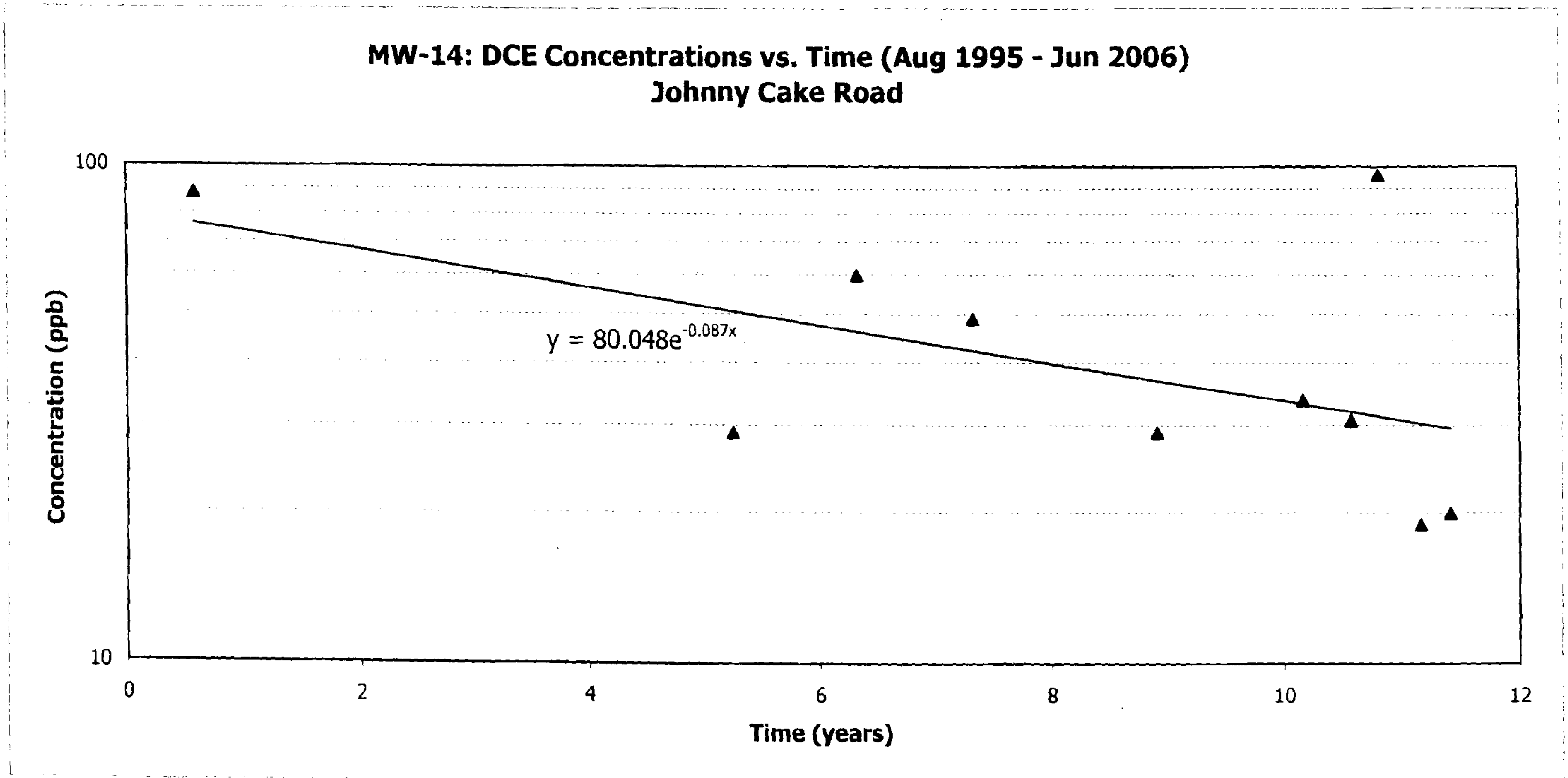


Date	Time since 1/00	DCE-total (ppb)
Apr-00	0.25	86
May-01	1.33	57
May-02	2.33	39
Dec-03	3.92	64.4
Mar-05	5.33	45.1
Aug-05	5.58	35.6
Nov-05	5.83	19
Mar-06	6.17	100
Jun-06	6.42	31

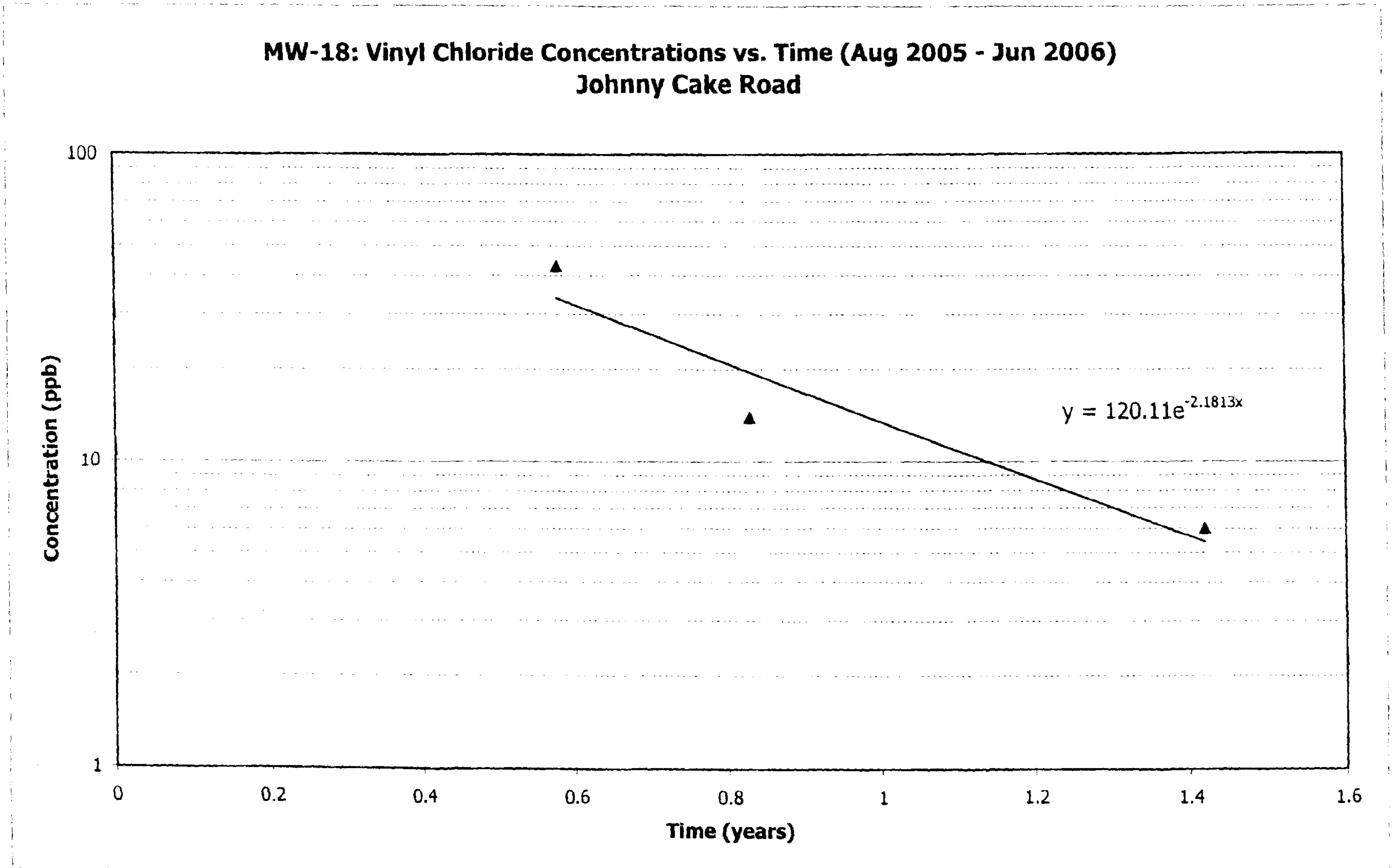
MW-13: DCE Concentrations vs. Time (Apr 2000 - Jun 2006)
Johnny Cake Road



Date	Time since 1/95	DCE-total (ppb)
Aug-95	0.58	88
Apr-00	5.25	29
May-01	6.33	60
May-02	7.33	49
Dec-03	8.92	29
Mar-05	10.17	33.7
Aug-05	10.58	30.7
Nov-05	10.83	96
Mar-06	11.17	19
Jun-06	11.42	20



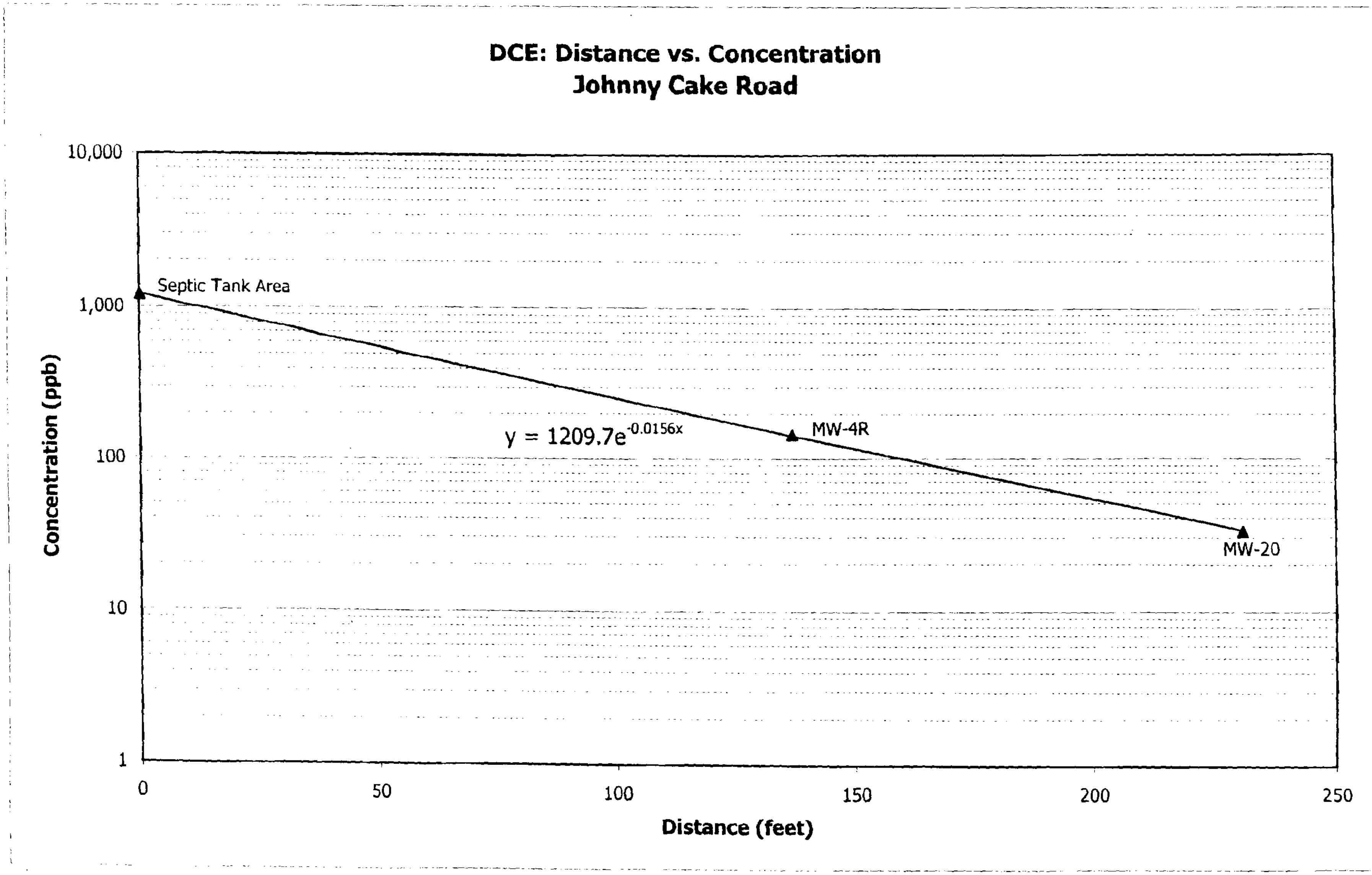
Date	Time since 1/05	VC (ppb)
Aug-05	0.58	43
Nov-05	0.83	14
Jun-06	1.42	6



APPENDIX C

Contaminant Concentration vs. Distance Graphs
Johnny Cake Road
Technical Memorandum
October 2006

Distance feet)	DCE (ppb)	Location
0.1	1,200	Septic tank area (near MW-6R)
137	146	MW-4R
231	33	MW-20



Distance feet)	VC (ppb)	Location
0.1	21	MW-18
63	3	M
157	2.3	.0

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