Addendum No.2, IFB 16-68



CITY OF SOMERVILLE, MASSACHUSETTS

Department of Purchasing JOSEPH A. CURTATONE MAYOR

To: Prospective bidders **IFB 16-68**, Lincoln Park Renovation

From: Alex Nosnik, Assistant Director, Purchasing

Date: 3/15/2016

Re: To provide additional information and to change the minimum quality requirements.

Addendum No. 2 to IFB 16-68

PLEASE BE SURE TO ACKNOWLEDGE THIS ADDENDUM BELOW

Please acknowledge receipt of this Addendum by signing below and including this form in your bid package. Failure to do so may subject the proposer to disqualification.



Name of Authorized Signatory Title of Authorized Signatory

The City is issuing this addendum to IFB 16-68, Lincoln Park Renovation, to make the following changes:

- 1. To provide additional information; please see Attachment 1 for the following:
 - Geotechnical Engineering Studies
 - Test Pit Report
 - Well Report
 - Soil Characterization Report Lincoln Park Community School
 - Geotechnical Engineering Report
 - Lincoln Park Irrigation Well Yield & Water Quality

2. To Change the Minimum Quality Requirements

DELETE current quality requirements form, in its entirety;

Addendum No.2, IFB 16-68

And,

REPLACE with the following (modified sections are highlighted in yellow):

	Yes	No
Has the contractor been established in this specified field for at		
least 5 years?		
Has the contractor successfully completed a minimum of three (3)		
similar sized Municipal (or similar; i.e., university or private		
school, etc.) Park projects (\$4,500,000 - \$5,000,000) within the		
past ten (10) years?		
Has the Contractor included a Health and Safety Plan with their		
bid documents?		
Can the contractor certify that all employees have successfully		
completed at least 10 hours of OSHA approved training in		
Construction Safety and Health?		
Optional:		
Vendor: Are you a State Office for Minority and Women Owned		
Business Assistance (SOMWBA) certified minority- or woman-		
owned business?		

Addendum No.2, IFB 16-68

Attachment 1

Various Reports and Studies (as referenced above)

GEOTECHNICAL ENGINEERING STUDIES LINCOLN PARK COMMUNITY SCHOOL SOMERVILLE, MASSACHUSETTS

Prepared For: Symmes Maini & McKee Associates Cambridge, Massachusetts

Prepared By: The Geotechnical Group, Inc. Needham, Massachusetts

> File No. Y1657.03 May 2005



May 19, 2005 File No. Y1657.03

Symmes Maini & McKee Associates 1000 Massachusetts Avenue Cambridge, MA 02138

Attention: Mr. Wayne Keefner, P.E.

RE: Additional Geotechnical

Engineering Studies

Lincoln Park Community School

Washington Street Somerville, MA

Dear Wayne:

The Geotechnical Group, Inc. (TGG) is pleased to present the results of our additional geotechnical engineering studies for the above referenced site. The purpose of our studies was to gather subsurface information within the area of proposed excavation support and develop geotechnical engineering design and construction recommendations for the excavation support system. This report has been prepared in accordance with our proposal to Symmes Maini & McKee Associates (SMMA) dated March 28, 2005. Our findings, conclusions and recommendations are subject to the Statement of Limitations attached to this report in Appendix A.

SITE AND PROJECT DESCRIPTION

The existing Lincoln Park Community School, located at 290 Washington Street in Somerville, Massachusetts, is bordered by Washington Street to the north, the Lincoln Park ball fields and parkway to the south, residential properties to the west and southeast and a Massachusetts Bay Transportation Authority (MBTA) railroad corridor to the northeast. A sidewalk and landscaping areas lie between Washington Street and the school building. The school was constructed in the 1970's. The Washington Street bridge and associated retaining walls were built shortly thereafter according to the documents provided to TGG.

The existing grades in the excavation support area north of the school rises from about El. $20\pm$ at the west end up to about El. $32\pm$ at the east end along Washington Street where Washington Street starts to bridge over the MBTA railroad tracks. A retaining wall up to about $5\pm$ feet high accommodates a

grade change between the lower sidewalk and Washington Street above it. The retaining wall is approximately 10± feet from the face of the existing building at the narrowest section.

The proposed development includes the construction of a new school building located within, and extending beyond the current school building's footprint. It is our understanding that the proposed building will have a finish floor elevation of 16. The finish floor elevation of the existing school is 15.5±. The site grading within the existing sidewalk and landscaped areas is proposed to be backfilled about 5± feet to roughly match the existing elevation contours along Washington Street. We used this information as a basis for our recommendations.

TGG has conducted previous studies at the Lincoln Park site in support of the new school building. A report titled Preliminary Geotechnical Engineering Studies dated December 2001, a report titled Geotechnical Engineering Report dated June 2002 and a report entitled Geotechnical Engineering Studies dated March 2005 were prepared for SMMA.

A set of plans of the existing Lincoln Park Community School and subsurface information from the Washington Street bridge construction project were provided to TGG and used during our studies.

SUBSURFACE EXPLORATIONS

A subsurface exploration program consisting of four soil test borings (B-107 through B-110) was performed at the site to assess the subsurface soil and groundwater conditions in the area of the proposed excavation support system. The borings were performed by Soil Exploration Corporation on April 20, 21 and 22, 2005 using a rubber tracked Geoprobe drill rig and on April 25, 2005 using an ATV (All Terrain Vehicle) mounted drill rig. The borings were advanced to depths between $60\pm$ and $75\pm$ feet below the existing ground surface elevations. Standard Penetration Testing (SPT) and soil sampling were generally conducted at 5 to 10 feet intervals during advancement of the borings.

The SPT was performed by driving a standard two-inch outside diameter split spoon sampler a distance of twenty-four inches (or to refusal) with a 140 pound automatic trip hammer falling a distance of thirty inches at each sampling depth. The number of blows required to drive the sampler in six-inch increments is recorded on the boring logs attached in Appendix B. The sum of the blows required to drive the sampler from the 6 to 12 and 12 to 18 inch increments, defined as the Standard Penetration Resistance of the soil, is used as a measure of soil density, consistency and strength based upon empirically derived correlations.

Soil samples retrieved were visually described in the field using Burmister soil descriptions. The soil descriptions, blow counts, and other information are shown on the soil test boring logs, which are attached in Appendix B of this report. Note that the soil descriptions are representative of the 1 $\frac{3}{8}$ \pm inch minus size soil fraction of the overall deposits sampled.

The boring locations are shown approximately on the attached Figure No. 1 – Exploration Location Plan. These locations were determined by pacing, tape measurement and line of sight from the existing site features and should be considered approximate.

LABORATORY SOIL TESTING

A geotechnical laboratory testing program consisting of unconfined compressions, unconsolidated, undrained triaxial shears, Atterberg Limits, wash sieve analyses, hydrometer analyses, and natural water contents was performed on representative soil samples collected during the exploration phase of this study. The purpose of the testing was to aid in classifying the soil composition and to evaluate engineering behavior in terms of strength and compressibility.

The testing was performed in general accordance with the testing requirements of ASTM and the results are discussed in the next section. The laboratory testing results are included in Appendix C of this report.

SUBSURFACE CONDITIONS

The subsurface soil conditions within the proposed excavation support area can be generally characterized as surficial fill deposits underlain by a discontinuous layer of natural sand, followed by a sandy silt or silty sand and then a silty clay with frequent layers of silt and fine sand deposit. At two boring locations, a possible glacial till deposit was encountered beneath the silty clay deposit. A general description of the individual deposits encountered is discussed below. Refer to the test boring logs attached as Appendix B for additional information.

Existing Fill and Organics

The existing surficial fill generally varies from about 14 to 20 feet in thickness. The fill ranges in density from very loose to medium dense and its composition can generally be described as a fine to coarse sand with lesser amounts of gravel and silt. A sample of wood was recovered from depths of 15± to 17± feet below the existing ground surface during boring No. B-109. A buried deposit of natural organic soil was encountered during boring No. B-110 at depths of between 14± and 16.5± below the existing ground surface. This deposit appears to consist of dark brown, fine to medium sand, with about 20± percent organic silt and trace amounts of plant matter.

Natural Sand

A natural sand deposit was encountered below the existing fill and above the natural sandy silt and silty clay at the location of boring Nos. B-107, B-108 and B-110. The deposit varied from about $6.5\pm$ to $17\pm$ feet in thickness and typically consists of a medium dense, orangish tan to gray, fine to medium sand with less than about 15 percent silt. The groundwater table was generally encountered within this strata.

Natural Sandy Silt or Silty Sand

A natural deposit of stratified sandy silt or silty sand was observed during boring No. B-101. The deposit ranged from about 5 to 16 feet in thickness where it transitions to a silty clay deposit at depths of between about 25 and 45 feet below the existing ground surface. The sandy silt generally consists of medium dense, tan or gray silt with between about 25 and 50 percent fine sand and trace amounts of clay. The silty sand deposit generally consists of medium dense, tan or gray sand with between 25 and 50 percent fine sand and trace amounts of clay.

Natural Silty Clay with Frequent Layers of Silt and Fine Sand

At each of the boring locations, a deposit of silty clay underlies the above described soils. This clay deposit varies from more than 16 feet to 47 feet in thickness where the deposit was fully penetrated. The silty clay contains frequent layers of silt and fine sand. The overall deposit can be described as very soft to very stiff, gray silty clay or clayey silt with occasional to frequent seams and layers of sandy silt, silty sand, fine sand or silt. The silty clay layer appears to become thicker as one traverses the excavation support area from the east to the west. The thickest deposit was observed at boring No. B-109 where the silty clay is about 47 feet thick.

Laboratory testing on undisturbed samples obtained from this deposit indicate unconfined compressive strength values generally ranging from 700 to 1,200 pounds per square foot, undrained shear strength values generally ranging from 300 to 1,800 pounds per square foot, liquid limits ranging from 30 to 47 percent, plastic limits between 19 and 27 percent, and natural water contents between 26 and 35 percent.

Natural Glacial Till

A deposit of glacial till was encountered below the silty clay in boring Nos. B-108 and B-109 at depths between about 70 and 71 feet below the existing ground surface. The depths correspond to elevations ranging from about -42 to -48. This deposit was penetrated a distance of up to about 4 feet. A refusal condition of the split spoon sampler was encountered at boring No. B-108. The glacial till appeared to consist of gray fine to coarse gravel with about 15 percent fine to coarse sand and silt.

Groundwater

Groundwater levels for our studies were recorded at the times and under the conditions noted on the logs. Measurements made within the boreholes during drilling indicates the groundwater table to be located at about El. $6\pm$ to $9\pm$ feet within the area of the proposed excavation support. It should be expected that groundwater levels will fluctuate due to variations in temperature, rainfall and other factors. Therefore, groundwater levels during construction and thereafter may be different than those reported herein.

GEOTECHNICAL ENGINEERING RECOMMENDATIONS

The construction of the new school building will be accomplished by first razing the existing school building. To accomplish this, an excavation support system along Washington Street is necessary. The system should be installed prior to the demolition of the existing school as the existing school building retains a portion of Washington Street. The excavation support system should be designed to protect the adjacent roadway, sidewalk and utilities, control the lateral extent of excavations, and provide a safe area for construction operations. The types of excavation support systems suitable for a particular project depends on the local subsurface soil and groundwater conditions, the depth and width of excavation, the compatibility of the support system with other construction requirements and the site constraints among others.

The important geotechnical considerations relating to the excavation support for the replacement of the school are the generally weak soils, the site constraints, and the varying depth of excavation support required. Our recommendations regarding the excavation wall support systems, excavation bracing systems and excavation support design parameters are made under the following subheadings.

Excavation Wall Support Systems

Demolishing portions of the existing school along Washington Street first requires the installation of an excavation support system for the reasons previously given. Based on plans provided to TGG, the existing school's shallow spread footing foundations along Washington Street are at elevations of between 7 and 9. The new school buildings foundations will be shallow spread footings bearing on natural soils at similar elevations. Assuming deeper foundations or utilities are not required along Washington Street, the depth of excavation required below the existing ground surface will vary between about 11 feet at the western end to about 25 feet at the eastern end. Two types of excavation support systems were considered for this project; soldier piles and lagging and interlocking steel sheet piling.

A soldier pile and lagging system typically consists of vertical H-section structural steel members (solider piles) spaced 6 to 10 feet on center along the face of the excavation. The steel members are either installed with pile driving equipment (vibrating or driven) or set in pre-augered holes. As excavation proceeds, wood lagging is installed behind the front flanges or attached to the face of the soldier piles. The benefits of a soldier pile and lagging system include relatively simple construction, little disturbance to retained soils, minimal noise and vibrations if holes are pre-augered and a resulting support system which is typically stiffer than steel sheet piling.

Interlocking steel sheet piling consists of a steel sheet with a Z-shaped cross section and groves on both ends to slide down and lock into the adjacent sheets, driven along the face of the excavation. The steel sheets are typically installed by driving with pile driving equipment. Vibration is sometimes used if the soil precludes driving alone. The benefits of a steel sheet pile system include the potential to reuse the steel sheet pile sections, versatility with many shapes available, low soil displacement, easy handling, light-weight, and the applicability above and below groundwater tables.

Excavation Bracing Systems

Bracing is used when excavation support systems are needed to support excavation depths greater than allowed by cantilevered sections. Bracing reduces the depth of pile penetration and cross sectional area of the pile and provides greater stiffness to the wall which reduces ground movements. Two types of bracing systems are possible for excavation wall support, external bracing and internal bracing. To determine which bracing system is more appropriate, factors such as subsurface conditions, adjacent structures and utilities, easements and site constraints, and the depth, width and configuration of the excavation should be considered.

Anchored tiebacks (external bracing) are holes drilled from the face of the excavation support wall into the retained soil to a suitable depth. Steel tendons are inserted into the drilled holes and then surrounded with grout to provide a specified bond length. The steel tendons are attached to the face of the excavation support wall and are tensioned to a specified force. The primary benefit of tiebacks is that they do not reduce the area of the excavation needed for construction. However, tieback use is limited or hindered when subsurface utilities or structures are located behind the excavation support wall. Additionally drawbacks include obtaining permanent easements, loss of ground in silty or granular soils and unknown obstructions during installation.

For excavations where conditions prohibit anchored tieback installation, or for excavations less than about 50 feet wide, internal bracing is typically used. Internal bracing systems consist of struts, rakers, corner bracing and associated lacing. Continuous horizontal wales are installed to transfer load from the excavation support wall to the bracing. Structural steel pipe and wide flange sections of various shapes are commonly used for internal bracing compression members. The primary benefit of internal bracing is that construction is not required behind the face of the excavation support wall as the structural components are installed in the excavation area. For this reason the installation of internal bracing should be carefully coordinated with excavation activities. The use and layout of bracing can significantly impact construction operations and production. In some cases internal bracing may not be practical because of requirements that the excavation area remain free of obstructions.

Excavation Support System Recommendations

The subsurface conditions along the face of the excavation are anticipated to consist of granular fill above the depth of excavation, followed by natural sand and silty sand, or silty sand below the depth of excavation. The silty clay stratum with layers of silt and sand was encountered at depths of about 8 to 20 feet below the excavation. The observed groundwater elevation is at or near the depth of excavation. Since the observed groundwater elevation is at the approximate depth of excavation, a soldier pile and lagging excavation support system seems feasible. However, the existing school building may hinder the excavation for and installation of the lagging beams which is typically performed from within the excavation area. Sheet piles may be preferred considering this limitation.

Regardless of whether soldier piles and lagging or sheet piles are used, the excavation support system should be designed to resist horizontal earth and water pressures, temporary construction loads, traffic loads and where necessary, vertical loads. The depth of pile penetration below bottom of excavation should be that which is required to develop the necessary lateral resistance to satisfy horizontal force equilibrium. The excavation support design should utilize these tabulated soil parameters:

Recommended Soil Parameters for Excavation Support System Design

	<u>Fill</u>	Natural Sand or <u>Silty Sand</u>	Natural Silty Clay
Angle of Internal Friction (degrees)	28	33	0
Moist Unit Weight (pounds per cubic foot)	125	120	115
Effective Unit Weight (pounds per cubic foot)		58	53
Coefficient of Active Earth Pressure	0.36	0.30	1
Coefficient of Passive Earth Pressure		3.39	. 1
Cohesion (pounds per square foot)			1,500

In general, the fill and natural soils at the site appear relatively fine grained and granular allowing for easier pile driving and possibly eliminating the need for pre-augered holes. Vibrating or driving the piles into place is generally faster and less expensive than placing the piles into pre-augered holes. However, obstructions to pile installation may occur within the fill soils. Difficulty advancing the test boring equipment occurred at one boring location. Obstructions within the fill along the excavation wall support alignment may be caused by structures associated with the existing school and Washington Street bridge. The excavation support contractor should be prepared to make adjustments to the pile installation method.

Internal bracing is generally less expensive than an external bracing system. However, it is not anticipated that internal bracing (wales and rakers) can be used based on the plans provided to us. In this case, anchored tiebacks may become necessary at greater excavation depths. The tiebacks would be installed beneath Washington Street. The tiebacks should be cased during installation to limit loss of ground and should be located so as to avoid existing utilities and the Washington Street bridge foundations. Waling beams may be used to transfer the loads to the piles.

No allowable adhesion values are given for the design of tiebacks in this report. Design values can vary considerably based on location and elevation, the procedure of tieback installation and the grouting method during installation. The design loads are typically established by specialty

contractors along with the proposed design and methods of construction and evaluated during the construction submittal process. It is recommended that TGG review the proposed wall and tieback design.

PRE-CONSTRUCTION CONDITION SURVEY AND VIBRATION MONITORING

Given the proximity of the work to Washington Street, the MBTA railroad tracks and several residential structures, we recommend a pre-construction condition survey and vibration monitoring program be implemented before and during construction. The purpose of the program will be to monitor and document the following:

- Pre-construction video survey of the existing residential structures with about 100 feet of the construction area.
- Pre-construction elevations of the existing roadway and utilities within about 50 feet of the construction area.
- Vibrations caused by pile installation and other construction activities including vibrations felt at nearby residential structures.
- Performance of excavation support systems.
- Effect of the excavation support installation and subsequent excavation on the surrounding ground surfaces and utilities.

REVIEW AND CONSTRUCTION OBSERVATION

TGG is available, as allowed for in our proposal to SMMA, to review and comment on the technical specifications and plans for excavation support prior to bidding. Once an excavation support contractor is chosen, the contractor should submit his excavation support system design and proposed construction methods and sequencing to this office for review. The review will allow us to see that the recommendations contained in this report have been properly interpreted and included. We would also appreciate the opportunity to sit down with your chosen contractor prior to starting the project to discuss their proposed approach.

It is also recommended that TGG be retained to observe the excavation support construction phase of the project. The purpose of this observation is to assess compliance with the intent of the plans, specifications and this report, and to inform the project team of necessary design changes or alternatives based upon the actual conditions encountered during construction.

We have enjoyed working with you on this project and look forward to assisting you throughout the project. In the meantime, please feel free to contact us should you have any questions or require additional information.

Very truly yours,

THE GEOTECHNICAL GROUP, INC.

Wayne A. McArdle, P.E

Project Manager

Jefemy A. Haugh

Geotechnical Engineer

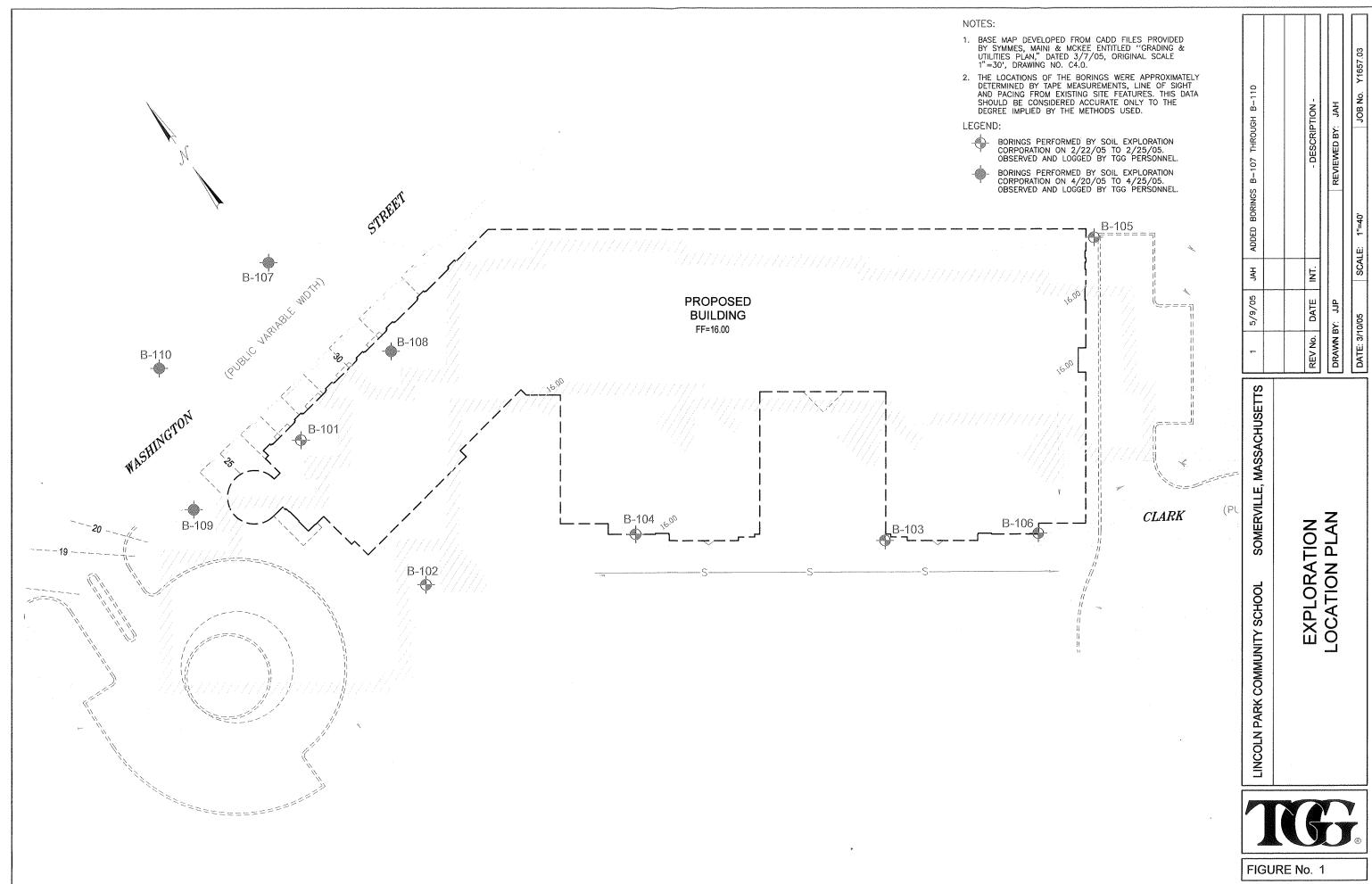
WAM/JMH/JAH/jah

James M. Handanyan, P

Vice President

Attachments: Figure 1 – Exploration Location Plan

Appendix A - Statement of Limitations Appendix B - Soil Test Boring Logs Appendix C - Laboratory Test Results



STATEMENT OF LIMITATIONS

Explorations

The analysis and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

The stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

Water level readings have been made in the explorations at the time and under the conditions stated on the logs. This data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors that are different from the time the measurements were made.

Review

In the event that any change in the nature, design or location of the proposed structure are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that earthwork recommendations may be properly interpreted and implemented in the design and specifications.

Construction

It is recommended that this firm be retained to provide soil engineering services during the construction phase of the work. This is to observe compliance with design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

Use of Report

This report has been prepared for the exclusive use of Symmes Maini & McKee Associates for specific application to the proposed Lincoln Park Community School in Somerville, Massachusetts, in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

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#### THE GEOTECHNICAL GROUP, INC. Boring No. B-107 - PROJECT -Sheet 2 of 3 Lincoln Park Community School **Test Boring Log** File No. Y1657.03 290 Washington Street Somerville, MA Review by: Wayne McArdle See Exploration Location Plan Soil Exploration Corporation Boring Location: Boring Co. 30± Ground Elev. Rich Foreman 4/20/05 Date Start > End Jeremy Haugh TGG Observer **Ground Water Readings (See Notes)** Sampling Protocol Depth to Water Rem. Time Depth to Bottom Date Unless otherwise noted, borings were accomplished using 2.5 inch I.D. flush joint casing driven by hydraulic percussion method. Samples were 61'± 22'± 2 4/20 Compl. recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 auto trip hammer falling 30 inches. Sample Data Strata Sample Description Change Rem Pen. Rec. Blows per 6 in. No. Depth Wet, medium dense, tan, SILT and fine SAND. 24 18 30-32 14-12-13-13 5-6 Wet, medium dense, gray, fine SAND, little Silt, trace Clay with frequent seams of Silty Clay. 35 12-9-10-9 24 18 5-7 35-37 Silty Sand Wet, medium dense, gray, fine SAND, little Silt. 40 40-42 9-8-13-14 5-8 45.0 Wet, stiff, gray, CLAYEY SILT, some fine Sand, trace (-) fine Gravel. 45 3-1-7-3 24 18 45-47 5-9 Wet, stiff, gray, CLAYEY SILT, some fine Sand. 4-5-6-6 24 24 47-49 5-10 Silty Clay Wet, stiff, gray, CLAYEY SILT, some fine Sand. With 24 20 5-4-5-7 50-52 5-11 50 Frequent Layers of Silt & Fine Sand Wet, medium stiff, gray, SILTY CLAY, little fine 24 24 55-57 4-3-3-3 5-12 55 Sand. Wet, medium stiff, gray, fine SAND and SILTY 59-61 2-2-5-3 24 S-13 Remarks:

### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-107 Sheet 3 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 290 Washington Street File No. Somerville, MA Review by: Wayne McArdle See Exploration Location Plan Soil Exploration Corporation Boring Location: Boring Co. 30± Rich Ground Elev. Foreman 4/20/05 Date Start > End Jeremy Haugh TGG Observer Ground Water Readings (See Notes) Sampling Protocol Depth to Bottom Depth to Water Rem. Unless otherwise noted, borings were accomplished using 2.5 inch I.D. Time Date flush joint casing driven by hydraulic percussion method. Samples were 4/20 61'± 22'± 2 Compl. recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 auto trip hammer falling 30 inches. Sample Data Strata Sample Description Change Rem Blows per 6 in. Pen. Rec. No. Depth 61.0* 1 Bottom of Boring at about 61.0± feet. 65 70 75 80 85

Remarks: *Silty Clay with Frequent Layers of Silt & Fine Sand 1. Boring terminated at 61± feet. 2. Depth to groundwater measured upon completion of boring.

#### THE GEOTECHNICAL GROUP, INC. Boring No. B-108 - PROJECT -Sheet 1 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 File No. 290 Washington Street Somerville, MA Wayne McArdle Review by: See Exploration Location Plan Boring Location: Soil Exploration Corporation Boring Co. 28± Ground Elev. Rich Foreman 4/21/05 Date Start > End TGG Observer Jason Mammone Ground Water Readings (See Notes) Sampling Protocol Unless otherwise noted, borings were accomplished using 2.5 inch inside diameter flush joint casing driven by hydraulic percussion method. Samples were recovered using a 2-inch O.D. split spoon Depth to Water Rem. Depth to Bottom Date Time 70.8± 22±' 2 4/21 a.m. sampler, driven by blows of a 140 lb. DH66 automatic drop hammer falling 30 inches. Sample Data Strata Sample Description Change Rem Pen. Rec. Depth Blows per 6 in. No. 5 24 Very loose to loose, dry, brown, fine to coarse 5-7 4-2-2-1 5-1 SAND, little (+) fine to coarse Gravel, trace (+) Fill 5-4-7-4 24 10-12 10 5-2 Medium dense, dry, brown, fine to coarse GRAVEL and fine to coarse SAND, trace (+) Silt. 1, 2 Very loose, wet, dark brown to brown, fine to 15 24 15 1-1-1-2 5-3 15-17 medium SAND and SILT, little (-) fine to coarse Gravel. 19.0 3 Loose to medium dense, tan to orange-tan, fine 20 24 18 20-22 5-5-5-9 5-4 to medium SAND, little Silt. Sand 4-7-10-10 Medium dense, wet, gray to orange-tan, fine 15 24 25 5-5 25-27 SAND, trace Silt.

#### Remarks:

- 1. Pushed casing through possible obstruction from about 12 to 14 $\pm$  feet.
- 2. Groundwater was encountered at about  $24\pm$  at the time of the boring.
- 3. Change in driving difficulty encountered at about 19± feet. Possible strata change.

#### THE GEOTECHNICAL GROUP, INC. B-108 Boring No. - PROJECT -Sheet 2 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 File No. 290 Washington Street Somerville, MA Wayne McArdle Review by: Boring Location: See Exploration Location Plan Soil Exploration Corporation Boring Co. 28± Ground Elev. Rich Foreman 4/21/05 Date Start > End Jason Mammone TGG Observer Ground Water Readings (See Notes) Sampling Protocol Unless otherwise noted, borings were accomplished using 2.5 inch inside diameter flush joint casing driven by hydraulic percussion method. Samples were recovered using a 2-inch O.D. split spoon Depth to Bottom Depth to Water Rem. Time Date 22±' 2 70.8±' 4/21 a.m. sampler, driven by blows of a 140 lb. DH66 automatic drop hammer falling 30 inches. Sample Data Strata Sample Description Change Blows per 6 in. Pen. Rec. Rem No. Depth Medium dense, wet, gray, fine SAND, little (-) Silt. 15 5-6 9-8-7-11 30-32 Sand 35.0 35 Loose, wet, gray, SILT, some fine Sand. 6-5-3-1 24 20 35-37 Sandy Silt 40.0 40 Very soft, wet, gray, SILTY CLAY, little fine SAND 24 18 WOH / 18"-2 5-8 40-42 with frequent seams of fine Sand. PP< 0.25 TSF 45 PUSHED 24 4 45-47 24 TS-1 Silty Very soft, wet, gray, SILTY CLAY, little fine Sand Clay 24 24 48-50 WOH / 18"-3 5-9 with frequent seams of fine Sand. With PP= 0.25 TSF Frequent 50 Layers of Silt & Fine Sand Very soft, wet, gray, SILTY CLAY, trace fine Sand 55 24 with frequent seams of fine Sand. 24 55-57 WOH / 12"-1-2 9-10

Remarks:

^{4.} Geoprobe advanced using the "open hole" method and wash boring techniques at about 45± feet.

#### THE GEOTECHNICAL GROUP, INC. B-108 Boring No. - PROJECT -Sheet 3 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 File No. 290 Washington Street Somerville, MA Wayne McArdle Review by: See Exploration Location Plan Boring Location: Soil Exploration Corporation Boring Co. Ground Elev. 28± Rich Foreman 4/21/05 Date Start > End Jason Mammone TGG Observer Ground Water Readings (See Notes) Sampling Protocol Unless otherwise noted, borings were accomplished using 2.5 inch inside diameter flush joint casing driven by hydraulic percussion method. Samples were recovered using a 2-inch O.D. split spoon Depth to Water Depth to Bottom Rem. Date Time 22±' 70.8±' 2 4/21 a.m. sampler, driven by blows of a 140 lb. DH66 automatic drop hammer falling 30 inches. Strata Sample Data Sample Description Change Blows per 6 Pen. Rec. Rem No. Depth Silty Clay with Frequent 65 Layers of Silt & Fine Sand 70.0 Wet, grayish brown, fine to coarse GRAVEL, little fine to 70 Glacial Till 70.8 70-70.8 12-50/3" 9 6 Refusal of the split spoon at 70.8± feet. 75 LEGEND: WOH = Weight of Hammer PP = Pocket Pentrometer 80 85

#### Remarks

- 5. Change in drilling difficulty encountered at about  $70\pm$  feet.
- 6. Refusal of the split spoon encountered at about 70.8± feet. Possible boulder/bedrock.

#### THE GEOTECHNICAL GROUP, INC. B-109 Boring No. - PROJECT -Sheet 1 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 File No. 290 Washington Street Somerville, MA Wayne McArdle Review by: See Exploration Location Plan Soil Exploration Corporation Boring Location: Boring Co. 23± Ground Elev. Rich Foreman 4/22/05 Date Start > End Jeremy Haugh TGG Observer Ground Water Readings (See Notes) Sampling Protocol Depth to Water Rem. Unless otherwise noted, borings were accomplished using 2.5 inch I.D. Depth to Bottom Time Date flush joint casing driven by hydraulic percussion method. Samples were 17'± 4 75'± 4/22 Drilling recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 auto trip hammer falling 30 inches. Strata Sample Data Sample Description Change Pen. Rec. Rem Depth Blows per 6 in. No. Medium dense, tan, fine to coarse SAND and fine 5 9-7-6-6 24 6 5-7 5-1 to coarse GRAVEL, trace Silt. Fill Medium dense, tan, fine to coarse SAND, trace 10 14-7-7-7 24 24 5-2 10-12 (+) fine Gravel, Silt. 15 WOOD. 24 12 15-17 WOH/6"-1-9-4 5-3 18.0 Wet, medium dense, orangish-tan to gray, fine Silty 20 16 24 20-22 10-6-5-7 5-4 Sand SAND and SILT. 24.0 Silty Wet, very soft, gray, SILTY CLAY, trace fine Clay With 25 24 1/18"-5 24 5-5 25-27 Sand with occasional layers of Sandy Silt. Frequent Layers of Šilt & Fine Sand Remarks: WOH=Weight of Hammer

#### THE GEOTECHNICAL GROUP, INC. Boring No. B-109 - PROJECT -Sheet 2 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 File No. 290 Washington Street Somerville, MA Wayne McArdle Review by: See Exploration Location Plan Boring Location: Soil Exploration Corporation Boring Co. $23 \pm$ Ground Elev. Rich Foreman 4/22/05 Date Start > End Jeremy Haugh TGG Observer Ground Water Readings (See Notes) Sampling Protocol Depth to Water Rem. Unless otherwise noted, borings were accomplished using 2.5 inch I.D. Depth to Bottom Time Date flush joint casing driven by hydraulic percussion method. Samples were 75'± 17'± 4 4/22 Drilling recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 auto trip hammer falling 30 inches. Strata Sample Data Sample Description Change Rec. Rem Depth Blows per 6 in. Pen. No. 30-32 PUSHED 24 24 TS-1 Wet, very soft, gray, CLAY and SILT with frequent layers of Silt. 24 1-1-1-2 24 32-34 5-6 35 40 Silty Wet, very soft, gray, SILTY CLAY. (TV=0.25 tsf) 24 24 1-1-1-1 5-7 40-42 Clay With Frequent Layers of Silt & 24 24 Fine 45-47 PUSHED TS-2 Sand Wet, medium stiff, gray, SILTY CLAY, trace fine Sand with occasional layers of Silty Sand. 24 5-4-2-1 24 5-8 47-49 50 Wet, soft, gray, SILTY CLAY. (TV=0.35 tsf) 55 24 WOH/12"-3-3 24 5-9 55-57 Remarks: TV=Torvane WOH=Weight of Hammer 1. Pushed 2 inch diameter Shelby tubes from $30\pm$ to $32\pm$ feet, $45\pm$ to $47\pm$ feet and $60\pm$ to $62\pm$ feet.

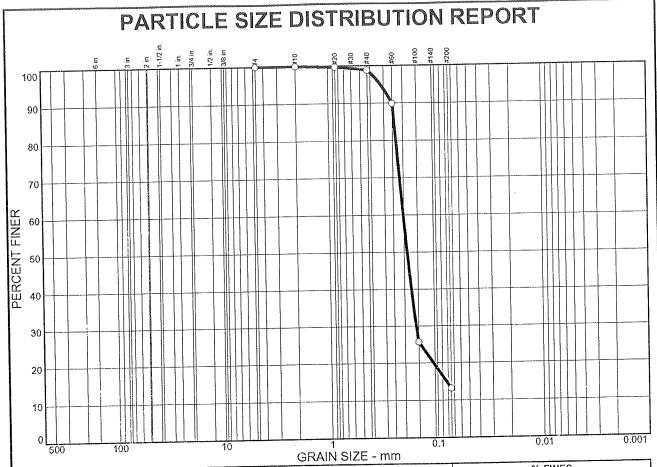
#### THE GEOTECHNICAL GROUP, INC. Boring No. B-109 - PROJECT -Sheet 3 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 290 Washington Street File No. Somerville, MA Review by: Wayne McArdle See Exploration Location Plan Soil Exploration Corporation Boring Location: Boring Co. 23± Ground Elev. Rich Foreman 4/22/05 Date Start > End Jeremy Haugh TGG Observer **Ground Water Readings (See Notes)** Sampling Protocol Depth to Water Rem. Depth to Bottom Unless otherwise noted, borings were accomplished using 2.5 inch I.D. Date Time flush joint casing driven by hydraulic percussion method. Samples were 4/22 75'± 17°± 5 Drilling recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 auto trip hammer falling 30 inches. Sample Data Strata Sample Description Change Rec. Rem Blows per 6 in. Pen. No. Depth 24 24 1, 2 PUSHED TS-3 60-62 Silty Wet, medium stiff, gray, SILTY CLAY. (TV=0.4 tof, PP=0.25-0.5 tof) 24 24 2-2-3-4 5-10 62-64 Clay With Frequent 65 Layers of Silt & Fine Sand 70 71.0 3 Possible Glacial Till 75.0 4 Bottom of Boring at about 75.0± feet. 80 85 Remarks: TV=Torvane PP=Pocket Penetrometer 2. Advanced borehole to 75± feet utilizing open hole drilling techniques. 3. Drilling became difficult at 71± feet indicating strata change. 4. Boring terminated at 75± feet. 5. Depth to groundwater observed during drilling.

				GE(	) I E C	usermannessensemmente	OAL OJECT -	JVVL	IP, INC. Boring No.	B-110	M4000derlander Hampboordstronds and	
					W		A STATE OF THE PARTY OF THE PAR			Sheet 1 of 3	<del></del>	
	T	est Bori	ng Log				ommunity Ington St		File No.	Y1657.03	***************************************	
					230		rville, MA	1000	Review by:	Wayne McArd		
			Soil Exploration	n Corn	oration		·	Location		Ioration Location Pla	-	
	ing Co.	A STATE OF THE STA		ike	UIANUII		Ground			26±	####################################	
	eman	0.0r	Jeremy				ļ	tart > En	d	4/25/05	##************************************	
100	3 Obse	***************************************	Sampling Protocol	, augii		i grafa			ound Water Reading			
Inle	es other		borings were accompli	shed us	sing 4-in	ich I.D.	Date	Time	Depth to Bottom	Depth to Water	Rem	
holic spoc	ow stem : on sample	augers. San	nples were recovered us blows of a 140 lb. CME a	sing a 2-inch O.D. split			4/25	Drilling	61'±	17'±	5	
3U II	nches.		Sample Data				Str	ata	Samn	le Description	I	
٦	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rec. Rem	Cha	ange	Camp			
5	9-1 5-7				Fill 1				Fill	Medium dense, brown, fine to coarse SAND, lit (+) Silt, little (-) fine Gravel, trace (-) Cinders  Medium dense, brown, fine to coarse GRAVEL, some (+) fine to coarse Sand, trace (+) Silt, trace (-) Cinders.		
		<b></b>					14	1.0				
15	S-3	15-16.5	3-4-8	18	18		_	anics	Medium dense, dark staining, fine to med	ium SAND, some (-) :	Organio	
	5-3A	16.5-17	12	6	6	<b> </b>	1	5.5	Silt, trace (-) plant f	COLUMN TO THE OWN TO THE OWN COLUMN TO THE OWN COLUMN TO THE OWN TO THE OWN COLUMN TO THE OWN TO		
									Moist, gray, fine to c	oarse SANV, trace S	oilt.	
							5	and				
20	5-4	20-22	5-8-11-14	24	24	2			Wet, medium dense, SAND, trace Silt.	tannish-orange to gr	ay, fine	
		THE STATE OF THE PROPERTY OF T					2:	3.0			Maril Carrier School of The	
			AND THE PROPERTY OF CHARACTER STATE OF CHARACTER STATE CHARACT						Wet, medium dense,	tan to gray, SILT and	d fine	
ne.	5-5	24-26	9-11-13-14	24	14-				SAND, trace (-) Clay	with occasional sea	ms of	
25		, enderformer of the property	The state of the s				Sa	indy	dark gray Clay.			
							1	bilt				
			CONTRACTOR OF THE PROPERTY OF			ļ	-					
		TO SERVICE THE PROPERTY OF THE			<del> </del>		-		Wet, medium dense, trace Clay with frequ	gray, SILT, some fine	Sand,	
	5-6	29-31	6-7-12-12	24	18	1	1		Turace Clay with treat	cito scattis di Ciavey	J11V.	

Remarks: 1. Augers grinding from 8± to 14± feet. 2. Removed augers from borehole and advanced 3± inch l.D. flush joint casing to 61± feet utilizing wash boring techniques.

#### THE GEOTECHNICAL GROUP, INC. B-110 Boring No. - PROJECT -Sheet 2 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 File No. 290 Washington Street Somerville, MA Wayne McArdle Review by: Boring Location: See Exploration Location Plan Soil Exploration Corporation Boring Co. 26± Ground Elev. Mike Foreman 4/25/05 Date Start > End Jeremy Haugh TGG Observer Ground Water Readings (See Notes) Sampling Protocol Depth to Bottom Depth to Water Rem. Unless otherwise noted, borings were accomplished using 4-inch I.D. Time Date hollow stem augers. Samples were recovered using a 2-inch O.D. split 5 17'± 4/25 Drilling 61'± spoon sampler, driven by blows of a 140 lb. CME auto trip hammer falling 30 inches. Sample Data Strata Sample Description Change Pen. Rec. Rem No. Depth Blows per 6 in. Sandy Silt Wet, dense, gray, SILT and fine SAND. 24 18 S-7 34-36 8-16-18-9 35 38.0 3-3-3-3 24 24 Wet, medium stiff, gray SILT and CLAY, trace 5-8 39-41 40 (-) fine Sand with frequent seams of Sandy Silt. Wet, soft, gray, CLAY and SILT with frequent 3-1-2-1 24 44-46 5-9 seams of Silt. 45 Silty Clay With Frequent Layers of 24 49-51 PUSHED 24 3 TS-1 50 Silt & Fine Wet, medium stiff, gray, fine SAND and SILT. 2-2-4-3 24 16 51-53 5-10 Sand 55 Wet, medium stiff, gray SILTY CLAY, trace fine Sand with occasional layers of Silty Sand. 2-4-5-8 24 59-61 5-11 Remarks: 3. Pushed 2 inch diameter Shelby tube from 49± to 51± feet.

		ppyraphteria in the second				- PRO	DJECT -		Boring No.	B-110	
	Т	est Bori	na Loa				ommunity		Sheet 3 of 3		
. di		0000011	. y = y y		290		ington St rville, MA	reet	File No.	Y1657.03	-
						Some	·			Review by: Wayne McArdle	
Bori	ng Co.		Soil Exploration		oration			Location	: See Ex	oloration Location Pla	an
Fore	eman			ke			Ground			26±	MONTE CONTRACTOR OF THE STATE O
TG	3 Obse		Jeremy	Haugh			Date S	tart > En		4/25/05	proprogram and special contract and special contrac
		and the following the second of the contract o	Sampling Protocol						ound Water Readin		T Dave
Unle	ss other	wise noted,	borings were accomplished were recovered us	shed us	ing 4-ir -inch O	nch I.D. D solit	Date	Time	Depth to Bottom	Depth to Water	Rem 5
ollon Soda	w stem on sampl	er, driven by l	plows of a 140 lb. CME a	auto trip	hamme	r falling	4/25	Drilling	61'± .	17°±	1 5
30 ir	ches.							<u> </u>		and the control of a late of the	
	i qu		Sample Data	- 11:1		i subsett		ata	Samı	ole Description	
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem		ange			
						4	61	.0*			
							1		Bottom of Boring a	t about 61.0± feet.	
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65						***********					
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85							-				
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			Nith Frequent Layers at 61± feet. rved during drilling.			1		7000 <b>4</b> 000 <b>2</b> 02 2000 000 000 000			



				_	), () (i) \ O \			
% GRAVEL				Ĭ	% SAND		% FINES	
% + 3"		CRS.			MEDIUM	FINE	SILT CLAY	
	0.0	0.0	0.0	0.0	1.2	85.6	13.2	
1	0.0	1 0.0						

SIEVE FLIVOLINI					
#4 100.0 #10 100.0 #20 99.7 #40 98.8 #60 89.9 #100 25.7		SIEVE	PERCENT	SPEC.*	PASS?
#10 100.0 #20 99.7 #40 98.8 #60 89.9 #100 25.7	1	SIZE	FINER	PERCENT	(X=NO)
		#10 #20 #40 #60 #100	100.0 99.7 98.8 89.9 25.7		

Silty sand	Soil Description							
·								
PL=	Atterberg Limits LL=	P =						
D ₈₅ = 0.242 D ₃₀ = 0.158 C _u =	Coefficients D60= 0.203 D15= 0.0829 Cc=	D ₅₀ = 0.188 D ₁₀ =						
USCS= SM	Classification AASH	TO= A-2-4(0)						
as rec'd w% = 23	$\frac{\text{Remarks}}{\text{as rec'd w\%} = 23.8}$							

Sample No.: S-5

Source of Sample: Boring B-107

Date: 5/3/05

Elev./Depth: 25-27'

Location:

Client: SMMA

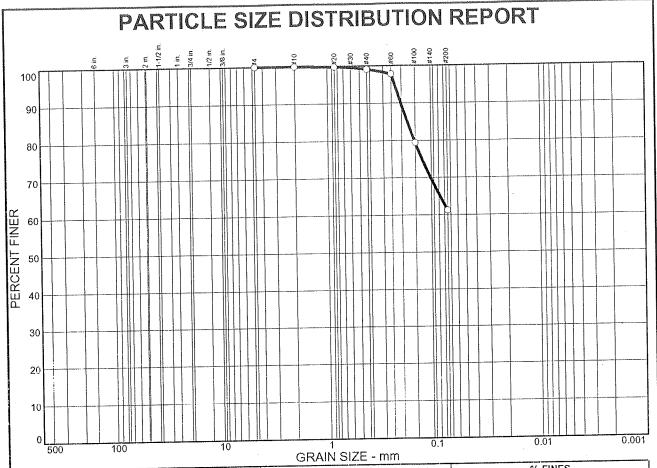
Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.03

SL-867 Lab. No.

THE GEOTECHNICAL GROUP, INC.



			<u>_</u>	SINTHIA CIETE	111111			
	% GR	AVEL	T	% SANI	D I	% FINES		
% + 3"	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY	
0.0	0.0	0.0	0.0	0.9	37.9	61.2		

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#4 #10 #20 #40 #60 #100 #200	100.0 100.0 99.8 99.1 97.8 79.4 61.2		
Ì			1

	Soil Descripti	on_							
Sandy silt									
PL=	Atterberg Lim	<u>lits</u> Pl=							
D ₈₅ = 0.177 D ₃₀ = C _u =	Coefficients D ₆₀ = D ₁₅ = C _c =	D ₅₀ = D ₁₀ =							
USCS= ML	USCS= ML Classification  AASHTO= A-4(0)								
.1 0/ 0/	<u>Remarks</u>								
as $\operatorname{rec'd} w\% = 22$	۷.1								
	······································								

Sample No.: S-6

Source of Sample: Boring B-107

Date: 5/3/05

Location:

Elev./Depth: 30-32'

THE GEOTECHNICAL GROUP, INC.

Client: SMMA

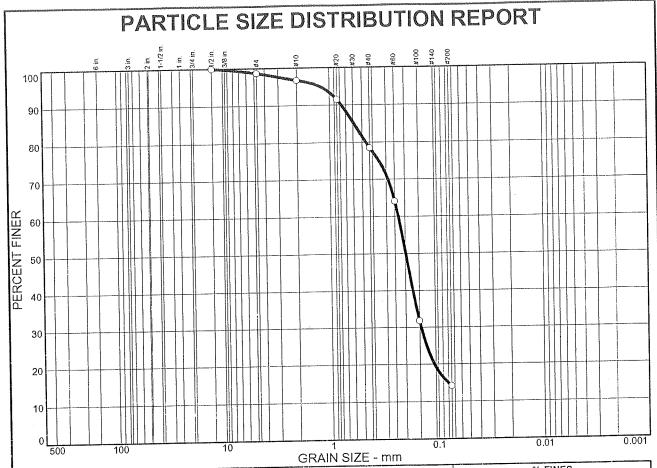
Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.03

Lab. No.

SL-867



			(	SUMIN OITE	7 3 3 14 1 3			
	% GP	AVEL		% SANI	)	% FINES		
% + 3"	% + 3" % GRAVEL CRS. FINE		CRS. MEDIUM FINE			SILT	CLAY	
0.0	0.0	1.3	2.0	18.2	64.3	14.2		

-				
ſ	SIEVE	PERCENT	SPEC.*	PASS?
	SIZE	FINER	PERCENT	(X=NO)
	1/2 in. #4 #10 #20 #40 #60 #100 #200	100.0 98.7 96.7 91.5 78.5 64.1 31.8 14.2		

	Soil Description	
Silty sand		
	Atterberg Limits	
PL=	LL=	PI=
	<u>Coefficients</u>	Dec= 0.100
$D_{85} = 0.591$ $D_{30} = 0.145$	$D_{60} = 0.232$ $D_{15} = 0.0805$	D ₅₀ = 0.199 D ₁₀ =
Cu≝	Cc≡	
HCCC- CM	Classification	O = A-2-4(0)
USCS= SM	AAOITI	O 11 2 1(0)
	<u>Remarks</u>	
as $\operatorname{rec'd} w\% = 24$	1.7	

Sample No.: S-4

Source of Sample: Boring B-108

Date: 5/3/05 Elev./Depth: 20-22'

Location:

Client: SMMA

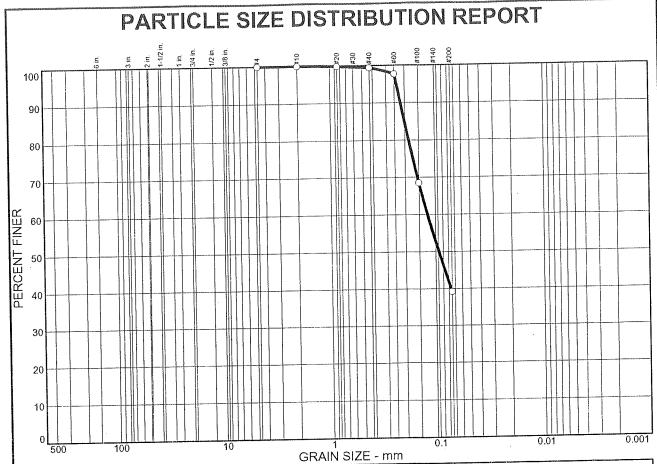
Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.03

Lab. No. SL-867

THE GEOTECHNICAL GROUP, INC.



			_	JI VAIIN OILL	()))()			
	% GR	AVEL	T	% SAN	D	% FINES		
% + 3"	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY	
0.0	0.0	0.0	0.0	0.6	60.3	39.1		

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X≔NO)
#4 #10 #20 #40 :#60 #100 #200	100.0 100.0 99.8 99.4 97.7 68.5 39.1		

	Soil Description	
Silty sand		
•		
	Atterberg Limits	
PL=	LL=	PI=
	<u>Coefficients</u>	
D ₈₅ = 0.202	$D_{60} = 0.126$	D ₅₀ = 0.0993 D ₁₀ =
D30= Cu=	D15= C _C =	D ₁₀ =
C _u =	C _c =	
	Classification	
USCS= SM	AASHT	O = A-4(0)
	Re <u>marks</u>	
as rec'd w% = 21	100MBHILLIAN TANA	

Sample No.: S-4

Source of Sample: Boring B-109

Date: 5/3/05

Location:

Elev./Depth: 20-22'

THE GEOTECHNICAL GROUP, INC.

Client: SMMA

Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.03

Lab. No.

SL-867

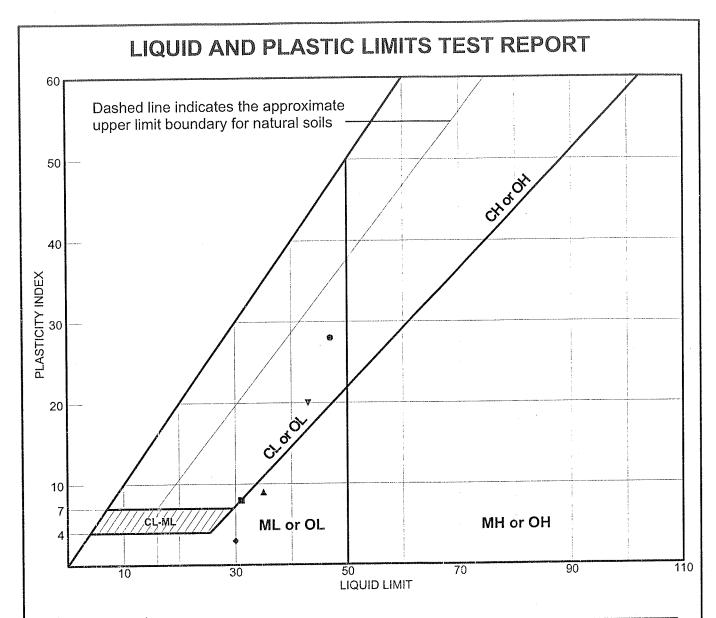
00-00-00-00-00-00-00-00-00-00-00-00-00-		THE G	EOTECHNI	CAL G	ROUP, INC.		
			UNDISTURBE	ED TUBE	LOG		
PROJEC	CT: Lincoln Park C	ommunity	School		FILE NO: Y165	57.03	
	ION: Somerville,	A STATE OF THE STA			<b>DATE:</b> 5/3/05		
Boring N		B-108		Logged I	3y:	jaf	
Tube No	HONE WAS INSTRUMENT AND THE STATE OF STATE OF	TS-1			f Sample (in.)	26	
Depth:		45-47'		Diameter	of Tube (in.)	1.8 Shelby	
Sample Depth	Laboratory Log TOP	Sample Length		Des	scription		Water Content (%)
(feet)		(inches)					
		2					
		3	-				
	Wax Seal	4					
	YY AA SCAI	5					
45		6	Top of Sample				
43		7					
		8					
		9					
		10	Grey Silty Clay w/seams of fine sand				
	-	11					
		12					
	-	13	Torvane = $0.25$	tsf			27.5
		14	,				
		15					
	Sample for	16					
	Triaxial UU	17					
46	-	18					
1,5		19					
		20					
		21					
		22					
		23	Torvane = $0.20$	tsf			
	Gama da Fan	24					28.5
	Sample For Atterberg Limits	25					
		26					
		27					
		28					
		29	Bottom of Sam	ple			
47	Wax Seal	30					

And the second s		THE G	EOTECHNI		and the second s	NC.		
			UNDISTURBE	D TUBE				
PROJEC	T: Lincoln Park C	Community	School		FILE NO:		7.03	
LOCAT	ON: Somerville,	MA			<b>DATE:</b> 5/4	/05		
Boring N	0.:	B-109		Logged	By:		jrs	
Tube No.	ALCOHOLOGY STATE OF S	TS-1		Length o	of Sample (in.	)	25	
Depth:		30-32'		Diamete	r of Tube (in.)	)	1.8 Shelby	
Sample Depth	Laboratory Log TOP	Sample Length (inches)		De	scription			Water Content (%)
(feet)	- Appelling that was the first through the second	1						,
		2						
		3						
		4		-				
	wax seal	5						
30		6	Top of Sample					
		7						
		8	Grey Silty Clay					
		9						
		10						
	1	11	Torvane = $0.30$	tsf				28.1
	1	12						
	Sample for	13						
	Triaxial UU	14						
		15						
		16						
		17						
31		18						
		19						
		20						
		21				,		
		22						34.8
	Sample for	23	Torvane = $0.35$	tsf				
	Atterberg Limits	24						
		25						
		26						
		27						
		28						
	_]	29	Bottom of Sam	ple				
32	Wax seal	30			entroposition (no operation operation operation)	uzaneko (akersakista)		

	A STATE OF THE PROPERTY OF T	THE G	EOTECHNI	CAL G	ROUP, INC.		
			UNDISTURBI	ED TUBE	LOG		
PROJEC	CT: Lincoln Park C	ommunity	School		FILE NO: Y16:	57,03	
	ON: Somerville,	And a self-research delice and the first			<b>DATE:</b> 5/4/05		
Boring N		B-109		Logged I	Зу:	jrs	
Tube No.	The president of the Cartes Parkethera Legical	TS-2		Length o	f Sample (in.)	22	
Depth:		45-47'		Diameter	of Tube (in.)	1.8 Shelby	
Sample Depth	Laboratory Log <b>TOP</b>	Sample Length		Des	scription		Water Content (%)
(feet)		(inches)	\$1.54.54.54.75.75				
		2					
		3					
		4					
		5					
45		6					
		7					
	Wax Seal	8	Top of Sample				
		9					
	7	10	Grey Silty Clay				
		11					
	1	12					
	-	13	Torvane = $0.30$	tsf		M	
		14					21.4
	Sample for	15					31.4
	Unconfined Compression Test	16					
	Compression rest	17					
46		18					
		19					
		20					
		21					
	_	22					33.9
	Sample for Atterberg Limits	23	Torvane = $0.30$	tsf			33.7
	Atterberg Limits	24					
	_	25					
		26					
	_	27					
		28					
	_	29	Bottom of Sam	ple			<u> </u>
47	Wax Seal	30		Company of the Second Section of Contrast		ann teamh a' Cheann tag leist an t-ann an tha an tag a Tha ann an tag an ta	

		THE G	EOTECHNI	CAL G	ROUP, INC.		
			UNDISTURBE	D TUBE	LOG		
PROJEC	CT: Lincoln Park C	ommunity	FILE NO: Y1657.03				
Carlot and the standard and and	ION: Somerville,	- 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.			<b>DATE:</b> 5/5/05		
Boring N	As were some and the first state of the second	B-109		Logged I	By:	jrs	
Tube No	on the control of the	TS-3		2.00000	f Sample (in.)	24	
Depth:		60-62'		Diameter	r of Tube (in.)	1.8 Shelby	
Sample Depth	Laboratory Log TOP	Sample Length (inches)		Des	scription		Water Content (%)
(feet)		1					
		2					
		3					
		4					
		5					
60	Wax Seal	6					
		7					
		8	Top of Sample				
		9					
		10	Grey Silty Clay				
		11					
	Sample for Unconfined	12					
	Compression Test	. 13	Torvane = $0.551$	tsf			29.3
		14					
		15					
	_	16					
		17					
61		18					
		19					
		20					
	_	21					
		22					26.6
	Sample for	23	Torvane = 0.60	tsf			26.6
	Atterberg Limits	24					
		25					
		26					
		27					
		28					
		29	Bottom of Samp	ple			
62	Wax Seal	30		nterior metalogoro control (1000 me	<u>nama pepaka mangah akebagan dan karena pada pangahan kahanda aran angah dan dalah dalah san bandara anta</u> Kananda kangahan dalah dan pada dalah san dan dan dan paga an atam pipangan dan dan dan dan dan dan dan dan da	rome. A de the limit of the land and the lan	THE CONTRACTOR OF THE CONTRACT

HELP (COLUMNIA) TO THE STATE OF		THE G	GEOTECHNI	CAL G	ROUP, INC.		COMPANY CONTRACTOR OF THE CONT
			UNDISTURBE	ED TUBE	LOG		
PROJEC	CT: Lincoln Park C	Community	School		FILE NO: Y1657.03		
	ION: Somerville,	Surpus records automated for			<b>DATE:</b> 5/3/05		
Boring N		B-110		Logged I	By:	jrs	
Tube No	Standard Control of the Control of the Control	TS-1		Length o	f Sample (in.)	25	
Depth:		49-51'		Diameter	of Tube (in.)	1.8 Shelby	
Sample Depth	Laboratory Log TOP	Sample Length (inches)		Des	cription		Water Content (%)
(feet)		1					
		2					
		3					
<u> </u>		4					
	Wax Seal	5					
49	77.002.000	6	Top of Sample				
		7					
		8					
		9					
		10	Grey Silty Clay	w/seams o	f fine sand		
	G 1. C	11					
	Sample for Unconfined	12					
	Compression Test	13	Torvane = 0.20	tsf			27.8
		14					
	1	15					
	-1 	16					
		17					
50		18					
		19					
	Sample for	20					
	Atterberg Limits	21					
		22					
		23	Torvane = 0.20	tsf			
		24					
		25					
		26					
		27					
		28					
		29	Bottom of Samp	ole			
51	Wax Seal	30					



Mandre State A. L. Water State	SOIL DATA									
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	uscs		
	Boring B-108	TS-1	45-47'	28.5	19	47	28	CL		
巍	Boring B-109	TS-1	30-32'	34.8	23	31	8			
▲	Boring B-109	TS-2	45-47'	31.4	26	35	9			
•	Boring B-109	TS-3	60-62'	26.6	27	30	3			
₩	Boring B-110		49-51'	27.8	23	43	20			

LIQUID AND PLASTIC LIMITS TEST REPORT

THE GEOTECHNICAL GROUP, INC.

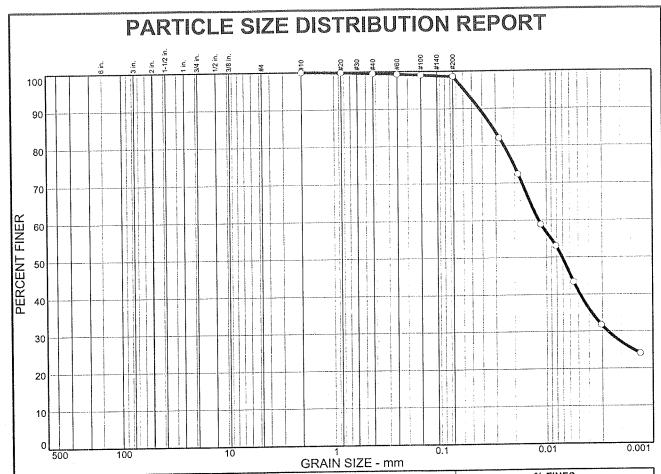
Client: SMMA

Project: Lincoln Park Community School

Somerville, MA

Project No.: Y1657.03

Lab. No. SL-867



% GRAVEL		% SAND			% FINES			
% + 3	)" <del> </del>	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0		00	0.0	0.0	0.5	0.9	57.7	40.9
SIEVE	PERCENT FINER	SPEC.*		SS?	Lean c		oil Description	
#10	100.0	1 2110211			2,500.	)		,

SIEVE	PERCENT	SPEC.	PASS
SIZE	FINER	PERCENT	(X=NO)
#10 #20 #40 #60 #100 #200	100.0 99.8 99.5 99.3 99.0 98.6		
ı		I	1

	Soil Description	
Lean clay		
PL= 19	Atterberg Limits LL= 47	PI= 28
D ₈₅ = 0.0322 D ₃₀ = 0.0027 C _u =	$\begin{array}{c} \underline{\text{Coefficients}} \\ D_{60} = 0.0118 \\ D_{15} = \\ C_{\text{C}} = \end{array}$	D ₅₀ = 0.0071 D ₁₀ =
USCS= CL	Classification AASH	TO= A-7-6(30)
	<u>Remarks</u>	

(no specification provided)

Sample No.: TS-1 Location:

Source of Sample: Boring B-108

Date: 5/3/05

Elev./Depth: 45-47'

THE GEOTECHNICAL GROUP, INC.

Client: SMMA

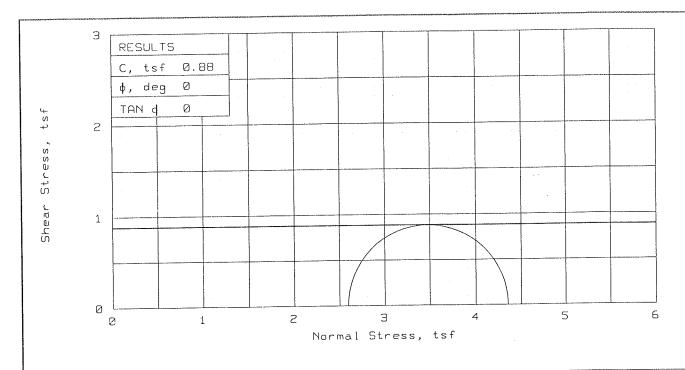
Project: Lincoln Park Community School

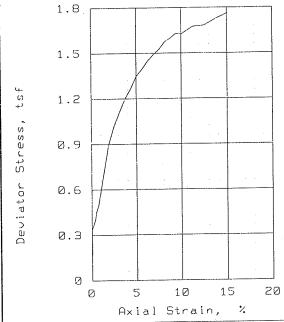
Somerville, MA

Project No: Y1657.03

Lab. No.

SL-867





SAI	MPLE NO.:	1	
L	WATER CONTENT, % DRY DENSITY, pcf SATURATION, % VOID RATIO DIAMETER, in HEIGHT, in	27.8 95.3 100.0 0.735 1.85 3.98	
<b> </b>	WATER CONTENT, % DRY DENSITY, pcf SATURATION, % VOID RATIO DIAMETER, in HEIGHT, in	27.8 95.3 100.0 0.735 1.85 3.98	
St	rain rate, in/min	0.0400	
ВА	CK PRESSURE, tsf	0.03	
CE	LL PRESSURE, tsf	2.59	
FA	ILURE STRESS, tsf	1.76	
UL	TIMATE STRESS, tsf	1.76	
01	FAILURE, tsf	4.35	
σE	FAILURE, tsf	2.59	

TYPE OF TEST:

Unconsolidated Undrained SAMPLE TYPE: 1.8" Shelby DESCRIPTION: Grey Lean Clay

PI= 28 LL= 47 PL= 19 ASSUMED SPECIFIC GRAVITY= 2.65 REMARKS:

PROJ. NO.: Y1657.03 DATE: 5/3/05

Somerville, MA

TS-1 (45-47')

CLIENT: SMMA

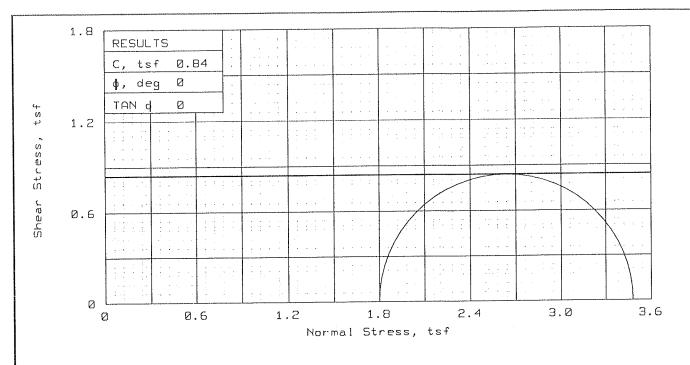
TRIAXIAL SHEAR TEST REPORT

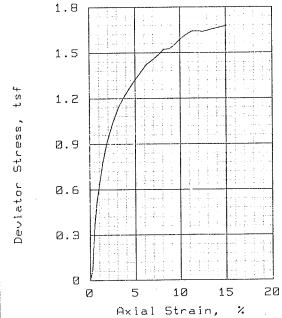
PROJECT: Lincoln Park Community School

SAMPLE LOCATION: Boring B-128

THE GEOTECHNICAL GROUP, INC.

LAB No.: SL-867





TYPE OF TEST:

Unconsolidated Undrained SAMPLE TYPE: 1.8" Shelby DESCRIPTION: Grey Clay

LL= 31 PL= 23 PI= 8 ASSUMED SPECIFIC GRAVITY= 2.65 REMARKS:

_AB No.: SL-867
-----------------

SA	MPLE NO.:	1	
INITIAL	WATER CONTENT, % DRY DENSITY, pcf SATURATION, % VOID RATIO DIAMETER, in HEIGHT, in	28.3 94.8 100.6 0.745 1.86 3.98	
AT TEST	WATER CONTENT, % DRY DENSITY, pcf SATURATION, % VOID RATIO DIAMETER, in HEIGHT, in	28.1 94.8 100.0 0.745 1.86 3.98	
St	rain rate, in/min	0.0400	
BA	ICK PRESSURE, tsf	0.00	
CE	LL PRESSURE, tsf	1.80	
FF	ILURE STRESS, tsf	1.68	
UL	TIMATE STRESS, tsf	1.64	
0	FAILURE, tsf	3.48	
03	FAILURE, tsf	1.80	

CLIENT: SMMA

PROJECT: Lincoln Park Community School

Somerville, MA

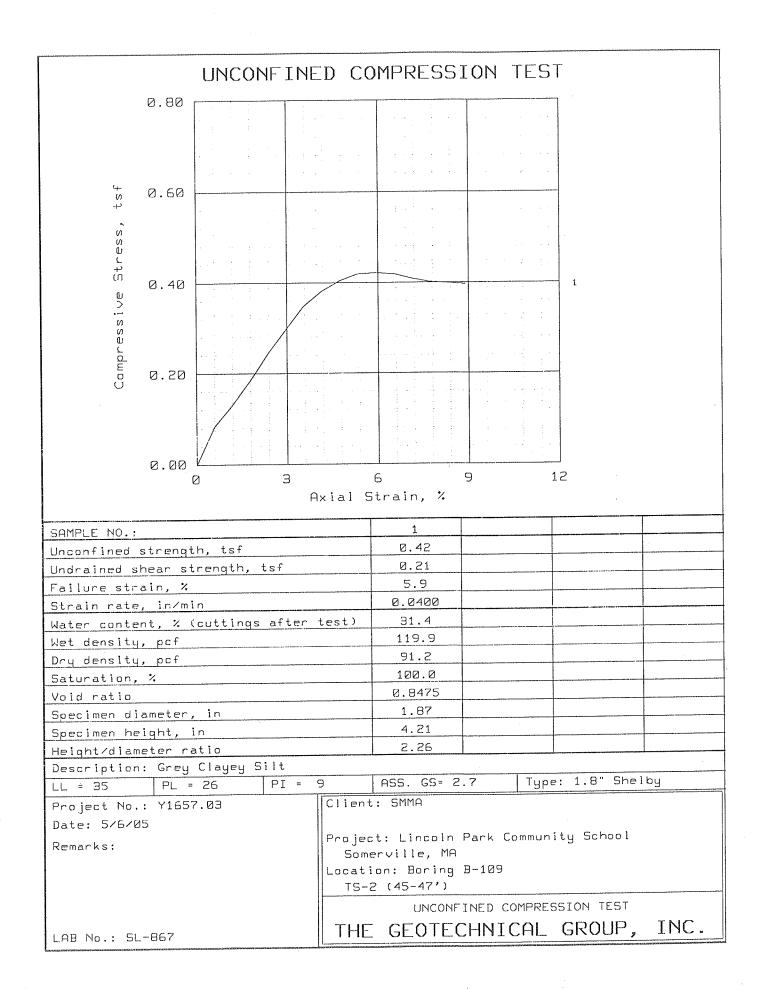
SAMPLE LOCATION: Boring B-109

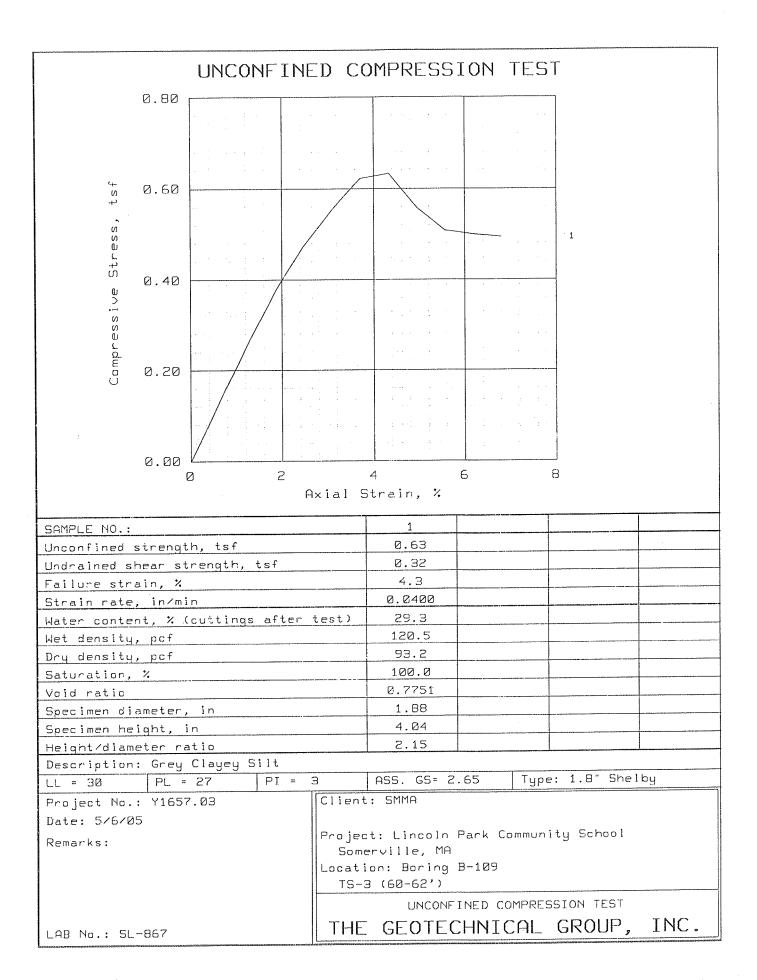
TS-1 (30-32')

PROJ. NO.: Y1657.03 DATE: 5/6/05

TRIAXIAL SHEAR TEST REPORT

THE GEOTECHNICAL GROUP, INC.





100 Foxborough Blvd., Suite 250 Foxborough, MA 02035

tel: 508-698-3034 fax: 508-698-0843 www.westonandsampson.com

engineering, energy, planning, permitting, design, construction, operation, maintenance

Weston & Sampson .

# MEMORANDUM

TO: Brandon Kunkel, Cheri Ruane

FROM: Alyssa Peck, PE

**DATE:** June 10, 2015

**SUBJECT:** Lincoln Park – Test pit results

Test pits were performed at Lincoln Park in Somerville, MA on June 9, 2015. They were conducted to better understand the subsurface soil and drainage conditions, so that proper drainage systems can be provided for the renovation of the existing playground, playing fields, and basketball courts. The proposed design includes a large U-12 playing field, a softball field, two basketball courts, new playground area, new sidewalks, a new closed drainage system, and several new site features and amenities. The following is a brief summary of the test pit explorations. Detailed test pit logs and photos are attached to this memorandum.

Four (4) test pits were performed on the site. Test pit 1 was located adjacent to the basketball courts, test pit 2 was located in centerfield of the existing ballfield, and test pits 3 and 4 were in the western and eastern ends of the large soccer field, respectively. The test pits were excavated to depths ranging from about 5.5 feet to 7.5 feet below ground surface (b.g.s.). All test pits had features that correlate with the poor drainage conditions in the existing fields.

Test pits 1 and 2 were similar, with a predominant clay component starting at a depth of about three feet b.g.s. Groundwater was observed at 61 and 65 inches b.g.s. Test pit 3 had a five inch thick clay layer at about two feet b.g.s. and a silt loam layer from about 3.5 feet b.g.s. to the bottom of the excavation. No groundwater was observed, but mottles were present in the layers starting at 21 and 43 inches b.g.s. Test pit 4 had a 19 inch thick loam layer to a depth of about three feet b.g.s. In contrast with the other three test pits, test pit 4 had a nearly 2.5 foot thick layer of medium sand starting at about 4 feet b.g.s. There was standing groundwater at the bottom of the excavation (78 inches b.g.s.).

A percolation test was done in test pit 1 to determine the infiltration rate of the soil. The percolation hole was hand dug at a depth of 29 inches below ground surface. After 77 minutes and a water elevation drop of only 2.875 inches, the test was abandoned. The estimated percolation rate using the obtained data was 26.78 minutes per inch.

TEST PIT LOG									
PROJECT N	AME/NO.	Lincoln Park / 2150034			TEST	PIT NUMBER			
LOCATION		Somerville, MA			TP - 1				
CLIENT		City of Somerville			GROUND SURFA	CE			
CONTRACTO		The City	FOREMA		ELEVATION	13.53			
OBSERVED		A. Peck	DATE	6/9/15		INDWATER BELOW			
CHECKED B	Υ		DATE		SURFACE _	61" (weeping)			
DEPTH BELOW									
GROUND		TEST PIT DIAGRAM AND SOIL DESCRIPTION							
SURFACE (in.)									
		Dark brown sandy loam							
5"			Da	irk brown sandy to	alli				
J									
			Dark b	rown gravelly loam	ny sand				
12"									
			Dark h	rown gravelly sand	dy Ioam				
			Daik	TOWIT GLAVELLY SALIC	dy Ioairi				
25"									
	Dark brown gravelly sandy loam, trace clay								
32"									
36"		Gravelly coarse sand							
30									
			Li	ght brown clay loa	ım				
46"									
	Blueish grey gravelly clay loam								
	(brick pieces, metal, cobbles, misc. debris)								
	, , , , , , , , , , , , , , , , , , , ,								
74"				End of Evalored					
NOTES:			-	End of Exploration		DIT NUMPER			
NOTES:	Δ nercolati	ion hole was dug at 29" to	n a denth of	14"	1531	PIT NUMBER TP - 1			
	-	0" – 10:57 om	-		WEST	ON & SAMPSON			
		1/8 " = 12:14 pm Estima	ted perc rate	e = 26.78 min/in		INEERS, INC.			
	11110 @ 3	1/0 = 12.14 pill			LNG				
					•				

#### **TEST PIT LOG** Lincoln Park / 2150034 TEST PIT NUMBER PROJECT NAME/NO. LOCATION Somerville, MA TP - 1 CLIENT City of Somerville GROUND SURFACE FOREMAN: CONTRACTOR The City ELEVATION 13.53 DEPTH TO GROUNDWATER BELOW OBSERVED BY A. Peck DATE 6/9/15 **CHECKED BY** DATE SURFACE 61" (weeping)

DEPTH BELOW GROUND SURFACE (in.)

# TEST PIT DIAGRAM AND SOIL DESCRIPTION





NOTES:

TEST PIT NUMBER
TP - 1

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG										
PROJECT N	AME/NO.	Lincoln Park / 2150034			TEST PIT NUMBER					
LOCATION		Somerville, MA			TP - 2					
CLIENT		City of Somerville			GROUND SURFACE					
CONTRACTO	OR	The City	FOREMA	AN:	ELEVATION 14.40					
OBSERVED	BY	A. Peck	DATE	6/9/15	DEPTH TO GROUNDWATER BELOW					
CHECKED B				SURFACE65" (standing)						
DEPTH BELOW										
GROUND		TEST PIT DIAGRAM AND SOIL DESCRIPTION								
SURFACE (in.)		TEST ITI DIMORAWA MAD GOTE DEGOTAL TION								
5"		Dark brown sandy loam								
12"			Dark b	prown gravelly sand	ly loam					
32"		Dark brown gravelly sandy loam, very firm in place								
44"	Blueish grey gravelly clay loam									
53"	Dark brown clay loam									
65"	Blueish grey clay - End of Exploration -									
NOTES:					TEST PIT NUMBER					
1.	Miscellane	eous debris in most layers	S.		TP - 2					
					WESTON & SAMPSON ENGINEERS, INC.					

#### **TEST PIT LOG** Lincoln Park / 2150034 TEST PIT NUMBER PROJECT NAME/NO. LOCATION Somerville, MA TP - 2 CLIENT City of Somerville GROUND SURFACE CONTRACTOR The City FOREMAN: ELEVATION 14.40 DEPTH TO GROUNDWATER BELOW OBSERVED BY A. Peck DATE 6/9/15 **CHECKED BY** DATE SURFACE 65" (standing)

DEPTH BELOW GROUND SURFACE (in.)

TEST PIT DIAGRAM AND SOIL DESCRIPTION



NOTES:

1. Miscellaneous debris in most layers.

**TEST PIT NUMBER** 

TP - 2

WESTON & SAMPSON ENGINEERS, INC.

TEST PIT LOG							
PROJECT N	AME/NO.	Lincoln Park / 21500	034		TEST PIT NUMBER		
LOCATION		Somerville, MA			TP - 3		
CLIENT		City of Somerville			GROUND SURFACE		
CONTRACTO	OR	The City	FOREMA	N:	ELEVATION 15.03		
OBSERVED	BY	A. Peck	DATE	6/9/15	DEPTH TO GROUNDWATER BELOW		
CHECKED B	Υ		DATE		SURFACE		
DEPTH BELOW							
GROUND			TEST PIT DIAG	GRAM AND SOIL I	DESCRIPTION		
SURFACE (in.)							
			Da	rk brown sandy loa	am		
5"							
			Davida bassassas		Sans to select		
				sandy loam, very f ravel, broken brick			
			(oomo g	.a.o., broken brick	p. 2005,		
21"							
			G	rey (w/ mottles) cla	ay		
26"							
	Dark brown gravelly loamy sand, very firm in place						
32"							
	Dark brown loamy sand, with some clay and pockets of crushed brick						
	,,						
43"							
43							
	Grey (w/ mottles) silt loam						
74"							
			-	End of Exploration			
NOTES:					TEST PIT NUMBER		
					TP - 3		
					WESTON & SAMPSON		
					ENGINEERS, INC.		

#### **TEST PIT LOG** Lincoln Park / 2150034 TEST PIT NUMBER PROJECT NAME/NO. LOCATION Somerville, MA TP - 3 CLIENT City of Somerville GROUND SURFACE CONTRACTOR The City FOREMAN: ELEVATION 15.03 DEPTH TO GROUNDWATER BELOW OBSERVED BY A. Peck DATE 6/9/15 **CHECKED BY** DATE SURFACE

DEPTH BELOW GROUND SURFACE (in.)

# TEST PIT DIAGRAM AND SOIL DESCRIPTION





NOTES:

TEST PIT NUMBER
TP - 3
WESTON & SAMPSON
ENGINEERS, INC.

			TEST	PIT LOG				
PROJECT N	AME/NO.	Lincoln Park / 21500	34		TEST PIT NUMBER			
LOCATION		Somerville, MA			TP - 4			
CLIENT		City of Somerville			GROUND SURFACE			
CONTRACTO	OR	The City	FOREMA	N:	ELEVATION 14.10			
OBSERVED	BY	A. Peck	DATE	6/9/15	DEPTH TO GROUNDWATER BELOW			
CHECKED B	Υ		DATE		SURFACE 78" (standing)			
DEPTH BELOW								
GROUND		•	TEST PIT DIA	GRAM AND SOIL	DESCRIPTION			
SURFACE (in.)								
			Dr	ark brown sandy loa	am.			
5"			De	ark brown sandy loo	aiii			
			Dark brown g	ravelly sandy loam	, firm in place			
18"								
	Light brown loam							
	-							
37"								
			Dark brow	n sandy loam, with	some clay			
				, , ,	,			
46"								
				NA . P				
	Medium sand							
75"								
78"				ne sandy loam, wit End of Exploration				
NOTES:			-	LING OF EXPIDIATION	TEST PIT NUMBER			
HOILS.					TP - 4			
					WESTON & SAMPSON			
					ENGINEERS, INC.			
					2, 3, 3, 2,			

#### **TEST PIT LOG** Lincoln Park / 2150034 TEST PIT NUMBER PROJECT NAME/NO. LOCATION Somerville, MA TP - 4 CLIENT City of Somerville GROUND SURFACE FOREMAN: CONTRACTOR The City ELEVATION 14.10 DEPTH TO GROUNDWATER BELOW OBSERVED BY A. Peck DATE 6/9/15 **CHECKED BY** DATE SURFACE 78" (standing)

DEPTH BELOW GROUND SURFACE (in.)

TEST PIT DIAGRAM AND SOIL DESCRIPTION

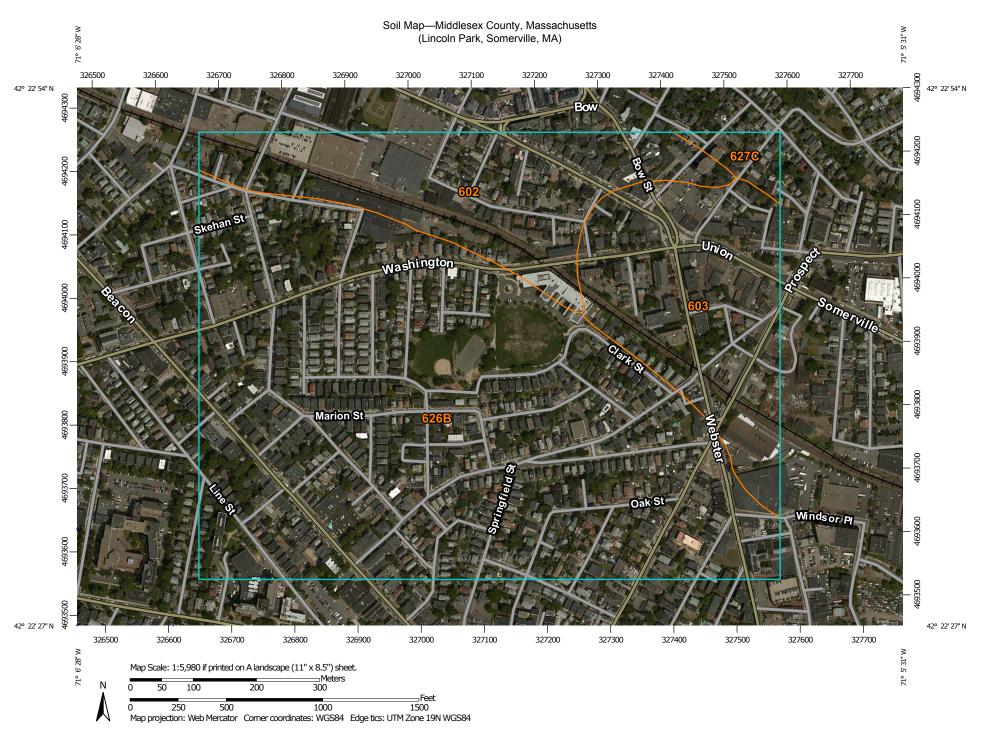


NOTES:

TEST PIT NUMBER

TP - 4

WESTON & SAMPSON ENGINEERS, INC.



## MAP LEGEND

# Area of Interest (AOI)

Area of Interest (AOI)

#### Soils

Soil Map Unit Polygons



Soil Map Unit Points

#### Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

A Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

-

Stony SpotVery Stony Spot

Spoil Area

Wet Spot

Other

Special Line Features

#### **Water Features**

Streams and Canals

### Transportation

→ Rails

Interstate Highways

US Routes

Major Roads

Local Roads

### Background

Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:25,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Middlesex County, Massachusetts
Survey Area Data: Version 14, Sep 19, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 10, 2014—Aug 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# **Map Unit Legend**

Middlesex County, Massachusetts (MA017)						
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI			
602	Urban land	27.4	17.0%			
603	Urban land, wet substratum	26.9	16.7%			
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	104.4	64.8%			
627C	Newport-Urban land complex, 3 to 15 percent slopes	2.4	1.5%			
Totals for Area of Interest		161.0	100.0%			

# Middlesex County, Massachusetts

# 626B—Merrimac-Urban land complex, 0 to 8 percent slopes

# **Map Unit Setting**

National map unit symbol: 9957 Elevation: 0 to 2,100 feet

Mean annual precipitation: 45 to 54 inches Mean annual air temperature: 43 to 54 degrees F

Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

# **Map Unit Composition**

Merrimac and similar soils: 40 percent

Urban land: 40 percent Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the

mapunit.

# **Description of Urban Land**

# Setting

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Excavated and filled land

## **Description of Merrimac**

### Settina

Landform: Terraces, plains

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread, rise

Down-slope shape: Convex Across-slope shape: Convex

Parent material: Friable loamy eolian deposits over loose sandy glaciofluvial deposits derived from granite and gneiss

## Typical profile

H1 - 0 to 9 inches: fine sandy loam H2 - 9 to 18 inches: gravelly sandy loam

H3 - 18 to 26 inches: very gravelly loamy coarse sand

H4 - 26 to 33 inches: stratified extremely gravelly coarse sand

H5 - 33 to 65 inches: stratified gravelly coarse sand

## **Properties and qualities**

Slope: 0 to 8 percent

Depth to restrictive feature: More than 80 inches Natural drainage class: Somewhat excessively drained

Capacity of the most limiting layer to transmit water (Ksat): High (2.00

to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water storage in profile: Low (about 4.9 inches)

# Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: A

# **Minor Components**

# Sudbury

Percent of map unit: 10 percent Landform: Terraces, plains

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread, dip

Down-slope shape: Linear Across-slope shape: Concave

## Windsor

Percent of map unit: 5 percent Landform: Deltas, terraces, flats

Landform position (two-dimensional): Footslope Landform position (three-dimensional): Tread, rise

Down-slope shape: Convex Across-slope shape: Convex

## Hinckley

Percent of map unit: 5 percent Landform: Ridges, eskers, terraces

Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope

Down-slope shape: Linear Across-slope shape: Convex

# **Data Source Information**

Soil Survey Area: Middlesex County, Massachusetts

Survey Area Data: Version 14, Sep 19, 2014

Weston Sampson.

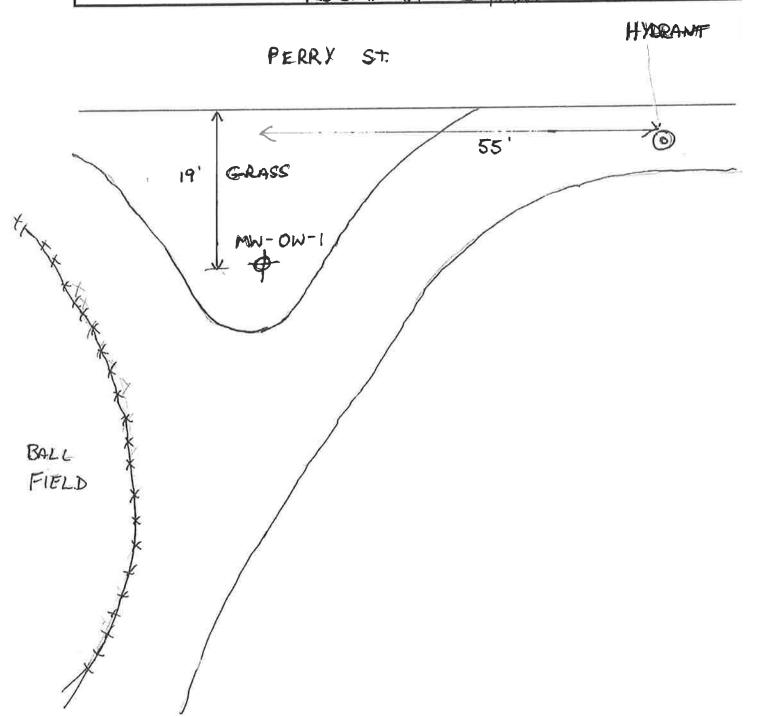
PROJECT:

LINCOLN PARK SOMERVILLE MA

DATE: 06/04/15 PAGE:

BY:

CHKD BY:



Weston&Sampson_®

PROJECT: LINCOLN PARL

Somervicer MA

DATE: 6/4/16 PAGE:
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BASKET BACC
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O
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Weston&Sampson _®
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PROJECT: LINCOLN FARK
SOMERVICLE, MA

DATE: 6/4//5 PAGE: BY:

CHKD BY:

GATE to SOCROL FIELD REAL OF SCHOOL Soccer Fish 152.8 CHILDARN'S MW-0W-3

GROUNDWATER MONITORING WELL INSTALLATION REPORT									
PROJECT NAME/NO.	Lincoln Park					MONITORING WELL NO.			
LOCATION	Neec Somerville,					MW-OW-1			
CLIENT	City of Somerville				ELEVATION TOP OF PVC				
DRILLING COMPANY	Crawford Drilling		DATE	6/4/15	DEPTH TO GROUNDWATER FROM				
OBSERVED BY	Padraic TKavar		DATE DATE	0/4/15		TOP OF PVC	NOVATERTROM		
CHECKED BY			DATE	-		101 01 1 10	1		
GROUND ELEVATION GENERAL SOIL CONDITIONS (NOT TO SCALE)		<	TYPE OF TYPE OF ID OF SU  DEPTH E  ID OF RIS TYPE OF TYPE OF DEPTH I  TYPE OF DEPTH I  TYPE OF SIZE OP ID OF SO  TYPE OF	TOP OF SEAL BOTTOM OF TOP OF SC SCREEN ENINGS CREEN	SEAL(S) CASING C	EAL(S)  D RISER PIPE  OP OF SAND COLUM  D SCREEN  N  COLUMN	(GROUND SURFACE)  4" Flush-mount Roadbox 1-foot Cement  4" Road Box 3' 1-foot  2-inch PVC natural  1' bentonite N 2'-feet 2' PVC machine slot 10-slot 2-inch SAND 12' 12' none		
				ER OF BOF BOTTOM O		IOLE	4-inch		
NOTES:						MONITOR	RING WELL NO.		
							W-OW-1		
							I & SAMPSON		
1						ENGIN	IEERS, INC.		
1									

							PRC	JECT	REPO	RT OF BORING	No.		OW-1	
Weston & Sampson			Lincoln Park			SHEET		1		OF 1				
	ENGINEERS, INC.		1		ville, MA	Project No.		2150034B		50034B				
			, C					CHKD BY						
BORIN	5011110 00. <u>Clairiola Britting</u>							BORING LOCATION See attached plan						
FORE		Jim/Joe				GROUND SURFACE ELEV.						DATUM DATE END 6/4/2015		
WSE G	EOLOG	SIST:	F	adraic T. K	avanagh									
SAMPLER: SAMPLER CONSISTS OF 24" by 1 3/6" I.D. SPLIT SPOON DRIVEN USIN				NG A		DATE	TIME	ROUNDWATE WATER AT	R REA		S STABILIZATION TIME			
			MMER FALLING 30 I		ERS/ DRIVEN 3" DIAM	METER		DATE	TIIVIE	WAILKAI	N/		N/A	
					n, & DRIVE & WASH									
CASING	SIZE:	4,25 in, H,5	S,A, / 3 in, CASING		OTHER:						<u> </u>			
	CASING			SAMPLE	DI OMICICII	PID		SAMPLE Burmiste	DESCR		NOTES	STR	ATUM DESCRIPTION	
(feet)	(bpf)	No. S-1	REC/PEN (in) 10/24"	0-2	BLOWS/6" 2-5-12-15	(ppm)	Fill m			m, trace gravel				
0.0		0-1	10/24	-02	201210		coal,d	cinder,ash and	l brick fra	agments				
											1 1			
E 0						-	ł					Fill		
5.0_		S-2	0/24"	5-7	5-8-2-2	NA	No re	covery.			1 1			
							1							
							ł							
10.0							1							
		S-3	0/24"	10-12	3-1-1-1	] NA	No re	ecovery.						
		_					1				1			
		S-4	4/24"	12-14	1-1-1-1	NA	Grey	f-c sand with	some gr	avel. Saturated	2			
15.0						-	ł				1		1	
		-					1							
							1							
20.0						-	-							
20.0											1			
							-							
			ļ			-	┨							
							1							
25.0						-	-					l		
		_					1					l		
							1							
						-	-							
30.0		-					1							
							1							
						-	-							
	GRANI	JLAR S	SOILS	COHES	SIVE SOILS	NOT	ES:							
	WS/FT		DENSITY	BLOWS/FT	DENSITY			ll set at 12 fe B at 14 feet	et					
	)-4		LOOSE	0-2 2-4	V. SOFT SOFT	1 '	2 EOI	B at 14 feet						
	-10 0-30		. DENSE	4-8	M. STIFF						¥			
	0-50	1	DENSE	8-15	STIFF									
>	50	\ \ \	. DENSE	15-30 > 30	V. STIFF HARD									
NOTES		1) THE	STRATIFICATIO	N LINES REPRE	SENT THE APPR	OXIMAT	E BOU	NDARY BETWEE	N SOIL TY	PES. TRANSITIONS	MAY BE G	RADUA	L.	
1		2) WAT	ER LEVEL REAL	INGS HAVE BE	EN MADE IN THE	DRILL H	HOLES	AT TIMES AND U	NDER CO	NDITIONS STATED O	N THIS BO	RING	₋OG.	
					GROUNDWATER	MAY OC	CUR DI	UE TO OTHER FA	ACTORS T	HAN THOSE PRESEN	NIAITHE	: IIME		
		MEA	ASUREMENTS A	KE MADE.							BORI	NG No	OW-1	

						PRO	JECT	REPO	RT OF BORING	No.		OW-3	
Weston & Sampson					Lincoln Park			- Constant in the	SHEET		1 OF 1		
ENGINEERS, INC.				Somerville, MA			Project No. CHKD BY		2150034B				
BORING Co. Crawford Drilling						BORING LOCATION See attached plan							
/IAN			Jim/Joe GROUND SURFACE ELEV.					DATE END 6/4/2015					
						DATI	I						
				ING A		DATE					STABILIZATION TIME		
			METER		5/112					N/A			
					TECHNIQ	JE							
				JIHER:	DID	_	SAMPLE	DESCR	PTION		_		
	No			BLOWS/6"	(ppm)	1				NOTES	NOTES STRATUM DESCRIPTION		
	S-1	8/24"	0-2	3-4-5-4	NA								
						coai,c	ander,ash and	DIICK II	igments	ll			
										1 1			
	-	40/04/	F 7	4260	NIA	Cill ma	atorial with da	rk grout	a groy fine SAND	1 1		Fill	
	S-2	18/24"	5-7	4-3-6-9	NA					ΙI			
						trace	brick fragmen	ts. Wet	at 7 feet.	1 1	_		
					-	1							
	S-3	12/24"	10-12	7-8-10-5	NA					1 1			
					-	and s	oft clay at 12	teet. Sa	turated				
						1							
	C 4	24/24"	15 17	2123	NΔ	Gray	to blue soft cl	av		┨╻		Clay	
	5-4	24/24	13-17	2-1-2-3	INA	Giey	to plue soit ci	ay.					
						]				2			
						1							
						Г							
	-				-	1							
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	-					1							
						1							
GRANI	II AR S	OILS	COHES	IVE SOILS	NOT	ES:							
WS/FT	1 0	DENSITY	BLOWS/FT	DENSITY		Wel		et					
10			-		1 2	2 FOE	3 at 17 feet						
-10 )-30			4-8	M. STIFF						Œ.			
)-50	1	DENSE	8-15	STIFF									
50	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	DENSE	15-30   > 30	V. STIFF HARD									
	1) THE	STRATIFICATIO	N LINES REPRE	SENT THE APPR	OXIMAT	E BOUN	IDARY BETWEEN	N SOIL TY	PES. TRANSITIONS	MAY BE GI	RADUA	L.	
	2) WAT	ER LEVEL READ	INGS HAVE BEI	EN MADE IN THE	DRILL F	OLES A	AT TIMES AND UI	NDER CON	IDITIONS STATED OF HAN THOSE PRESEN	N THIS BO IT AT THE	KING L TIME	.OG.	
		CTUATIONS IN T SUREMENTS AF		MOONDWATER		5511 06							
	G Co. MAN EOLOG  ER:  CASING (bpf)  GRANU WS/FT  0-4 -10 0-30 0-50 50	GRANULAR S  WS/FT  10  10  10  10  10  10  10  10  10  1	## Company	ENGINEERS, INC.  G Co. Crawford Drilli Jim/Joe EOLOGIST: Padraic T. Ka  ER: SAMPLER CONSISTS OF 24" by 1 3/8" I.D. SPLIT 140 Ib. HAMMER FALLING 30 In. 4 25 In., INSIDE DIAMETER HOLLOW STEM AUGE CASING USING A 300 Ib., HAMMER FALLING 24 Ir G SIZE: 4.25 In., H.S.A. / 3 In., CASING  CASING (bpf) No. REC/PEN (in) DEPTH (ft.)  S-1 8/24" 0-2  S-2 18/24" 5-7  S-3 12/24" 10-12  S-4 24/24" 15-17  S-4 24/24" 15-17  S-4 24/24" 15-17  COMES WS/FT DENSITY BLOWS/FT 0-4 V. LOOSE 0-2 10-30 M. DENSE 0-2 10-30 M. DENSE 0-2 10-30 M. DENSE 0-3 10 THE STRATIFICATION LINES REPRE 2) WATER LEVEL READINGS HAVE BEI  1) THE STRATIFICATION LINES REPRE 2) WATER LEVEL READINGS HAVE BEI	G Co. Crawford Drilling  Jim/Joe  EOLOGIST: Padraic T. Kavanagh  LER: SAMPLER CONSISTS OF 24" by 1 3/6" I.D. SPLIT SPOON DRIVEN US 140 Ib., HAMMER FALLING 30 In. 4.25 In., INSIDE DIAMETER HOLLOW STEM AUGERS/ DRIVEN 3" DIAVE CASING USING A 300 Ib., HAMMER FALLING 24 In., 8 DRIVE & WASH OTHER:  CASING (bpf) No. REC/PEN (In) DEPTH (ft.) BLOWS/6"  S-1 8/24" 0-2 3-4-5-4  S-2 18/24" 10-12 7-8-10-5  S-3 12/24" 10-12 7-8-10-5  S-4 24/24" 15-17 2-1-2-3  S-4 24/24" 15-17 2-1-2-3  GRANULAR SOILS COHESIVE SOILS WS/FT DENSITY D-4 V. LOOSE 1-0 LOOSE 2-4 SOFT 1-0 LOOSE 2-4 SOFT 1-0 DENSE 3-15 STIFF 1-30 V. DENSE 15-30 V. STIFF 2) WATER LEVEL READINGS HAVE BEEN MADE IN THE 2) WATER LEVEL READINGS HAVE BEEN MADE IN THE 2) WATER LEVEL READINGS HAVE BEEN MADE IN THE 2) WATER LEVEL READINGS HAVE BEEN MADE IN THE 2) WATER LEVEL READINGS HAVE BEEN MADE IN THE 2) WATER LEVEL READINGS HAVE BEEN MADE IN THE	### Crawford Drilling #### Crawford Drilling ####################################	### Weston & Sampson	### Company	### Somerville, MA    Crawford Drilling	Weston & Sampson ENGINEERS, INC.    Crawford Drilling   Soring Location   Soring Loc	### Weston & Sampson	### Weston & Sampson	

GROUNDWATER MONITORING WELL INSTALLATION REPORT									
PROJECT NAME/NO. LOCATION CLIENT DRILLING COMPANY OBSERVED BY CHECKED BY	Lincoln Park  Neec Somerville, MA  City of Somerville  Crawford Drilling  Padraic TKavanagh  DATE  DATE					MONITORING WELL NO.  MW-OW-3  ELEVATION  TOP OF PVC  DEPTH TO GROUNDWATER FROM  TOP OF PVC			
GROUND ELEVATION  GENERAL SOIL CONDITIONS (NOT TO SCALE)		<<	TYPE O  TYPE O  ID OF S  DEPTH  ID OF R  TYPE O  DEPTH  DEPTH  DEPTH  DEPTH  DEPTH  DEPTH  TYPE O	TOP OF SI PF SEAL BOTTOM ( TOP OF SI PF SCREEN PENINGS SCREEN	E SEAL(S) E CASING ASING DF CASING IPE L AROUNI EAL DF SEAL/T CREEN I LL AROUN OF SCREE OF SAND ( LL BELOW DREHOLE	D RISER PIPE  OP OF SAND COLU  D SCREEN  COLUMN SCREEN	(GROUND SURFACE)  4" Flush-mount Roadbox 1-foot Cement  4" Road Box 3' 1-foot  2-inch PVC natural  2' bentonite  MN 3' 5'  PVC machine slot 10-slot 2-inch SAND 15' 15' none  4-inch 17'		
NOTES:	<u></u>					Total Control Control Control Control Control	ORING WELL NO.		
						II.	ON & SAMPSON INEERS, INC.		

# SOIL CHARACTERIZATION REPORT LINCOLN PARK COMMUNITY SCHOOL SOMERVILLE, MASSACHUSETTS

Prepared For:
Symmes, Maini & McKee Associates
1000 Massachusetts Avenue
3575 Piedmont Road
Cambridge, MA 02138

Prepared By:
The Geotechnical Group, Inc.
Environmental Division
Needham, Massachusetts

File No. HE3351 July 2005



July 20, 2005 File No. HE3351

Symmes, Maini & McKee Associates 1000 Massachusetts Avenue Cambridge, MA

Attention: Mr. Wayne Keefner, P.E.

RE: Soil Characterization Report

Lincoln Park Community School

Somerville, Massachusetts

# Dear Mr. Keefner:

The Geotechnical Group, Inc. (TGG) is pleased to present the results of our recent limited subsurface assessment at the above referenced property in Somerville, Massachusetts. This report was prepared in accordance with our proposal dated May 4, 2005, and the Limitations and Terms of Agreement contained in Appendix A.

The objective of TGG's work was to characterize soil present as fill material at the above referenced property for planned site construction and to develop a professional opinion as to the potential presence of oil or hazardous materials in the fill material as defined by Massachusetts General Laws, Chapter 21E and the Massachusetts Contingency Plan (MCP). Soil samples were submitted for laboratory analysis of parameters typically required by licensed waste management facilities to characterize the material for potential off-site disposal. A Site Locus and an Exploration Location Plan are attached as Figure 1 and 2, respectively.

# SUBSURFACE EXPLORATIONS

A subsurface exploration program, consisting of five soil test borings (P-1 through P-5) and two near surface soil sampling locations (P-6 and P-7), was conducted at the subject property on June 27, 2005. The completed test borings and soil sample locations were observed and logged by TGG. See Figure 2 for the approximate exploration locations.

# Soil Test Borings

GeoSearch, Inc. of Fitchburg, Massachusetts used a truck-mounted hydraulic geoprobe rig to advance five soil test borings (P-1 through P-5) at the subject property on June 27, 2005 to obtain soil samples for field screening and laboratory analyses. The geoprobes were generally advanced through existing fill materials into native soil. completion, asphalt patch was installed to fill the hole created in the existing asphalt at locations P-1 through P-4. Soil samples P-6 and P-7 were obtained by hand excavation into the earthen floor of a crawl space under the existing building.

Borings P-1 through P-5 were advanced in fill materials to depths ranging from three foot below ground surface (P-4) to a maximum depth of 9 feet below ground surface (P-5). Fill materials consisted of medium to fine sand and silt, with varying percentages of gravel, and trace amounts of cinder, ash, and brick. Similar fill materials were observed in soil samples obtained at locations P-6 and P-7. The subsurface conditions encountered at the exploration locations are described on the test boring logs attached as Appendix B.

# Groundwater

Groundwater levels for this study were recorded at the times and under the conditions noted on the logs. Measurements made within the boreholes during drilling indicated the groundwater table to be located at about five to nine feet below ground surface. The depth to groundwater observed during drilling was consisted with the depth to groundwater measured in monitoring well MW-1 (6.88 feet recorded on June 9, 2005). Refer to Figure 2 for the location of monitoring well MW-1. Groundwater levels may fluctuate due to variations in temperature, rainfall, and other factors.

# FIELD SCREENING AND LABORATORY ANALYSES

Soil samples collected during the field exploration program were screened in the field and composite soil samples were delivered to Spectrum Analytical, Inc. (Spectrum), of Agawam, Massachusetts for laboratory analysis.

# **Qualitative Screening**

Soil samples from the soil borings were screened in the field for the potential presence of volatile organic compounds (VOCs) using a portable photoionization detector (PID), equipped with a 10.6 eV lamp. The PID was calibrated with benzene equivalent prior to screening the samples. Screening results from the samples generally indicated nondetectable concentrations of total organic vapors (0.0 units). Soil screening results are presented in Table 1.

# Quantitative Analysis - Soil

One composite soil sample was made up from each boring for laboratory analysis of the following parameters: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), pH, specific conductance, reactivity, ignitability, and metals. Prior to compositing the samples, a small volume of soil that was representative of the soil samples obtained from each boring was placed in 40 ml vials containing methanol for VOC analysis. This method was used to minimize the loss of any volatile organic compounds during mixing of the composite soil samples. Soil samples were collected in pre-cleaned, laboratory-provided glassware and preserved in the field in accordance with the test method protocols. Samples were delivered on ice and under a chain of custody to Spectrum Analytical, Inc. for laboratory analysis.

Results of the laboratory analyses indicated that the compounds tested were below the laboratory reporting limits except for TPH, selected SVOCs (polyaromatic hydrocarbons or PAHs), and selected metals. Metals were detected at concentrations below their applicable Department of Environmental Protection (DEP) reportable concentrations for soil category RCS-1; soil category RCS-1 pertains to soils located on or within 500 feet of a residential dwelling, residentially zoned property, school, park, or playground. Identified metals concentrations are also below background concentrations established by the DEP for soils containing coal ash or wood ash associated with fill material.

Selected PAH compounds were identified at concentrations above the applicable DEP reportable concentrations but below background concentrations established by the DEP for natural soils and/or soil containing coal ash or wood ash associated with fill material.

Identified concentrations for TPH in most of the soil samples were below the applicable DEP reportable concentration of 200 mg/kg; however, a TPH concentration of 344 mg/kg was reported for soil sample P-7. TGG requested that the laboratory further evaluate this soil sample in an effort to determine whether the reported TPH concentration may be indicative of background concentrations related to the PAHs identified in the fill material or if the analytical result represents a reportable release condition for the site. The laboratory indicated in their analytical report that the reported TPH concentration for the soil sample obtained from soil sample P-7 is related to a hydrocarbon background source such as asphalt, coal ash, compressed coal, or coal tar; cinder and ash were observed in soil samples obtained at sample locations P-6 and P-7. Therefore, the TPH concentration reported in sample P-7 is not an actual petroleum product, and does not represent a reportable release condition.

Refer to Table 1 for a summary of parameters detected above the laboratory reporting limits, with a comparison to DEP RCS-1 reportable concentrations and DEP identified background levels in soil; the complete laboratory report is contained as Appendix C.

# **CONCLUSIONS**

This report presents the results of our limited subsurface assessment at the above referenced property in Somerville, Massachusetts. This report was prepared in accordance with our proposal dated June 8, 2005, and the Limitations and Terms of Agreement contained in Appendix A.

The objective of TGG's work was to characterize soil present as fill material at the above referenced property for planned site construction and to develop a professional opinion as to the potential presence of oil or hazardous materials in the fill material as defined by Massachusetts General Laws, Chapter 21E. Soil samples were submitted for laboratory analysis of the parameters typically required by licensed waste management facilities to characterize materials for off-site disposal.

Fill materials consisted of medium to fine sand and silt, with varying percentages of gravel, and trace amounts of cinder, ash, and brick were identified in borings P-1 through P-5. Similar fill materials were observed in soil samples obtained at locations P-6 and P-7 in the crawl space under the existing building. Depth to groundwater observed during drilling ranged from 5 to 9 feet below ground surface.

Selected metals, PAHs, and TPH were identified above the laboratory reporting limits in soil samples P-1 through P-7. Identified concentrations of metals and PAHs are below background concentrations established by the DEP for soil containing coal ash or wood ash associated with fill material. TPH identified in soil at concentrations above the DEP reportable concentrations was determined by the laboratory to be associated with a non-petroleum source of hydrocarbon and is related to a hydrocarbon background source such as asphalt, coal ash, compressed coal, or coal tar; cinder and ash were observed in soil samples obtained at sample locations P-6 and P-7.

The MCP contains an exemption where the identification of compounds at concentrations above applicable DEP reportable concentrations does not require notification to the DEP of a release condition for soils containing coal or wood ash associated with fill material.

# RECOMMENDATIONS

Existing fill material that is exposed or disturbed during site construction can be reused as backfill material under buildings, if it is appropriate from a geotechnical standpoint, or under paved surfaces. Existing fill material that cannot be reused on the property cannot be transported off-site as clean fill due to the presence of PAHs and TPH in the soil. Based on our review of the analytical results, excess fill material would be acceptable for off-site disposal or reuse as daily cover at a licensed in-state or out-of-state landfill.

Although the DEP does not require the remediation of compounds present at levels consistent with background, it is recommended that potential exposures be mitigated whenever possible in residential settings, which would include school facilities where children are present. Placement of three feet of clean soil over existing fill containing coal ash and/or wood ash in unpaved areas is recommended to mitigate the potential for direct contact with the fill material. Boring logs conducted during previous geotechnical studies conducted by TGG between 2001 and 2002 indicated that a buffer of soil up to approximately one foot in thickness is present above the ash fill in the area of the property that is currently in use as a ball field. According to SMMA, clean fill will be brought in during the course of site restoration following building construction to increase the thickness of the soil buffer in unpaved areas.

The existing upper three feet of material, consisting of topsoil and ash fill, will be removed from the infield area of the ball field and from the vegetable garden area to be protective of more intensive property uses; these areas are to be backfilled with clean material. The topsoil will be stripped from approximately one-half of remainder of the ball field and a four-inch layer of crushed stone will be placed in that area during construction. Upon completion of building construction, the original topsoil and an additional four to six inches of topsoil will be placed over the layer of crushed stone in that portion of the ball field.

It has been a pleasure assisting you with this project. Please feel free to contact us with any questions or comments.

Very truly yours,

THE GEOTECHNICAL GROUP Environmental Division

Andrea Stiller, LSP

Associate

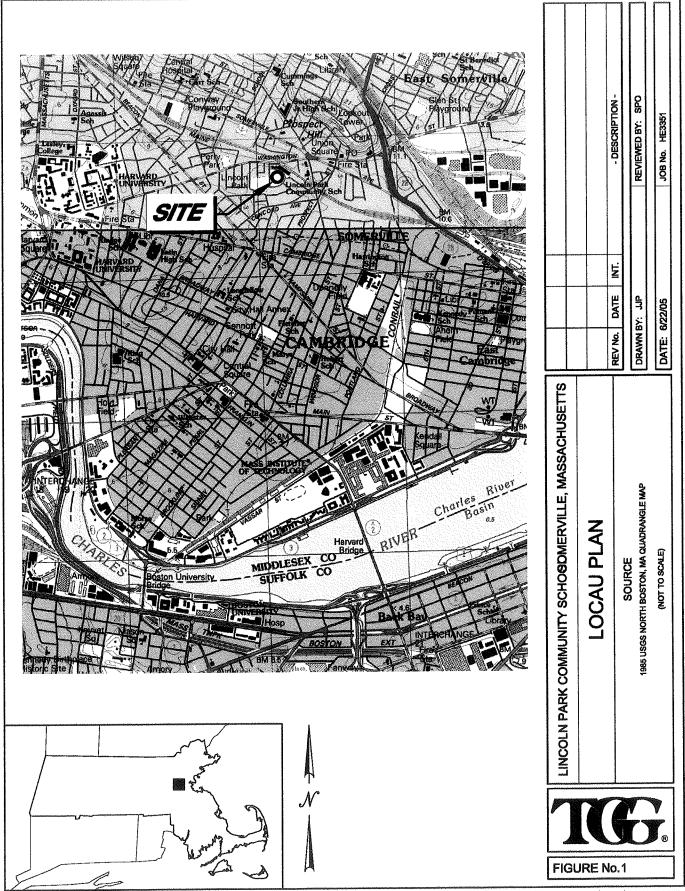
Hubrdeau Ellen R. Thibodeau, LSP Senior Project Manager

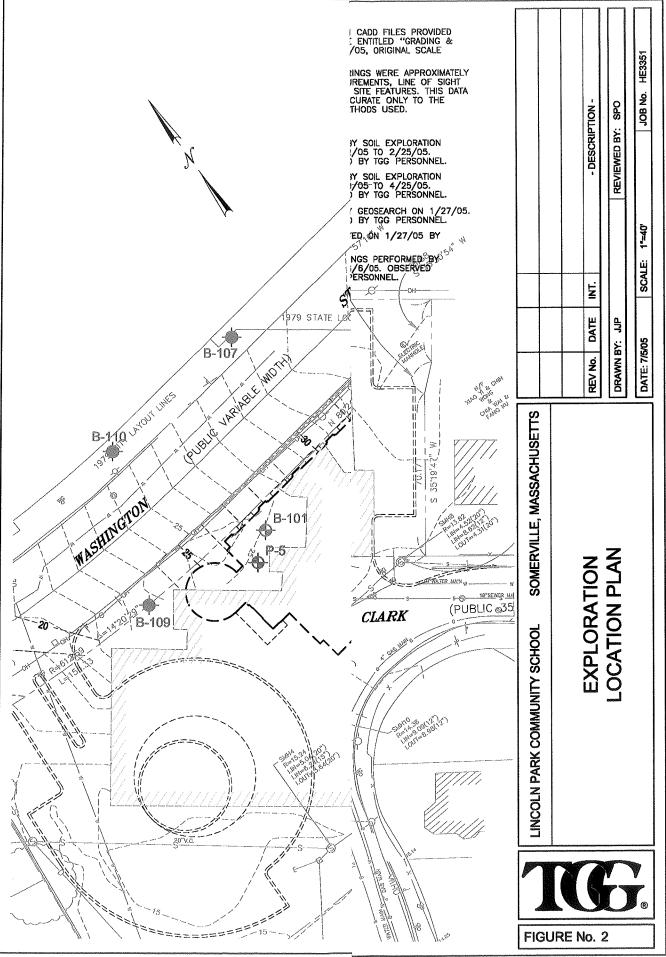
Attachments: Figure 1: Site Locus Plan

Figure 2: Exploration Location Plan Table 1: Soil Analytical Results

Appendix A: Limitations and Terms of Agreement

Appendix B: Test Boring Logs Appendix C: Laboratory Report





ERVILLE\ PLANS\ 335100F03.DWG

June 27, 2005 File No. HE3351

Soil Analytical Results Lincoln Park School Somerville, Massachusetts Table 1

Sample ID	P-1/Comp	P-2/Comp	P-3/Comp	P-4/Comp	P-5/Comp	P-6/Comp	P-7/Comp	Reportable	DEP Bac	DEP Background Concentrations
Date Sampled	6/27/05	6/27/05	6/27/05	6/27/05	6/27/05	6/27/05	6/27/05	Concentrations		
Sample Depth (feet)	0.25-6	0.25-6	0.25-5	0.25-3	6-0	1-0	. 0-1	RCS-1		Soil with Coal Ash or Wood
Field Screening Results (ppm)	QX	ON	QN	QN	QN	QN	ON		Natural Soil	Wood Ash Associated
Volatile Organic Compounds (ug/kg)										with Fill Material
All Analyzed Compounds	QN	QN	QN	Q	Q.	ND	ND	1	1	t
Semivolatile Organic Compounds (ug/kg)										
Benzo (a) anthracene	QN.	289	1,800	QN.	QN	1,130	939	700	2,000	9,000
Benzo (a) pyrene	R	S	1,560	Q	Ð	1,180	923	700	2,000	7,000
Benzo (b) fluoranthene	QN.	Q.	1,110	Ð	£	840	581	700	2,000	8,000
Benzo (g.h.l.) pervlene	QN.	Q.	839	Ð	£	503	ND	1,000,000	1,000	3,000
Benzo (k) fluoranthene	QX	QN	1,090	£	Ð	929	668	NS	1,000	4,000
Chrysene	QX	332	1,940	呈	Ð	1,370	1,010	7,000	2,000	7,000
Fluoranthene	2	435	3,410	QN.	QX	1,680	1,500	1,000,000	4,000	10,000
Indeng (1.2.3-cd) pyrene	£	Q.	820	Q	g	559	468	700	1,000	3,000
Pyrene	R	445	2,220	£	ND QX	1,790	1,540	700,000	4,000	20,000
Fluorene	£	Ð	£	QZ	QN	Q	£	NA	1,000	2,000
Phenanthrene	2	2	2,340	QZ	Ð	781	649	100,000	3,000	20,000
Anthracene	(N	QN.	851	R	QX	Q.	Q.	1,000,000	1,000	4,000
Total Petroleum Hydrocarbons (mg/kg)										
TPH 8100 by GC-Fingerprint	39.7	Ð	169	£	Ø	197	344	200	,	
Polychlorinated Biphenyls (ug/kg)										
PCBs	QS.	QN	£	N ON	Q	QN	QN	2,000	1	1
RCRA 8 Metals (mg/kg)										
Arsenic 8,	8.71	9.48	12.5	96.6	8.5	7.42	7.54	30	20	20
Barium	17.9	20	33.3	24.8	31.7	37.7	37.9	1,000	50	50
Cadmium	S	QN	0.917	QN.	QX	1.35	1.23	30	2	C)
Chromium	12.9	14.1	17.3	18.2	23	17.7	18.2	1,000	30	40
Mercury	R	QN	0.352	£	QN	0.489	0.436	20	0.3	
Lead	6.4	15.6	79.2	3.7	35.4	120	124	300	100	009
Silver	QN.	Q	QN	QN	ON	ND	QN QN	100	9.0	5
Selenium	QN.	Q	R	QN	QN	ND	ON	400	0.5	1
General Chemistry Parameters							5			
Flashpoint (°F)	> 200	> 200	> 200	> 200	> 200	> 200	> 200	NS		4
pH (pH units)	9.87	8.2	8.48	8.01	9.34	8.2	7.8	NS		1
Reactivity (mg/kg)	Negative	SN	•	-						
Reactivity Cyanide	R	Ð	Ð	QN N	QN	ND	ON	NS	t	1
Reactivity Sulfide	ND	QN	QN	ND	QN	QN	QN ON	NS	t	-
Specific Conductance	102	215	158	76.3	90.1	89.1	92.8	NS	•	-

Notes:

ND indicates compound not detected above laboratory detection limits.
 NT indicates compound not analyzed.
 NS indicates no MCP standard exists for the specified compound.

Not all compounds analyzed are presented in this table. See laboratory analytical data for complete list of analytes.
 Modified EPA Method 8100 for TPH could not identify the type of oil, therefore termed, "unidentified"; TPH result was quantified using standard for Fuel Oil #6.

6. DEP Background Concentrations obtained for natural soil and soil containing coal or wood ash associated with fill material (May 23, 2002 Update to Section 2.3 Guidance for Disposal Site Risk Characterization in Support of the Massachusetts Contingency Plan (1992).

### LIMITATIONS

- 1. Observations were made of the site as indicated within the Report. If areas exist which were inaccessible or not included in the scope of work, and therefore not observed, TGG can render no opinion as to the conditions in that area. This includes but is not limited to the areas covered by buildings, stockpiles, construction materials, and vegetation.
- 2. In preparing this Report, TGG referenced work completed by others. Due to the potential for errors, omissions or inaccuracies that may exist there is some risk associated with reliance on such information. Although there may have been some corroboration provided by multiple sources, TGG cannot be responsible for the accuracy or completeness of the information reviewed or received during the course of this work
- 3. The conclusions and recommendations contained in this Report are based in part upon the data obtained from soil samples collected from subsurface explorations completed at the referenced property. The nature and extent of variations between these explorations may not become evident until additional work is undertaken at the site. If variations or latent conditions then appear evident, it will be necessary to reevaluate the conclusions and recommendations of this report.
- 4. The purpose of this Report was to provide environmental services at the subject site with respect to the presence in the environment of hazardous material or oil, as defined in Massachusetts General Laws Chapter 21E. No specific attempt was made to check on the compliance of present or past owners or operators of the site with federal, state, or local laws and regulations, environmental or otherwise.
- 5. This report was prepared for the exclusive use of Symmes, Maini & McKee Associates, solely for use in connection with environmental studies of the property located at Lincoln Park Community School in Somerville, Massachusetts. This report was prepared in accordance with generally accepted environmental engineering practice. No other warranty, expressed or implied, is made.

	and the second s		TH	E GE	OTE	CHNI	CAL (	GRO	JP, INC.		
						- PRO	JECT -		Boring No.	P-1	
										Sheet 1 of	1
	Te	est Borii	ng Log				nmunity		File No.	HE3351	
					Some	erville, iVla	assachus	sects	Review by:	Ellen Thibode	au
Bor	ing Co.		Ge	oSearch	ì		Boring	Locatio	n:	See Plan	
	eman			Brian			Ground	l Elev.		N/A	
TG	G Obse	rver	Stepl	nanie Or	low		Date S	1777	C12-22-33-32-32-32-32-32-32-32-32-32-32-32	6/27/05	
			Sampling Protoco					Control State of the Control of the Control	ound Water Readings		
Unle	ess other	wise noted, I	borings were accomp	lished us	sing 4 inc	ch inside	Date	Time	Depth to Bottom	Depth to Water	Rem.
dian split inch	spoon sa	ow stem auge ampler, driver	ers. Samples were rec n by blows of a 140 Lt	overed u o. safety	sing a 2-i hammer f	nch O.D. falling 30	6/27	AM	8 feet	5± feet	
			Sample Data				Str	ı ata			
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem.	Cha		Sample	Description	
	S-1	0.25-4	DP	48	40		.2	5	Asphalt Light brown, fine SANI	) some Silt	
									Light brown, line SAM	J, SUITE SIIC.	
							F	ill			
							_ '		Wet, light brown, fine S	SAND, some Silt.	
5	S-2	4-8	DP	36	44		6.	0	Light brown, fine SANI Wet, light brown, fine S	D, some Silt. SAND, some Silt.	
	3-2	4-0	Dr	30	+		Peat		Wet, black to dark brown SIL		e fine sand.
					<del>                                     </del>	-	Sand & C		Wet, medium to dark t some fine to coarse G	prown, fine to coars	e SAND,
					<u> </u>	<u> </u>		·····			
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Da	marks.										

Remarks:
1. Groundwater observed at approximately 5± feet.
2. Bottom of boring at 8± feet.

			TH	E GE	OTE	CHNI	CAL (	3RO	UP, INC.		
						- PRO	di Maria da San Naji Maria		Boring No.	P-2	
						D				Sheet 1 of	1
	Te	est Borii	ng Log				nmunity		File No.	HE3351	
					Some	erville, iVla	assachus	etts	Review by:	Ellen Thibode	au
Bor	ing Co.		Ge	oSearch	)		Boring	Locatio	on:	See Plan	
For	eman		:	Brian			Ground	l Elev.		N/A	
TG	G Obse	erver	Stepl	nanie Or	low		Date S	allection in collection	directory or or a	6/27/05	
			Sampling Protoco	1					round Water Reading		
Unle	ess other	wise noted, l	borings were accomp	lished us	sing 4 inc	h inside	Date	Time	Depth to Bottom	Depth to Water	Rem.
dian split	neter holl spoon s	ow stem auge ampler, drive	ers. Samples were rec n by blows of a 140 Lt	overed u o. safety l	sing a ∠-i hammer i	ralling 30	6/27	AM	8 feet	6± feet	
inch					123.18 VV.						
		Sampling Pro- nerwise noted, borings were accollow stem augers. Samples were assampler, driven by blows of a  Sample Di Depth Blows per 1 0.25-4 DP					Str		Sample	e Description	
	No.	1 0.25-4 DP		Pen.	Rec.	Rem.	Cha	nge 5	Asphalt		
	S-1	O.25-4 DP		48	38		ļ <del>'</del>	<u></u>	Medium brown, fine to	medium SAND, littl	e fine to
		Test Boring Log  Co.  n Deserver  Sampling Proteins of the service		<u> </u>				1	medium Gravel, trace	SIIT.	
							Grar Fi		   Medium to dark browr	n fine SAND some Si	ilt trace
							· ' '	••	fine to medium Grave	I, trace (+) Cinder ar	nd Brick.
5	S-2	4-8	DP	48	40		6.	0	Light brown, fine SA trace Ash.	ND, some Silt, litt	le Brick,
							Sa	nd	Wet, brown to gray, fir Gravel, trace Silt.	ne to coarse SAND, I	ittle fine
		4-0					8.	0	Gravel, trace Silt.		
									D-ttore of howing		
									Bottom of boring.		
10				-	<u> </u>		-				
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15		4-8 DP					1				
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Do	marks:			1	l	ļ	J				

Remarks:
1. Groundwater observed at approximately 6± feet.
2. Bottom of boring at 8± feet.

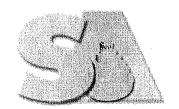
	2004200000		THI	E GE	OTE	CHNI	CAL G	ROI	JP, INC.		
						- PRO	JECT -		Boring No.	P-3	
						D		·		Sheet 1 of 1	
	16	est Borii	ng Log				nmunity S		File No.	HE3351	
					Some	a viiie, ivia	assachuse	ects	Review by:	Ellen Thibode	au
Bor	ing Co.		Geo	Search		•	Boring L	ocatio	ın:	See Plan	
	eman		·	3rian			Ground	Elev.		N/A	
TG	G Obse	erver	Steph	anie Orl	ow		Date Sta	Tare of the control of		6/27/05	
			Sampling Protocol					Gr	ound Water Readings		
Unle	ss other	wise noted, l	porings were accompl	ished us	ing 4 inc	h inside	Date	Tim	Depth to Bottom	Depth to Water	Rem.
dian split inch	spoon sa	ow stem auge ampler, drive	ers. Samples were reco n by blows of a 140 Lb	safety h	ammer	ren O.D. falling 30	6/27	AM	8 feet	6± feet	
	10.000		Sample Data				Stra	ta .			
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem.	Char		Sample	Description	
	S-1	0.25-4	DP	48	40		.25	)	Asphalt Medium to dark brown	fine to coarse SAN	D some
									fine to medium Grave	I, little (-) Silt. trac	ce Brick,
			***************************************				Fill	ı	Glass & Cinder.		
		2 4-8 DP					5.0		Brown, fine SAND and	SILT.	
5	S-2	4-8	DP	48	42		Pea 6.5		Black to dark brown : Roots.	Silt, some fine San	d, some
						<u> </u>	Sar 8.0		Wet, brown, fine to coa	arse SAND, trace S	ilt.
							0.0	<u>J</u>			
									Bottom of boring.		
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Dar	narke:				1	alamanysiassa	<u>I</u>				

Remarks:
1. Groundwater observed at approximately 6± feet.
2. Bottom of boring at 8± feet.

			17H	E GE	OTE	CHNI	CALC	BRO	UP, I	NC.		
						- PRO	JECT -			Boring No.	P-4	
	Tc	est Borir	na I na		Lincoln	Park Co	mmunity S	School			Sheet 1 of	1
		JUDUIII	19 -09				assachus			File No.	HE3351	
						,	_			Review by:	Ellen Thibode	eau
Bor	ing Co.		Ge	oSearch	1		Boring I		on:		See Plan	
For	eman			Brian			Ground				N/A	
TG	G Obse	VIII.		nanie Or	low		Date St	4000	5000000000		6/27/05	
			Sampling Protoco						,	Vater Reading	The second secon	
dian	neter holl	ow stem auge	porings were accompl rs. Samples were rec n by blows of a 140 Lb	overed u	sing a 2-i	nch O.D.	Date 6/27	Tim AM	Dep	th to Bottom 8 feet	Depth to Water 6± feet	Rem.
inch		ampier, unver		, duiot,		umig oo						
	NI.	Donth	Sample Data Blows per 6 in.	Pen.	Rec.	Rem.	Stra Char	Control of the second		Sample	Description	
	No. S-1	Depth 0.25-4	DP	48	40	iveni:	.25	Martin Start	Aspha	ılt		j tilsvichus, siedi
	3-1	0.25-4	DF	40	40		Granı Fil		Hight	brown, fine to r m Gravel, little	nedium SAND, little (+) Silt.	e fine to
				<u> </u>			3.0 Sand & S		Light b	prown, fine to med	dium SAND and SILT,	little (+)
							Sand & S					
5	C 2	S-2 4-8 DP			45		6.0		Mediu	m brown, fine SA	AND, some Silt.	
	3-2	S-2 4-8 DP			1 10		Sand & G				coarse SAND and tine	to coarse
		S-2 4-8 DP					Silty Sa		LOKAVE	L. trace Silt. Prown to gray, fir	ne SAND and SILT.	
						<u> </u>	Sifty Sai	nu 0.0	<del>                                     </del>	<u> </u>		
							1		Botto	m of boring.		
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			TH	E GE	OTE	CHNI	CAL	RO	UP, INC.					
						- PRO	JECT -		Boring No.	P-5	·			
						D . O		~		Sheet 1 of 1				
	16	st Bori	ng Log				nmunity S		File No.	HE3351				
					Some	rville, ivia	assachuse	eccs	Review by:	Ellen Thibode	au			
Bor	ing Co.		Geo	Search			Boring L	ocatio	on:	See Plan				
	eman			Brian			Ground	Elev.		N/A				
TG	G Obse	rver	Steph	anie Or	ow		Date Sta	art > E	nd	6/27/05				
			Sampling Protocol					Gr	ound Water Reading	Sheet 1 of 1  Sheet 1 of 1  HE3351  Review by: Ellen Thibodeau  See Plan  N/A  6/27/05  Ater Readings (See Notes)  to Bottom Depth to Water R  B feet 9± feet  Sample Description  Swn, fine to medium SAND, little (+)  O Glass, trace fine Gravel and Roots  brown, fine to coarse Sand, some fine Gravel, little Silt.  brown, fine to coarse SAND, some fine Gravel, little Silt.  went to dark brown, Silty CLAY, little fine Sand.				
Unle	ess othen	wise noted,	borings were accompl	ished us	ing 4 inc	h inside	Date	Tim	Depth to Bottom					
dian split inch	spoon sa	ow stem auge ampler, drive	ers. Samples were reco n by blows of a 140 Lb	overed us . safety l	sing a 2-ii nammer f	nch O.D. alling 30	6/27	AM	8 feet					
			Sample Data				Stra	ta						
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem.	Char							
	S-1	0.25-4	DP	48	36				Dark brown, fine to m	edium SAND, little	(+) Silt,			
							Fill 2.5	<u>[</u>	(+) Glass, trace	e fille Graverand Not	JUS.			
							Boulde	r 3.5	Modium brown fine to	coarse Sand some	fine to			
5									medium Gravel, little	Silt.	, 11110 00			
J	S-2	4-8	DP	48	40		San	ıd						
							and Grav	1						
					ļ				Medium brown, fine to	coarse SAND, some	e fine to			
							9.0	)						
,,		0.40	200	40			Silty (	Clav	Wet, brown to dark bro	own, Silty CLAY, littl	e fine to			
10	S-3	8-12	DP	48	36			_	mediani Sana.	vel, little Silt. to dark brown, Silty CLAY, little f nd.				
					<u> </u>		11.0	)						
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D.					L									

Remarks: 1. Groundwater observed at approximately 9± feet. 2. Bottom of boring at 12± feet.



Final Report

## SPECTRUM ANALYTICAL, INC. Featuring

# HANIBAL TECHNOLOGY Laboratory Report

The Geotechnical Group, Inc. 100 Crescent Road Needham, MA 02494

Attn: Ellen Thibodeau

Project: Lincoln Park School-Somerville, MA

Project #: HE3351

Laboratory ID	Client Sample ID	<u>Matrix</u>	Date Sampled	Date Received
SA30139-01	P-1/Comp	Soil	27-Jun-05 08:30	28-Jun-05 16:10
SA30139-02	P-2/Comp	Soil	27-Jun-05 09:00	28-Jun-05 16:10
SA30139-03	P-3/Comp	Soil	27-Jun-05 09:30	28-Jun-05 16:10
SA30139-04	P-4/Comp	Soil	27-Jun-05 09:55	28-Jun-05 16:10
SA30139-05	P-5/Comp	Soil	27-Jun-05 10:30	28-Jun-05 16:10
SA30139-06	P-6/Comp	Soil	27-Jun-05 12:00	28-Jun-05 16:10
SA30139-07	P-7/Comp	Soil	27-Jun-05 12:45	28-Jun-05 16:10

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. All applicable NELAC requirements have been met.

Please note that this report contains 57 pages of analytical data including Chain of Custody document(s).

This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Massachusetts Certification # M-MA138/MA1110 Connecticut # PH-0777 Florida # E87600/E87936 Maine # MA138 New Hampshire # 2538/2972 New York # 11393/11840 Rhode Island # 98 USDA # S-51435 Vermont # VT-11393



Authorized by:

Hanibal C. Tayeh, Ph.D. President/Laboratory Director

Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method indicated. Please refer to our "Quality" webpage at www.spectrum-analytical.com for a full listing of our current certifications.

### NOTE:

Per client request for further evaluation of sample SA30139-07 to determine the potential hydrocarbon source, the following summarizes the process of this sample. Spectrum has analyzed the aforementioned samples for total petroleum hydrocarbons via modified SW846 8100 method in addition to method SW846 8270 for semivolatile organic compounds. I Hanibal C. Tayeh have reviewed the GC/FID and GCMS chromatograms for this sample. Subsequently, it is my professional opinion, that the Total Petroleum Hydrocarbon (TPH) concentration reported is related to a hydrocarbon-background source such as asphalt, coal ash, compressed coal or coal tar and not an actual petroleum product. A portion of the TPH concentration is related to poly aromatic hydrocarbons (PAHs).

#### CASE NARRATIVE:

The data set for work order SA30139 complies with internal QC criteria for the methods performed. The samples were received @ 6.0 degrees Celsius. An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method.

According to WSC-CAM 5/2004 Rev.4, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended 70%-130% recovery range, a range has been set based on historical control limits. Please refer to "Notes and Definitions" for all sample/analyte qualifiers. Qualifiers will note any exceedance levels and issues relating to sample analysis/matrix.

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile (	Organic Compounds			- Constitutions				and the second second		
	VOC Extraction	Field extracted	N/A	1	VOC	28-Jun-05	28-Jun-05	5061926	BD	
Volatile (	Organic Compounds		Prepared by method	1 SW84	l6 5030 Soil (h	igh level)				VOCIO
7-64-1	Acetone	BRL	767 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
07-13-1	Acrylonitrile	BRL	38.3 μg/kg dry	50	п	H	п	п	#1	
1-43-2	Benzene	BRL	38.3 µg/kg dry	50	n	p	n	<b>s</b> 1	"	
108-86-1	Bromobenzene	BRL	38.3 μg/kg dry	50	11	n	**	ıı.		
14-97-5	Bromochloromethane	BRL	38.3 µg/kg dry	50	11	D	п	**	n	
15-27-4	Bromodichloromethane	BRL	38.3 μg/kg dry	50	ш	U	n	11	п	
5-25-2	Bromoform	BRL	38.3 μg/kg dry	50	"	п	tr.	**	"	
74-83-9	Bromomethane	BRL	76.7 μg/kg dry	50	11	**	u	u	"	
78-93-3	2-Butanone (MEK)	BRL	383 μg/kg dry	50	n	и	u u	u	"	
04-51-8	n-Butylbenzene	BRL	38.3 μg/kg dry	50	11		**	n	п	
135-98-8	sec-Butylbenzene	BRL	38.3 μg/kg dry	50	tt		11	**	31	
08-06-6	tert-Butylbenzene	BRL	38.3 μg/kg dry	50	n	"	n	п	D.	
75-15-0	Carbon disulfide	BRL	192 μg/kg dry	50	u	"	u	11	41	
6-23-5	Carbon tetrachloride	BRL	38.3 μg/kg dry	50	n	"	11		o.	
08-90-7	Chlorobenzene	BRL	38.3 μg/kg dry	50	II.	11	"	11	**	
75-00-3	Chloroethane	BRL	76.7 μg/kg dry	50	11	и	u	n n	n	
57-66-3	Chloroform	BRL	38.3 μg/kg dry	50	II.	11	ч	**	•	
74-87-3	Chloromethane	BRL	76.7 µg/kg dry	50		н	11	11		
95-49-8	2-Chlorotoluene	BRL	38.3 μg/kg dry	50	II .	16	u	**	41	
106-43-4	4-Chlorotoluene	BRL	38.3 μg/kg dry	50	н	n	п	u	(t	
06-12-8	1,2-Dibromo-3-chloropropane	BRL	76.7 µg/kg dry	50	п	11	**	11	n	
124-48-1	Dibromochloromethane	BRL	38.3 µg/kg dry	50	и	#1	п		n	
106-93-4	1,2-Dibromoethane (EDB)	BRL	38.3 μg/kg dry	50	и	11		**	11	
74-95-3	Dibromomethane	BRL	38.3 μg/kg dry	50	n	,,	**	п		
95-50-1	1,2-Dichlorobenzene	BRL	38.3 μg/kg dry	50	44	п	ii.		11	
541-73-1	1,3-Dichlorobenzene	BRL	38.3 μg/kg dry	50	11	н		1)	п	
106-46-7	1,4-Dichlorobenzene	BRL	38.3 μg/kg dry	50	11	п	n n		**	
75-71-8	Dichlorodifluoromethane	BRL	76.7 μg/kg dry	50	11	11	#	**		
	(Freon12)	BICE	, o., pg, ng ar							
75-34-3	1,1-Dichloroethane	BRL	38.3 μg/kg dry	50	11	11	11		11	
107-06-2	1,2-Dichloroethane	BRL	38.3 μg/kg dry	50	u	н	II	н	11	
75-35-4	1,1-Dichloroethene	BRL	38.3 μg/kg dry	50	ü	11	11	n	n	
156-59-2	cis-1,2-Dichloroethene	BRL	38.3 μg/kg dry	50	ii	и	н	n	11	
156-60-5	trans-1,2-Dichloroethene	BRL	38.3 μg/kg dry	50	H	n	11	п	u	
78-87-5	1,2-Dichloropropane	BRL	38.3 μg/kg dry	50	Ħ	D	u	17	U	
142-28-9	1,3-Dichloropropane	BRL	38.3 μg/kg dry	50	ti	н	11	11	11	
594-20-7	2,2-Dichloropropane	BRL	38.3 μg/kg dry	50	44	11	ш	**	11	
563-58-6	1,1-Dichloropropene	BRL	38.3 μg/kg dry	50	u	ti.	n	п	41	
10061-01-5	cis-1,3-Dichloropropene	BRL	38.3 μg/kg dry	50	D D	11	п	n	и	
10061-02-6	trans-1,3-Dichloropropene	BRL	38.3 μg/kg dry	50	п	п	Ħ	п	п	
100-41-4	Ethylbenzene	BRL	38.3 μg/kg dry	50	11	o o	**	ır	"	
87-68-3	Hexachlorobutadiene	BRL	38.3 μg/kg dry	50	u	li .	n	**	11	
591-78-6	2-Hexanone (MBK)	BRL	383 $\mu$ g/kg dry	50	ii		a	п	18	
98-82-8	Isopropylbenzene	BRL	38.3 μg/kg dry	50	tt.	#1	**	u	u u	
99-87-6	4-Isopropyltoluene	BRL	38.3 μg/kg dry	50	н	п	n	11	11	

CAS No.	Analyte(s)	Result	*RDL/Units Di	lution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile (	Organic Compounds									
Volatile (	Organic Compounds		Prepared by method	SW84	16 5030 Soil (h	igh level)				VOC10
634-04-4	Methyl tert-butyl ether	BRL	38.3 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
08-10-1	4-Methyl-2-pentanone (MIBK)	BRL	$383 \mu g/kg dry$	50	п	и	R	н	II	
5-09-2	Methylene chloride	BRL	383 μg/kg dry	50	14	11	16	11	**	
1-20-3	Naphthalene	BRL	38.3 μg/kg dry	50	11	Ħ	#1	**		
03-65-1	n-Propylbenzene	BRL	38.3 μg/kg dry	50	II .	ч	**	**	ш	
.00-42-5	Styrene	BRL	38.3 μg/kg dry	50	11	11	11	II.	н	
30-20-6	1,1,1,2-Tetrachloroethane	BRL	38.3 μg/kg dry	50	ri .	**	11	п	11	
9-34-5	1,1,2,2-Tetrachloroethane	BRL	38.3 μg/kg dry	50	n	It	и	н	IF	
27-18-4	Tetrachloroethene	BRL	38.3 µg/kg dry	50	**	11	n	11	11	
08-88-3	Toluene	BRL	38.3 μg/kg dry	50	st	u	11	11	ti .	
37-61-6	1,2,3-Trichlorobenzene	BRL	38.3 μg/kg dry	50	II	II.	u	н	"	
120-82-1	1,2,4-Trichlorobenzene	BRL	38.3 µg/kg dry	50	n	11	"		ŧı	
71-55-6	1,1,1-Trichloroethane	BRL	38.3 μg/kg dry	50	n-	u	11	0	11	
79-00-5	1,1,2-Trichloroethane	BRL	38.3 μg/kg dry	50	и	"	u	**	"	
79-01-6	Trichloroethene	BRL	38.3 μg/kg dry	50	n	n	**	U	#	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL	38.3 μg/kg dry	50	и	"	11	II	н	
6-18-4	1,2,3-Trichloropropane	BRL	38.3 μg/kg đry	50	n	11	II .	11	11	
5-63-6	1,2,4-Trimethylbenzene	BRL	38.3 μg/kg dry	50	п	u u	· ·	ti.	si	
08-67-8	1,3,5-Trimethylbenzene	BRL	38.3 μg/kg dry	50	n	H H	II.	н	н	
75-01-4	Vinyl chloride	BRL	38.3 μg/kg dry	50	U	"	11	10	11	
1330-20-7	m,p-Xylene	BRL	76.7 μg/kg dry	50	ıı	n	"	11	ü	
95-47-6	o-Xylene	BRL	38.3 μg/kg dry	50	H	"	11	11	н	
109-99-9	Tetrahydrofuran	BRL	383 μg/kg dry	50	II	,,	u	11	11	
60-29-7	Ethyl ether	BRL	38.3 µg/kg dry	50	н	и	D	u	11	
994-05-8	Tert-amyl methyl ether	BRL	38.3 μg/kg dry	50	11	u	41	11	н	
637-92-3	Ethyl tert-butyl ether	BRL	38.3 μg/kg dry	50	**		18	11	Ð	
108-20-3	Di-isopropyl ether	BRL	38.3 μg/kg dry	50	U	"	11	**	,,	
75-65-0	Tert-Butanol / butyl alcohol	BRL	383 μg/kg dry	50	11	Ħ	п	"	11	
123-91-1	1,4-Dioxane	BRL	767 μg/kg dry	50	и	n	и	n	"	
Surrogate	e recoveries:				*****		AU, 2			
460-00-4	4-Bromofluorobenzene	102	70-130 %		н	n	11	"	11	
2037-26-5	Toluene-d8	91.4	70-130 %		11	п	. 11	10	н	
17060-07-0	1,2-Dichloroethane-d4	69.6	70-130 %		n	н	11	н	u	S-C
1868-53-7	Dibromofluoromethane	78.2	70-130 %		11	ti	ii .	11	"	
Extract	able Petroleum Hydrocarbons									
TPH 81	00 by GC		Prepared by method	SW8	846 3550B					
8006-61-9	Gasoline	BRL	31.8 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	506203	6 KG	
68476-30-2	Fuel Oil #2	BRL	31.8 mg/kg dry	1	II.	17	n	u	"	
68476-31-3	Fuel Oil #4	BRL	31.8 mg/kg dry	1	u	11	0	II.	11	
68553-00-4	Fuel Oil #6	BRL	31.8 mg/kg dry	1	ii	II	er er	11	"	
M09800000	Motor Oil	BRL	31.8 mg/kg dry	1	n	н	11	II.	11	
8032-32-4	Ligroin	BRL	31.8 mg/kg dry	1	#1	п	п	**	11	
J00100000	Aviation Fuel	BRL	31.8 mg/kg dry	1	ш	и	11	11	n	
	Unidentified	39.7	31.8 mg/kg dry	1	10	0	n n	п	11	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Extracta	ble Petroleum Hydrocarbons									
TPH 810	0 by GC		Prepared by method	SW84	16 3550B					
	Other Oil	Calculated as	31.8 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	KG	
	Total Petroleum Hydrocarbons	39.7	31.8 mg/kg dry	1	11	п	и	и	11	
urrogate	recoveries:									
386-33-2	1-Chlorooctadecane	70.4	40-140 %		п	"	11	II	ш	
emivola	itile Organic Compounds by Go	C								
	rinated Biphenyls by SW846 808		Prepared by method	SW84	16 3545A					
2674-11-2	PCB 1016	BRL	29.3 μg/kg dry	1	SW846 8082	29-Jun-05	30-Jun-05	5061936	TG/	
1104-28-2	PCB 1221	BRL	29.3 μg/kg dry	1	ti .	11	и	11	11	
1141-16-5	PCB 1232	BRL	29.3 μg/kg dry	1	u	н	D.	ti	11	
3469-21-9	PCB 1242	BRL	29.3 μg/kg dry	1	n	0	11	II.	н	
2672-29-6	PCB 1248	BRL	29.3 μg/kg dry	1	11	17	н	11	n	
1097-69-1	PCB 1254	BRL	29.3 μg/kg dry	1	II	12	11	"	"	
1096-82-5	PCB 1260	BRL	29.3 μg/kg dry	1	ii	ш	**	n	"	
7324-23-5	PCB 1262	BRL	29.3 μg/kg dry	1	tr	n	"	n	11	
1100-14-4	PCB 1268	BRL	29.3 μg/kg dry	1	п	u	41	п	н	
Surrogate	recoveries:									
0386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	80. I	30-150 %		11	**	11	II	п	
051-24-3	Decachlorobiphenyl (Sr)	85.3	30-150 %		11	tr	**	11	п	
Semivol	atile Organic Compounds by G	CMS								
	utile Organic Compounds by SW		Prepared by metho	4 SW8	46 3545A					
			•	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
3-32-9	Acenaphthene	BRL	227 μg/kg dry 227 μg/kg dry	1	3 77 640 62 700	29-Jun-05	01-341-05	3001773	"	
08-96-8	Acenaphthylene	BRL BRL		1	11	1)	**	-		
2-53-3	Aniline	BRL	227 μg/kg dry 227 μg/kg dry	1		н	u		н	
20-12-7	Anthracene	BRL	227 μg/kg dry 227 μg/kg dry	1	11		я		12	
912-24-9	Atrazine Azobenzene/Diphenyldiazine	BRL	227 μg/kg dry 227 μg/kg dry	1	н	. *	п	**	a	
2-87-5	Benzidine	BRL	227 μg/kg dry 227 μg/kg dry	1	п		"	11	11	
6-55-3	Benzo (a) anthracene	BRL	227 μg/kg dry 227 μg/kg dry	1		n	п	н	n	
0-32-8	Benzo (a) pyrene	BRL	227 μg/kg dry	1	11	н	"	11	u	
05-99-2	Benzo (b) fluoranthene	BRL	227 μg/kg dry	1	u	н	п	н	, n	
91-24-2	Benzo (g,h,i) perylene	BRL	227 μg/kg dry	1	tt.	н	11	10	11	
207-08-9	Benzo (k) fluoranthene	BRL	227 μg/kg dry	1	"	11	11	11	н	
55-85-0	Benzoic acid	BRL	227 μg/kg dry	1	n n	н	11	н	u	
100-51-6	Benzyl alcohol	BRL	227 μg/kg dry	1	11	n	п	If	п	
111-91-1	Bis(2-chloroethoxy)methane	BRL	227 μg/kg dry	1	n.	н	11	н	n	
11-44-4	Bis(2-chloroethyl)ether	BRL	227 μg/kg dry	1	n	11	u	ır	ij	
9638-32-9		BRL	227 μg/kg dry	1	0	п	11	n	н	
17-81-7	Bis(2-ethylhexyl)phthalate	BRL	227 μg/kg dry	1	11	п	u	11	"	
101-55-3	4-Bromophenyl phenyl ether	BRL	227 μg/kg dry	1	0	#1	**	11	n n	
85-68-7	Butyl benzyl phthalate	BRL	227 μg/kg dry	1	11	11	п	n	н	
86-74-8	Carbazole	BRL	227 μg/kg dry	1	U	**	**	II	п	
	4-Chloro-3-methylphenol	BRL	227 μg/kg dry	1	u	n	n	н	**	
59-50-7										
59-50-7 106-47-8	4-Chloroaniline	BRL	227 μg/kg dry	1	11°	n	11	n	n	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Semivola	tile Organic Compounds by G	CMS								
Semivolai	tile Organic Compounds by SW	<u> /846 8270C</u>	Prepared by method	1 SW84	6 3545A					
95-57-8	2-Chlorophenol	BRL	227 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	М.В	
7005-72-3	4-Chlorophenyl phenyl ether	BRL	227 μg/kg dry	1	n	11	u u	**	п	
218-01-9	Chrysene	BRL	227 μg/kg dry	1	n	11	11	U	п	
53-70-3	Dibenzo (a,h) anthracene	BRL	227 μg/kg dry	1	II	ıı.	n	n	**	
132-64-9	Dibenzofuran	BRL	227 μg/kg dry	1	п	n	11	11	ii .	
5-50-1	1,2-Dichlorobenzene	BRL	227 μg/kg dry	1	w	11	11	D	н	
641-73-1	1,3-Dichlorobenzene	BRL	227 μg/kg dry	1	u	"	v	11	v	
06-46-7	1,4-Dichlorobenzene	BRL	227 µg/kg dry	1	II.	D	D	"	"	
1-94-1	3,3'-Dichlorobenzidine	BRL	227 μg/kg dry	1	u	**	**	ш	н	
20-83-2	2,4-Dichlorophenol	BRL	227 μg/kg dry	1	n	"	Ð	n	51	
34-66-2	Diethyl phthalate	BRL	227 μg/kg dry	1	Ħ	п	п	H	п	
131-11-3	Dimethyl phthalate	BRL	227 μg/kg dry	1	n	н	n	ш	ıı	
05-67-9	2,4-Dimethylphenol	BRL	227 μg/kg dry	1	п	u	п	11	н	
34-74-2	Di-n-butyl phthalate	BRL	227 μg/kg dry	1	n	u	ų	11		
534-52-1	4,6-Dinitro-2-methylphenol	BRL	227 μg/kg dry	1	11	Ħ	"	u-	11	
51-28-5	2,4-Dinitrophenol	BRL	227 μg/kg dry	1	п	Ir	II	Ħ	**	
21-14-2	2,4-Dinitrotoluene	BRL	227 μg/kg dry	1	и	н	11	11	n	
606-20-2	2,6-Dinitrotoluene	BRL	227 μg/kg dry	1	ıı	н	u	11	n	
17-84-0	Di-n-octyl phthalate	BRL	227 μg/kg dry	1	n	II	11	"	n	
06-44-0	Fluoranthene	BRL	227 μg/kg dry	i	и	н	н	11	D	
6-73-7	Fluorene	BRL	227 μg/kg dry	1	11	n	н	11	н	
18-74-1	Hexachlorobenzene	BRL	227 μg/kg dry	1	н	n	**	п	и	
37-68-3	Hexachlorobutadiene	BRL	227 μg/kg dry	1	п	10	n	11	0	
77-47-4	Hexachlorocyclopentadiene	BRL	227 μg/kg dry	1	н	11	н	H	н	
57-72-1	Hexachloroethane	BRL	227 μg/kg dry	1	u	11	п	н	11	
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	227 μg/kg dry	1	и	"	"	u	н	
90-12-0	1-Methylnaphthalene	BRL	227 μg/kg dry	1	0	T†	"	н	11	
78-59-1	Isophorone	BRL	227 μg/kg dry	1	н	п	**	0	н	
91-57-6	2-Methylnaphthalene	BRL	227 μg/kg dry	1	u	10	u	н	0	
95-48-7	2-Methylphenol	BRL	227 μg/kg dry	1	ч	"	п	п	н	
	06-43,4-Methylphenol	BRL	227 μg/kg dry	1	11	n	11	0	u	
91-20-3	Naphthalene	BRL	227 μg/kg dry	1	н	n	11	II.	n	
88-74-4	2-Nitroaniline	BRL	227 μg/kg dry	1	II.	п	н	11	11	
99-09-2	3-Nitroaniline	BRL	227 μg/kg dry	1	tt.	n	п	н	н	
100-01-6	4-Nitroaniline	BRL	907 μg/kg dry	1	11	11	u	n	0	
98-95-3	Nitrobenzene	BRL	227 μg/kg dry	1	IF	11	ii	11	н	
88-75-5	2-Nitrophenol	BRL	227 μg/kg dry	1	n	n	п	н	11	
100-02-7	4-Nitrophenol	BRL	907 μg/kg dry	1	п	п	11	19	u	
62-75-9	N-Nitrosodimethylamine	BRL	227 μg/kg dry	1	<b>34</b>	**	п	н	11	
621-64-7	N-Nitrosodi-n-propylamine	BRL	227 μg/kg dry	1	11	11	н	11	н	
86-30-6	N-Nitrosodiphenylamine	BRL	227 μg/kg dry	1	11	It	#	11	"	
87-86-5	Pentachlorophenol	BRL	907 μg/kg dry	1	11		п	"	**	
85-01-8	Phenanthrene	BRL	227 μg/kg dry	1	11	n	u	п	11	
108-95-2	Phenol	BRL	227 μg/kg dry	1	u	п	"	п	n	
129-00-0	Pyrene	BRL	227 μg/kg dry	1	п	n	п		D	
122-UU-U	r yrene	DICL	ZZI HEIKE UIY	•						

CAS No.	Analyte(s)	Result	*RDL/Units I	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivola	tile Organic Compounds by (	GCMS								
Semivola	tile Organic Compounds by SV	V846 8270C	Prepared by method	SW84	16 3545A					
120-82-1	1,2,4-Trichlorobenzene	BRL	227 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
95-95-4	2,4,5-Trichlorophenol	BRL	227 µg/kg dry	1	U	ŧI		13	a	
88-06-2	2,4,6-Trichlorophenol	BRL	227 μg/kg dry	1	"	D	н	(1	ш	
Surrogate	recoveries:									
321-60-8	2-Fluorobiphenyl	57.6	30-130 %		11	**	**	n	н	
367-12-4	2-Fluorophenol	59.8	15-110 %		11	11	11	tr	U	
4165-60-0	Nitrobenzene-d5	59.0	30-130 %		п	n	11	41	**	
4165-62-2	Phenol-d5	40.0	15-110 %		и	11	u	0	н	
1718-51-0	Terphenyl-dl4	78.2	30-130 %		U	11	11	er e	**	
118-79-6	2,4,6-Tribromophenol	42.5	15-110 %		u	II.	"	11	п	
Total Mo	etals by EPA 6000/7000 Series	s Methods								
7440-22-4	Silver	BRL	1.06 mg/kg dry	1	SW846 6010B	29-Jun-05	01-Jul-05	5061913	HB	
7440-38-2	Arsenic	8.71	1.59 mg/kg dry	1	"	u u	11	11	u	
7440-39-3	Barium	17.9	0.530 mg/kg dry	1	п	n	u	11	u	
7440-43-9	Cadmium	BRL	0.265 mg/kg dry	1	**	11	0	n	н	
7440-47-3	Chromium	12.9	0.530 mg/kg dry	1	n n	н	н	u	"	
7439-97-6	Mercury	BRL	0.183 mg/kg dry	1	SW846 7471A	9	01-Jul-05	5061914	YP	
7439-92-1	Lead	6.40	0.794 mg/kg dry	1	SW846 6010B	и	01-Jul-05	5061913	HB	
7782-49-2	Selenium	BRL	1.59 mg/kg dry	1	n	0	n	н	"	
Toxicity	Characteristics									
•	Flashpoint	> 200	°F	1	SW846 1010	30-Jun-05	30-Jun-05	5062077	LK	
	pН	9.87	pH Units	1	SW846 9045C	30-Jul-05 11:00	30-Jul-05	5070031	BD	HT-2
Reactivii	ty Cyanide/Sulfide		Prepared by method	I Gene	eral Preparation					
	Reactivity	Negative	mg/kg dry	1	SW846 Ch. 7.3	29-Jun-05	29-Jun-05	5062033	3 LK	
	Reactive Cyanide	BRL	24.9 mg/kg dry	1	tr	#	n	77	D	
	Reactive Sulfide	BRL	49.8 mg/kg dry	1	u	**	11	n	"	
General	Chemistry Parameters									
	% Solids	93.4	%	1	SM2540 G Mod.	29-Jun-05	30-Jun-05	506197	4 JAK	
	Specific Conductance (EC)	102	uS/cm	1	SM2510B	01-Jul-05	01-Jul-05	507006	4 BD	

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CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Volatile (	Organic Compounds									
	VOC Extraction	Field extracted	N/A	1	VOC	28-Jun-05	28-Jun-05	5061926	BD	
olatile (	Organic Compounds		Prepared by method	1 SW84	6 5030 Soil (h	igh level)				voc
7-64-1	Acetone	BRL	858 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
07-13-1	Acrylonitrile	BRL	42.9 μg/kg dry	50	11	It	11	0	11	
1-43-2	Benzene	BRL	42.9 μg/kg dry	50	rt .	11	н	21	п	
08-86-1	Bromobenzene	BRL	42.9 μg/kg dry	50	υ	п	II.	**	11	
4-97-5	Bromochloromethane	BRL	42.9 μg/kg đry	50	tt	u u	**	**	9	
5-27-4	Bromodichloromethane	BRL	42.9 μg/kg dry	50	II	11	"		0	
5-25-2	Bromoform	BRL	42.9 μg/kg dry	50	н	II .	41	11	13	
4-83-9	Bromomethane	BRL	85.8 μg/kg dry	50	п	n	"	ti	11	
8-93-3	2-Butanone (MEK)	BRL	429 μg/kg dry	50	n	n	"	19	"	
04-51-8	n-Butylbenzene	BRL	42.9 μg/kg dry	50	n .	u	н	п	,11	
35-98-8	sec-Butylbenzene	BRL	42.9 μg/kg dry	50	u	n	11	D	п	
8-06-6	tert-Butylbenzene	BRL	42.9 μg/kg dry	50	н	11	á	n	"	
5-15-0	Carbon disulfide	BRL	214 μg/kg dry	50	11	11	10	**	U	
6-23-5	Carbon tetrachloride	BRL	42.9 μg/kg dry	50	n	п	11	11	u	
08-90-7	Chlorobenzene	BRL	42.9 μg/kg dry	50	u	u	11	11	U	
5-00-3	Chloroethane	BRL	85.8 µg/kg dry	50	H	n.	R	u	H	
7-66-3	Chloroform	BRL	42.9 μg/kg dry	50	11	n	11	11	п	
4-87-3	Chloromethane	BRL	85.8 μg/kg dry	50	и	11	11	*1	u	
5-49-8	2-Chlorotoluene	BRL	42.9 μg/kg dry	50	11	н	11	n	n	
06-43-4	4-Chlorotoluene	BRL	42.9 μg/kg dry	50	rt	- 11	11	en en	tt	
6-12-8	1,2-Dibromo-3-chloropropane	BRL	85.8 μg/kg dry	50	44	11	11		и	
24-48-1	Dibromochloromethane	BRL	42.9 μg/kg dry	50	н	11	II.	н	II.	
06-93-4	1,2-Dibromoethane (EDB)	BRL	42.9 μg/kg dry	50	u	II	u	D.	11	
4-95-3	Dibromomethane	BRL	42.9 μg/kg dry	50	n .	11	. "	n	n	
5-50-1	1,2-Dichlorobenzene	BRL	42.9 μg/kg dry	50	u .	11	n	11	u	
41-73-1	1,3-Dichlorobenzene	BRL	42.9 μg/kg dry	50	11	u	11		ır	
06-46-7	1,4-Dichlorobenzene	BRL	42.9 μg/kg dry	50	II	11	п	10	n	
75-71-8	Dichlorodifluoromethane	BRL	85.8 μg/kg dry	50	tt	n	"	ш	n	
75 24 2	(Freon12)	. DDY	42.0	50	11		u	h	O.	
75-34-3	1,1-Dichloroethane	BRL	42.9 μg/kg dry		u	11	и	0		
107-06-2	1,2-Dichloroethane	BRL	42.9 μg/kg dry	50	n	ır	н		n	
75-35-4	1,1-Dichloroethene	BRL	42.9 μg/kg dry	50	11		11		и	
.56-59-2	cis-1,2-Dichloroethene	BRL	42.9 μg/kg dry	50	D.	11	0	п	n	
56-60-5	trans-1,2-Dichloroethene	BRL	42.9 μg/kg dry	50	"	n.				
8-87-5	1,2-Dichloropropane	BRL	42.9 μg/kg dry	50		11		11	**	
42-28-9	1,3-Dichloropropane	BRL	42.9 μg/kg dry	50	II.				11	
94-20-7	2,2-Dichloropropane	BRL	42.9 μg/kg dry	50	"			,,		
63-58-6	1,1-Dichloropropene	BRL	42.9 μg/kg dry	50	"	"			"	
0061-01-5	cis-1,3-Dichloropropene	BRL	42.9 μg/kg dry	50	11	" u	11	,,	11	
10061-02-6	trans-1,3-Dichloropropene	BRL	42.9 μg/kg dry	50		"	"			
100-41-4	Ethylbenzene	BRL	42.9 μg/kg dry	50				U	,,	
87-68-3	Hexachlorobutadiene	BRL	42.9 μg/kg dry	50	н	#	**	12		
591-78-6	2-Hexanone (MBK)	BRL	429 μg/kg dry	50		"	li .	"		
98-82-8	Isopropylbenzene	BRL	42.9 μg/kg dry	50	u	п	11	11	ĮI.	
99-87-6	4-Isopropyltoluene	BRL	42.9 μg/kg dry	50	II.	II	ū	11	11	

CAS No.	Analyte(s)	Result	*RDL/Units L	ilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile C	Organic Compounds									
Volatile C	Prganic Compounds		Prepared by method	SW84	6 5030 Soil (h	igh level)				VOC10
634-04-4	Methyl tert-butyl ether	BRL	42.9 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
08-10-1	4-Methyl-2-pentanone (MIBK)	BRL	429 μg/kg dry	50	п	*	п	a	**	
75-09-2	Methylene chloride	BRL	429 μg/kg dry	50	п	11		**	п	
01-20-3	Naphthalene	BRL	42.9 μg/kg dry	50	ŧ	n	II	п	11	
03-65-1	n-Propylbenzene	BRL	42.9 μg/kg dry	50	U	u	11	"	п	
100-42-5	Styrene	BRL	42.9 μg/kg dry	50	11	11	ır	"	11	
530-20-6	1,1,1,2-Tetrachloroethane	BRL	42.9 μg/kg dry	50	II.	11	n	11	11	
79-34-5	1,1,2,2-Tetrachloroethane	BRL	42.9 μg/kg dry	50	ft.	u	"	"	n	
127-18-4	Tetrachloroethene	BRL	42.9 μg/kg dry	50	п	II.	и	u	**	
08-88-3	Toluene	BRL	42.9 μg/kg dry	50	ft	n .	п	n	n	
37-61-6	1,2,3-Trichlorobenzene	BRL	42.9 μg/kg dry	50	Н	0	#	п	11	
20-82-1	1,2,4-Trichlorobenzene	BRL	42.9 μg/kg dry	50	n	п	n	**	"	
1-55-6	1,1,1-Trichloroethane	BRL	42.9 μg/kg dry	50	**	n	11	0	и	
79-00-5	1,1,2-Trichloroethane	BRL	42.9 μg/kg dry	50	II.	n	u	ıı	D	
79-01-6	Trichloroethene	BRL	42.9 μg/kg dry	50	u	н	11	n n	II	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL	42.9 μg/kg dry	50	п	u	Ir	**	а	
6-18-4	1,2,3-Trichloropropane	BRL	42.9 μg/kg dry	50	II	n	п		"	
5-63-6	1,2,4-Trimethylbenzene	BRL	42.9 μg/kg dry	50	rr .	11	н	н	D	
08-67-8	1,3,5-Trimethylbenzene	BRL	42.9 μg/kg dry	50	n	u	n	n	н	
5-01-4	Vinyl chloride	BRL	42.9 μg/kg dry	50	e	u	ti	и	u	
330-20-7	m,p-Xylene	BRL	85.8 μg/kg dry	50	11		п		11	
15-47-6	o-Xylene	BRL	42.9 μg/kg dry	50	u	ır	н	*1	n	
09-99-9	Tetrahydrofuran	BRL	429 μg/kg dry	50	n	n	11	11	11	
50-29-7	Ethyl ether	BRL	42.9 μg/kg dry	50	II.	11	п	11		
994-05-8	Tert-amyl methyl ether	BRL	42.9 μg/kg dry	50	n	н ,	n	n	u	
537-92-3	Ethyl tert-butyl ether	BRL	42.9 μg/kg dry	50	и	11	п	11	u	
108-20-3	Di-isopropyl ether	BRL	42.9 μg/kg dry	50	H .	н	n	U	n	
75-65-0	Tert-Butanol / butyl alcohol	BRL	429 μg/kg dry	50	11	11	11	и	н	
123-91-1	1,4-Dioxane	BRL	858 μg/kg dry	50	it	n	u	u	11	
Curragata	recoveries:									
460-00-4	4-Bromofluorobenzene	103	70-130 %		п	п	ю	11	11	
2037-26-5	Toluene-d8	93.4	70-130 %		u	11		**	**	
17060-07-0	1,2-Dichloroethane-d4	68.4	70-130 %		II.	п	**	11	u	S-G
1868-53-7	Dibromofluoromethane	78.6	70-130 %		II.	16	**	"	n	
	ble Petroleum Hydrocarbons	70.0	70 130 70							
TPH 810	0 by GC		Prepared by method	sw8	46 3550B					
8006-61-9	Gasoline	BRL	32.5 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	506203	6 KG	
68476-30-2	Fuel Oil #2	BRL	32.5 mg/kg dry	1	31331110u.	II	п	11	н	
68476-31-3	Fuel Oil #4	BRL	32.5 mg/kg dry	1	ıı	14	•	н	11	
68553-00-4	Fuel Oil #6	BRL	32.5 mg/kg dry	1	п	41	11	u	"	
M09800000	Motor Oil	BRL	32.5 mg/kg dry	1	t)	п	u	u	11	
8032-32-4	Ligroin	BRL	32.5 mg/kg dry	1	11	11	и	**	ıı.	
J00100000	Aviation Fuel	BRL	32.5 mg/kg dry	1	11	и	u		n	
•	Unidentified	BRL	32.5 mg/kg dry	1				n	#	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzea	Batch	Analyst	Flag
Extractal	ble Petroleum Hydrocarbons									
TPH 8100	O by GC		Prepared by method	SW84	16 3550B					
	Other Oil	BRL	32.5 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	KG	
	Total Petroleum Hydrocarbons	BRL	32.5 mg/kg dry	1	11	11	11	n	"	
urrogate	recoveries:									
386-33-2	1-Chlorooctadecane	61.7	40-140 %		n	n	R	11	11	
Semivola	tile Organic Compounds by Go	С								
olychlor	rinated Biphenyls by SW846 808	<u>22</u>	Prepared by method	SW84	46 3545A					
2674-11-2	PCB 1016	BRL	30.9 μg/kg dry	1	SW846 8082	29-Jun-05	30-Jun-05	5061936	TG/	
1104-28-2	PCB 1221	BRL	30.9 μg/kg dry	1	11	n	<b>11</b>	ч	п	
1141-16-5	PCB 1232	BRL	30.9 μg/kg đry	1	11	n	п	н	11	
3469-21-9	PCB 1242	BRL	30.9 μg/kg dry	1	н	и	0	11	0	
2672-29-6	PCB 1248	BRL	30.9 μg/kg dry	1	11°	n	п	**	11	
1097-69-1	PCB 1254	BRL	30.9 μg/kg dry	1	н	19	#	0	u	
1096-82-5	PCB 1260	BRL	30.9 μg/kg dry	1	и	**	n	11	D	
37324-23-5	PCB 1262	BRL	30.9 μg/kg dry	1	и	11	11	"	**	
11100-14-4	PCB 1268	BRL	30.9 μg/kg dry	1	D.	n	O	11	n	
Surrogate	recoveries:									
0386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	90.0	30-150 %		19	**	**	U	и	
051-24-3	Decachlorobiphenyl (Sr)	94.8	30-150 %		. и	u	II .	11	11	
Semivola	atile Organic Compounds by G	CMS								
	atile Organic Compounds by SW		Prepared by metho	a SW8	46 3545A					
			238 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
83-32-9	Acenaphthene	BRL BRL	238 μg/kg dry 238 μg/kg dry	1	# 840 8270C	29-3011-03	01-341-03	J001775	141.15	
208-96-8	Acenaphthylene	BRL	238 μg/kg dry	1	11	n	u	н	"	
52-53-3	Aniline		238 µg/kg dry	1	н	11	11	n	11	
120-12-7	Anthracene	BRL		1	11	11	n			
1912-24-9	Atrazine	BRL	238 μg/kg dry	1	11	11	et	U	0	
103-33-3	Azobenzene/Diphenyldiazine	BRL	238 μg/kg dry	1	**	n	u	11	"	
92-87-5	Benzidine	BRL	238 μg/kg dry	1	16		п	n	u	
56-55-3	Benzo (a) anthracene	289	238 μg/kg dry	1	н	**	11	**	.,	
50-32-8	Benzo (a) pyrene	BRL	238 µg/kg dry	1	11	11	11	n		
205-99-2	Benzo (b) fluoranthene	BRL	238 μg/kg dry			11	**	**	,,	
191-24-2	Benzo (g,h,i) perylene	BRL	238 μg/kg dry	1	u	'n	н	и	п	
207-08-9	Benzo (k) fluoranthene	BRL	238 μg/kg dry		u.	11	п	,,	п	
65-85-0	Benzoic acid	BRL	238 μg/kg dry 238 μg/kg dry	1	**	п	**	11	n	
100-51-6	Benzyl alcohol	BRL		1	#	•	u.	n	n	
111-91-1	Bis(2-chloroethoxy)methane	BRL	238 μg/kg dry	1	lt	11	u.	"	n	
111-44-4	Bis(2-chloroethyl)ether	BRL	238 μg/kg dry	1	0	11	11		"	
39638-32-9	Bis(2-chloroisopropyl)ether	BRL	238 μg/kg dry	1	II	11	11	**		
117-81-7	Bis(2-ethylhexyl)phthalate	BRL	238 μg/kg dry		н	0	n	"	"	
101-55-3	4-Bromophenyl phenyl ether	BRL	238 μg/kg dry	1	u		u	u		
85-68-7	Butyl benzyl phthalate	BRL	238 μg/kg dry	1	II.		**	"	"	
86-74-8	Carbazole	BRL	238 μg/kg dry	1			 II		11	
	4-Chloro-3-methylphenol	BRL	238 μg/kg dry	I	"	.*	**	••	•	
59-50-7 106-47-8	4-Chloroaniline	BRL	238 μg/kg dry	1		U		u	п	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Semivola	tile Organic Compounds by G	CMS								
Semivola	tile Organic Compounds by SW	<u>′846 8270C</u>	Prepared by method	SW84	6 3545A					
5-57-8	2-Chlorophenol	BRL	238 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
7005-72-3	4-Chlorophenyl phenyl ether	BRL	238 μg/kg dry	1	Ð	п	u	и	u	
18-01-9	Chrysene	332	238 µg/kg dry	1	11	п	n	п	11	
3-70-3	Dibenzo (a,h) anthracene	BRL	238 μg/kg dry	1	н	n	Tr.	u	•	
32-64-9	Dibenzofuran	BRL	238 μg/kg dry	1	11	D	п	п	н	
5-50-1	1,2-Dichlorobenzene	BRL	238 µg/kg dry	1	n .	11	11	11	II.	
41-73-1	1,3-Dichlorobenzene	BRL	238 μg/kg dry	1	"	и	11	n	o o	
06-46-7	1,4-Dichlorobenzene	BRL	238 μg/kg dry	1	0	п	п		**	
1-94-1	3,3'-Dichlorobenzidine	BRL	238 μg/kg dry	1	11	11	11	11	11	
20-83-2	2,4-Dichlorophenol	BRL	238 μg/kg dry	1	н	n	u u	et	41	
4-66-2	Diethyl phthalate	BRL	238 μg/kg dry	1	tt.	10	n	II.	н	
31-11-3	Dimethyl phthalate	BRL	238 μg/kg dry	1	11	н	n	п	It	
05-67-9	2,4-Dimethylphenol	BRL	238 μg/kg dry	1		u .	п	n	11	
4-74-2	Di-n-butyl phthalate	BRL	238 μg/kg dry	1	11	11	11	ш	н	
34-52-1	4,6-Dinitro-2-methylphenol	BRL	238 μg/kg dry	1	n	n	11	n	11	
1-28-5	2,4-Dinitrophenol	BRL	238 μg/kg dry	1	"	н	п	н	9	
21-14-2	2,4-Dinitrotoluene	BRL	238 μg/kg dry	1	u	n	н	n.	11	
06-20-2	2,6-Dinitrotoluene	BRL	238 μg/kg dry	1	н	11	u		n	
17-84-0	Di-n-octyl phthalate	BRL	238 μg/kg dry	1	H	u	11		п	
06-44-0	Fluoranthene	435	238 μg/kg dry	1	11	o o	R	n	u	
6-73-7	Fluorene	BRL	238 μg/kg dry	1	#	и	п	п		
18-74-1	Hexachlorobenzene	BRL	238 μg/kg dry	1	и	ıı	11	n	11	
7-68-3	Hexachlorobutadiene	BRL	238 μg/kg dry	1	ti.	11	"	II	0	
7-47-4	Hexachlorocyclopentadiene	BRL	238 μg/kg dry	1	н	n	п	11	77	
7-72-1	Hexachloroethane	BRL	238 μg/kg dry	1	n n	11	u		11	
93-39-5	Indeno (1,2,3-cd) pyrene	BRL	238 μg/kg dry	1	н	11	II.	H	**	
0-12-0	1-Methylnaphthalene	BRL	238 μg/kg dry	1	n.	II.	11	11	"	
8-59-1	Isophorone	BRL	238 μg/kg dry	1	н	**	п	U	"	
91-57-6	2-Methylnaphthalene	BRL	238 μg/kg dry	1	,	H	11	D	**	
95-48-7	2-Methylphenol	BRL	238 μg/kg dry	1	п	п		"	н	
	2-Methylphenol	BRL	238 μg/kg dry	1	11	n	u	ır	11	
91-20-3	Naphthalene	BRL	238 μg/kg dry	1	11	11	#	11	"	
88-74-4	2-Nitroaniline	BRL	238 μg/kg dry	1	n	**	п	. "	n	
99-09-2	3-Nitroaniline	BRL	238 μg/kg dry	1	**	D	11	1)	и,	
100-01-6	4-Nitroaniline	BRL	953 μg/kg dry	1	it.	11	u	**	н	
98-95-3	Nitrobenzene	BRL	238 μg/kg dry	1	11	n.	11	D.		
88-75-5	2-Nitrophenol	BRL	238 μg/kg dry	1	п	n	59	*1	"	
100-02-7	4-Nitrophenol	BRL	953 μg/kg dry	1	11	**	11	п	**	
		BRL	238 μg/kg dry	1	tr	и.	u	0	u	
62-75-9	N-Nitrosodimethylamine			1	n	11	11	"		
621-64-7	N-Nitrosodi-n-propylamine	BRL	238 μg/kg dry	1	u	u.	**	п	н	
86-30-6	N-Nitrosodiphenylamine	BRL	238 μg/kg dry	1	11	19	п	11	и	
87-86-5	Pentachlorophenol	BRL	953 μg/kg dry	1	H	n	11	11	н	
85-01-8	Phenanthrene	BRL	238 μg/kg dry		11	tt	п	11	u	
108-95-2	Phenol	BRL	238 μg/kg dry	1	11		"	u u	11	
129-00-0	Pyrene	445	238 μg/kg dry	1						

CAS No.	Analyte(s)	Result	*RDL/Units 1	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivola	ntile Organic Compounds by (	GCMS								
Semivola	tile Organic Compounds by SV	V846 8270C	Prepared by method	SW84	46 3545A					
120-82-1	1,2,4-Trichlorobenzene	BRL	238 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
95-95-4	2,4,5-Trichlorophenol	BRL	238 μg/kg dry	1	ш	11	11	11	**	
88-06-2	2,4,6-Trichlorophenol	BRL	238 μg/kg dry	1	11	н	н	п	ш	
Surrogate	recoveries:									
321-60-8	2-Fluorobiphenyl	55.2	30-130 %		п	11	и	н	11	
367-12-4	2-Fluorophenol	46.1	15-110 %		11	**	и	b	u	
4165-60-0	Nitrobenzene-d5	65.1	30-130 %		"	ij	u		It	
4165-62-2	Phenol-d5	55.2	15-110 %		n	11	11	н	п	
1718-51-0	Terphenyl-dl4	77.2	30-130 %		"	н	ч	"	п	
118-79-6	2,4,6-Tribromophenol	44.0	15-110 %		"	п	н	11	17	
Total M	etals by EPA 6000/7000 Series	s Methods								
7440-22-4	Silver	BRL	1.08 mg/kg dry	1	SW846 6010B	29-Jun-05	01-Jul-05	5061913	HB	
7440-38-2	Arsenic	9.48	1.63 mg/kg dry	1	n	п	"	D.	11	
7440-39-3	Barium	20.0	0.542 mg/kg dry	1	п	11	п	**	ti	
7440-43-9	Cadmium	BRL	0.271 mg/kg dry	1	11	п	**	**	11	
7440-47-3	Chromium	14.1	0.542 mg/kg dry	1	D	11	п	n	11	
7439-97-6	Mercury	BRL	0.197 mg/kg dry	1	SW846 7471A	и	01-Jul-05	5061914	YP	
7439-92-1	Lead	15.6	0.813 mg/kg dry	1	SW846 6010B	<b>31</b>	01-Jul-05	5061913	HB	
7782-49-2	Selenium	BRL	1.63 mg/kg dry	1	11	u	11	11	**	
Toxicity	Characteristics									
	Flashpoint	> 200	°F	1	SW846 1010	30-Jun-05	30-Jun-05	5062077	LK LK	
	pН	8.20	pH Units	1	SW846 9045C	30-Jul-05 11:00	30-Jul-05	5070031	BD	HT-2
<u>Reactivi</u>	ity Cyanide/Sulfide		Prepared by method	d Gene	eral Preparation					
	Reactivity	Negative	mg/kg dry	1	SW846 Ch. 7.3	29-Jun-05	29-Jun-05	5062033	3 LK	
	Reactive Cyanide	BRL	24.9 mg/kg dry	1	ii	п	11	11	u	
	Reactive Sulfide	BRL	49.7 mg/kg dry	1	n	**	ш	п	D	
General	l Chemistry Parameters									
	% Solids	90.8	%	1	SM2540 G Mod.	29-Jun-05	30-Jun-05	5061974	4 JAK	
	Specific Conductance (EC)	215	uS/cm	1	SM2510B	01-Jul-05	01-Jul-05	507006	4 BD	

CAS No.	Analyte(s)	Result	*RDL/Units I	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile (	Organic Compounds									
	VOC Extraction	Field extracted	N/A	1	VOC	28-Jun-05	28-Jun-05	5061926	BD	
Volatile (	Organic Compounds		Prepared by method	SW84	l6 5030 Soil (h	igh level)				VOC10
7-64-1	Acetone	BRL	988 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
07-13-1	Acrylonitrile	BRL	49.4 μg/kg dry	50	0	n	u	ţı	11	
1-43-2	Benzene	BRL	49.4 μg/kg dry	50	II	0	n	п	н	
08-86-1	Bromobenzene	BRL	49.4 μg/kg dry	50	tt.	н	п	11	11	
4-97-5	Bromochloromethane	BRL	49.4 μg/kg dry	50	ű.	11	**	tt	11	
5-27-4	Bromodichloromethane	BRL	49.4 μg/kg dry	50	11	u	н	п	11	
5-25-2	Bromoform	BRL	49.4 μg/kg dry	50	n	"	41	¥	11	
4-83-9	Bromomethane	BRL	98.8 μg/kg dry	50	n	n	н	II .	"	
8-93-3	2-Butanone (MEK)	BRL	494 μg/kg dry	50	n	0	**	11	#	
04-51-8	n-Butylbenzene	BRL	49.4 µg/kg dry	50	п	u	н	п	11	
35-98-8	sec-Butylbenzene	BRL	49.4 μg/kg dry	50		11	ш	**	11	
8-06-6	tert-Butylbenzene	BRL	49.4 μg/kg dry	50	D	· ·	11	b	41	
75-15-0	Carbon disulfide	BRL	247 μg/kg dry	50	11	н	II	"	11	
6-23-5	Carbon tetrachloride	BRL	49.4 μg/kg dry	50	II	11	11	11	n	
08-90-7	Chlorobenzene	BRL	49.4 μg/kg dry	50	II.	н	п		11	
5-00-3	Chloroethane	BRL	98.8 μg/kg dry	50	tr	10	"	**	13	
7-66-3	Chloroform	BRL	49.4 μg/kg dry	50	п		II.	. **	II	
4-87-3	Chloromethane	BRL	98.8 μg/kg dry	50	R	N	**	"	#	
5-49-8	2-Chlorotoluene	BRL	49.4 μg/kg dry	50	ш	11	n	"	II	
06-43-4	4-Chlorotoluene	BRL	49.4 μg/kg dry	50	и	п	11	ır	II	
6-12-8	1,2-Dibromo-3-chloropropane	BRL	98.8 μg/kg dry	50	n	11	н	"	ıı	
24-48-1	Dibromochloromethane	BRL	49.4 μg/kg dry	50	н	"	11	) to	11	
06-93-4	1,2-Dibromoethane (EDB)	BRL	49.4 μg/kg dry	50	u	11	11	11	ч	
74-95-3	Dibromomethane	BRL	49.4 μg/kg dry	50	ш	н	It	"	11	
95-50-1	1,2-Dichlorobenzene	BRL	49.4 μg/kg dry	50	ij	11		II.	11	
41-73-1	1,3-Dichlorobenzene	BRL	49.4 μg/kg dry	50	u	н	ш	н	n	
06-46-7	1,4-Dichlorobenzene	BRL	49.4 μg/kg dry	50	tł.	n	n	11	11	
75-71-8	Dichlorodifluoromethane	BRL	98.8 μg/kg dry	50	Ħ	н	II.	n	н	
	(Freon12)			50	11	11	ır		(4	
5-34-3	1,1-Dichloroethane	BRL	49.4 μg/kg dry	50	n	"		"	" n	
107-06-2	1,2-Dichloroethane	BRL	49.4 μg/kg dry	50	н	н	11	**	···	
75-35-4	1,1-Dichloroethene	BRL	49.4 μg/kg dry	50	ıt.	11			14	
156-59-2	cis-1,2-Dichloroethene	BRL	49.4 μg/kg đry	50	11	n	11	41	11	
156-60-5	trans-1,2-Dichloroethene	BRL	49.4 μg/kg dry	50	9	0			11	
78-87-5	1,2-Dichloropropane	BRL	49.4 μg/kg dry	50						
142-28-9	1,3-Dichloropropane	BRL	49.4 μg/kg dry	50	 11			U	n	
594-20-7	2,2-Dichloropropane	BRL	49.4 μg/kg dry	50	n	,,	11	11	R	
563-58-6	1,1-Dichloropropene	BRL	49.4 μg/kg dry	50		11			11	
10061-01-5	. ,	BRL	49.4 μg/kg dry	50						
10061-02-6	1 1	BRL	49.4 μg/kg dry	50	u				11	
100-41-4	Ethylbenzene	BRL	49.4 μg/kg dry	50			"	*1	"	
87-68-3	Hexachlorobutadiene	BRL	49.4 μg/kg dry	50			"		"	
591-78-6	2-Hexanone (MBK)	BRL	494 μg/kg dry	50	U 30	**		, ,	"	
98-82-8	Isopropylbenzene	BRL	49.4 μg/kg dry	50						
99-87-6	4-Isopropyltoluene	BRL	49.4 μg/kg dry	50	II	15	11	11	11	

CAS No.	Analyte(s)	Result	*RDL/Units D	ilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
/olatile C	Organic Compounds									
olatile C	Prganic Compounds		Prepared by method	SW84	6 5030 Soil (h	igh level)				VOC
634-04-4	Methyl tert-butyl ether	BRL	49.4 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
08-10-1	4-Methyl-2-pentanone (MIBK)	BRL	494 μg/kg dry	50	11	10	u	и	11	
5-09-2	Methylene chloride	BRL	494 μg/kg dry	50	t#	и	**	**	11	
1-20-3	Naphthalene	BRL	49.4 μg/kg dry	50	н	ц	н	11	Ħ	
03-65-1	n-Propylbenzene	BRL	49.4 μg/kg dry	50	9	n		11	U	
00-42-5	Styrene	BRL	49.4 μg/kg dry	50	**	II .	ti	n	ff	
30-20-6	1,1,1,2-Tetrachloroethane	BRL	49.4 μg/kg dry	50	u	u	ч	n	ti	
9-34-5	1,1,2,2-Tetrachloroethane	BRL	49.4 μg/kg dry	50	11	Ħ	11	ш	tr.	
27-18-4	Tetrachloroethene	BRL	49.4 μg/kg dry	50	**	ш	11	n	11	
08-88-3	Toluene	BRL	49.4 μg/kg dry	50	(1)	H	u	u	11	
7-61-6	1,2,3-Trichlorobenzene	BRL	49.4 μg/kg dry	50	11	н	н	п	n	
20-82-1	1,2,4-Trichlorobenzene	BRL	49.4 μg/kg dry	50	u	0	11	41	"	
71-55-6	1,1,1-Trichloroethane	BRL	49.4 μg/kg dry	50	tr.	11	11	11	11	
79-00-5	1,1,2-Trichloroethane	BRL	49.4 μg/kg dry	50	п	"	11	u	u	
79-01-6	Trichloroethene	BRL	49.4 μg/kg dry	50	"		11	11	п	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL	49.4 μg/kg dry	50	II.	н	п	"	11	
06-18-4	1,2,3-Trichloropropane	BRL	49.4 μg/kg dry	50	II	1)	**	11	II.	
5-63-6	1,2,4-Trimethylbenzene	BRL	49.4 μg/kg dry	50	н	u	"	. 0	11	
08-67-8	1,3,5-Trimethylbenzene	BRL	49.4 μg/kg dry	50	n	11	u	"	"	
5-01-4	Vinyl chloride	BRL	49.4 μg/kg dry	50	п	ti	н	u u	11	
330-20-7	m,p-Xylene	BRL	98.8 μg/kg dry	50	u	ш	ıı .	0	н	
5-47-6	o-Xylene	BRL	49.4 μg/kg dry	50	IF	*1	**	u	II	
109-99-9	Tetrahydrofuran	BRL	494 μg/kg dry	50	"	U	11	п	11	
50-29-7	Ethyl ether	BRL	49.4 μg/kg dry	50	lt.	11	"	н	н	
994-05-8	Tert-amyl methyl ether	BRL	49.4 μg/kg dry	50	11	n	11	u	11	
637-92-3	Ethyl tert-butyl ether	BRL	49.4 μg/kg dry	50	H	11	u	11	и	
108-20-3	Di-isopropyl ether	BRL	49.4 μg/kg đry	50	11	tı	11	II.	H.	
75-65-0	Tert-Butanol / butyl alcohol	BRL	494 μg/kg dry	50	n	n	"	<b>\$1</b>	н	
123-91-1	1,4-Dioxane	BRL	988 μg/kg dry	50	u	11	11	II.	**	
Surrogate	recoveries:					***************************************				
460-00-4	4-Bromofluorobenzene	102	70-130 %		11	н	tt	tt	u	
2037-26-5	Toluene-d8	90.4	70-130 %		n	п	u	п	n	
17060-07-0	1,2-Dichloroethane-d4	70.0	70-130 %		**	**	11	tt	н	
1868-53-7	Dibromofluoromethane	80.6	70-130 %		н	п	u	11	ш	
Extracta	able Petroleum Hydrocarbons									
	00 by GC		Prepared by method	sw8	346 3550B					
8006-61-9	Gasoline	BRL	33.4 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	506203	6 KG	
68476-30-2	Fuel Oil #2	BRL	33.4 mg/kg dry	1	"	н	IF	ti	11	
68476-31-3	Fuel Oil #4	BRL	33.4 mg/kg dry	1	it	11	п	u u	D	
68553-00-4	Fuel Oil #6	Calculated as	33.4 mg/kg dry	1	n	п	н	11	н	
M09800000		BRL	33.4 mg/kg dry	1	11	u	н	11	п	
8032-32-4	Ligroin	BRL	33.4 mg/kg dry	1	n	п	II.	D.	11	
J00100000	Aviation Fuel	BRL	33.4 mg/kg dry	1	n	u	Ħ	#1	II.	
		-	2 0 7						н	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Extractal	ble Petroleum Hydrocarbons									
TPH 8100	0 by GC		Prepared by method	SW84	6 3550B					
	Other Oil	BRL	33.4 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	KG	
	Total Petroleum Hydrocarbons	169	33.4 mg/kg dry	1	u.	п	и	n	ti .	
Surrogate	recoveries:									
3386-33-2	1-Chlorooctadecane	78.2	40-140 %		а	п	н	U	11	
Semivola	itile Organic Compounds by Go	C								
Polychlo	rinated Biphenyls by SW846 808	2	Prepared by method	SW84	16 3545A					
2674-11-2	PCB 1016	BRL	28.8 μg/kg dry	1	SW846 8082	29 <b>-</b> Jun-05	30-Jun-05	5061936	TG/	
11104-28-2	PCB 1221	BRL	28.8 μg/kg dry	1	u	ii .	"	п	н	
11141-16-5	PCB 1232	BRL	28.8 μg/kg dry	1	n	**	u	R		
53469-21-9	PCB 1242	BRL	28.8 μg/kg dry	1	(t	"	u	11	н	
12672-29-6	PCB 1248	BRL	28.8 μg/kg dry	1	n	n	n	п	п	
11097-69-1	PCB 1254	BRL	28.8 μg/kg dry	1	н	11	11	n	11	
11096-82-5	PCB 1260	BRL	28.8 μg/kg dry	1	μ	"	11	II.	n	
37324-23-5	PCB 1262	BRL	28.8 μg/kg dry	1	t)	0	D.	11	н	
11100-14-4	PCB 1268	BRL	28.8 μg/kg dry	1	11	41	11	"	11	
Surrogate	recoveries:	,							,	
10386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	80.1	30-150 %		u	0	IF	n	Ħ	
2051-24-3	Decachlorobiphenyl (Sr)	90.2	30-150 %		H	11	u	*	II.	
Semivol	atile Organic Compounds by G	CMS								
	atile Organic Compounds by SW		Prepared by metho	a SW8	46 3545A					
	•	BRL	•	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	3 M.B	
83-32-9	Acenaphthene	BRL	481 μg/kg dry 481 μg/kg dry	2	0	25-3tt1-05	. "	"	111.13	
208-96-8	Acenaphthylene Aniline	BRL	481 µg/kg dry	2	11	n.	11	11	**	
62-53-3	Annine Anthracene	851	481 μg/kg dry	2	н	u	н	h	"	
120-12-7		BRL	481 μg/kg dry	2	11	н		п	11	
1912-24-9 103-33-3	Atrazine Azobenzene/Diphenyldiazine	BRL	481 μg/kg dry	2	N	o o	11	"	**	
92-87-5	Benzidine	BRL	481 μg/kg dry	2	II.	н	u	ш	ш	
56-55-3	Benzo (a) anthracene	1,800	481 μg/kg dry	2	ŧŧ	u	11	11	#	
50-32-8	Benzo (a) pyrene	1,560	481 μg/kg dry	2	n	"	н	п	н	
205-99-2	Benzo (b) fluoranthene	1,110	481 μg/kg dry	2	11	"	D	н	11	
191-24-2	Benzo (g,h,i) perylene	839	481 μg/kg dry	2	н	"	**	u	11	
207-08-9	Benzo (k) fluoranthene	1,090	481 μg/kg dry	2	п	н	tt	п	n	
65-85-0	Benzoic acid	BRL	481 μg/kg dry	2	q	II.	ď	**	- 11	
100-51-6	Benzyl alcohol	BRL	481 μg/kg dry	2	п	n	n	n		
111-91-1	Bis(2-chloroethoxy)methane	BRL	481 μg/kg dry	2	и	n.	n	n	п	
111-44-4	Bis(2-chloroethyl)ether	BRL	481 μg/kg dry	2	п	н	tt	п	n	
39638-32-9	• • •	BRL	481 μg/kg dry	2	п	Ir	. 11	11	n	
117-81-7	Bis(2-ethylhexyl)phthalate	BRL	481 μg/kg dry	2	U	et	ti	u	11	
101-55-3	4-Bromophenyl phenyl ether	BRL	481 μg/kg dry	2	41	11	11	a	н	
85-68-7	Butyl benzyl phthalate	BRL	481 μg/kg dry	2	u	, n	н	п	11	
	Carbazole	BRL	481 μg/kg dry	2	n	II.	a	а	ш	
86-74-8										
		BRL	481 μg/kg dry	2	п	"	-11	"	**	
86-74-8	4-Chloro-3-methylphenol 4-Chloroaniline	BRL BRL	481 μg/kg dry 481 μg/kg dry	2 2	H	"	11	,,	11	

CAS No.	Analyte(s)	Result	*RDL/Units L	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Semivola	tile Organic Compounds by G	CMS								
Semivola	tile Organic Compounds by SW	<u> 846 8270C</u>	Prepared by method	SW84	6 3545A					
5-57-8	2-Chlorophenol	BRL	481 μg/kg dry	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
7005-72-3	4-Chlorophenyl phenyl ether	BRL	481 μg/kg dry	2	n	11	н	IJ	**	
18-01-9	Chrysene	1,940	481 μg/kg dry	2	n	11	u u	0	"	
3-70-3	Dibenzo (a,h) anthracene	BRL	481 μg/kg dry	2	н	и	16	11	rt .	
32-64-9	Dibenzofuran	BRL	481 μg/kg dry	2	и	n	11	н		
5-50-1	1,2-Dichlorobenzene	BRL	481 μg/kg dry	2	11	It	n	п	"	
41-73-1	1,3-Dichlorobenzene	BRL	481 μg/kg dry	2	11	11	ч	Ü	п	
06-46-7	1,4-Dichlorobenzene	BRL	481 μg/kg dry	2	11	tt	It	11	11	
1-94-1	3,3'-Dichlorobenzidine	BRL	481 μg/kg dry	2	ш	n	11	n	и	
20-83-2	2,4-Dichlorophenol	BRL	481 μg/kg dry	2	n .	**	11	n	tr	
4-66-2	Diethyl phthalate	BRL	481 μg/kg dry	2	11	и	**	11	II.	
131-11-3	Dimethyl phthalate	BRL	481 μg/kg dry	2	tr	H		п	11	
05-67-9	2,4-Dimethylphenol	BRL	481 μg/kg dry	2	н	п	u	41	"	
34-74-2	Di-n-butyl phthalate	BRL	481 μg/kg dry	2	11	n	"	n	**	
534-52-1	4,6-Dinitro-2-methylphenol	BRL	481 μg/kg dry	2	11	n	11	II .	11	
51-28-5	2,4-Dinitrophenol	BRL	481 μg/kg dry	2	н	11	u	11	II.	
121-14-2	2,4-Dinitrotoluene	BRL	481 μg/kg dry	2	II	**	II .	**	11	
06-20-2	2,6-Dinitrotoluene	BRL	481 μg/kg dry	2	II	"	**	n	**	
17-84-0	Di-n-octyl phthalate	BRL	481 μg/kg dry	2	11	11	tt	П	н	
06-44-0	Fluoranthene	3,410	481 μg/kg dry	2	"	n	U	11	11	
86-73-7	Fluorene	BRL	481 μg/kg dry	2	11	ь	11	11	**	
18-74-1	Hexachlorobenzene	BRL	481 μg/kg dry	2	11	11	п	n	"	
37-68-3	Hexachlorobutadiene	BRL	481 μg/kg dry	2	II.	**	"	н	11	
77-47-4	Hexachlorocyclopentadiene	BRL	481 μg/kg dry	2	11	u .	а	n	H	
57-72-1	Hexachloroethane	BRL	481 μg/kg dry	2	"	11	II	n	13	
193-39-5	Indeno (1,2,3-cd) pyrene	820	481 μg/kg dry	2	0	. н	u	11	Ħ	
90-12-0	1-Methylnaphthalene	BRL	481 μg/kg dry	2	**	It	П	"	10	
78-59-1	Isophorone	BRL	481 μg/kg dry	2	n	U	11	II.	н	
91-57-6	2-Methylnaphthalene	BRL	481 μg/kg dry	2	11	li .	п	11		
95-48-7	2-Methylphenol	BRL	481 μg/kg dry	2	н	11	н		11	
108-39-4,10	06-43,4-Methylphenol	BRL	481 μg/kg dry	2	Iř	**	н	11	н	
91-20-3	Naphthalene	BRL	481 μg/kg dry	2	n	· u	11	n	п	
88-74-4	2-Nitroaniline	BRL	481 μg/kg dry	2	11	"	п	n	11	
99-09-2	3-Nitroaniline	BRL	481 μg/kg dry	2	11	0	н	**	u	
100-01-6	4-Nitroaniline	BRL	1920 μg/kg dry	2	n	н	11	μ	11	
98-95-3	Nitrobenzene	BRL	481 μg/kg dry	2	п	II.	II .	н	н	
88-75-5	2-Nitrophenol	BRL	481 μg/kg dry	2	t)	11	**	11	"	
100-02-7	4-Nitrophenol	BRL	1920 μg/kg dry	2	ш	и	п	п	11	
62-75-9	N-Nitrosodimethylamine	BRL	481 μg/kg dry	2	п	11	17	н	n	
621-64-7	N-Nitrosodi-n-propylamine	BRL	481 μg/kg dry	2	11	н	и	ш	n	
86-30-6	N-Nitrosodiphenylamine	BRL	481 μg/kg dry	2	u	tt.	11	u	11	
87-86-5	Pentachlorophenol	BRL	1920 μg/kg dry	2	и	"	II.	11	n	
85-01-8	Phenanthrene	2,340	481 μg/kg dry	2	11	п	If	**	п	
108-95-2	Phenol	BRL	481 μg/kg dry	2	R	**	п	II.	#	
129-00-0	Pyrene	2,220	481 μg/kg dry	2	н	II	#	11	μ	
110-86-1	Pyridine	BRL	481 μg/kg dry	2	O	11	n	11	н	

CAS No.	Analyte(s)	Result	*RDL/Units 1	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivola	tile Organic Compounds by (	GCMS	MEAN ENVIOLENCE OF SPORT OF STATE AND							
Semivola	tile Organic Compounds by SV	V846 8270C	Prepared by method	SW84	46 3545A					
120-82-1	1,2,4-Trichlorobenzene	BRL	481 μg/kg dry	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
95-95-4	2,4,5-Trichlorophenol	BRL	481 μg/kg dry	2	п	n	11	u	ti	
88-06-2	2,4,6-Trichlorophenol	BRL	481 μg/kg dry	2	11	ii .	н	ŧi	"	
Surrogate	recoveries:									
321-60-8	2-Fluorobiphenyl	62.1	30-130 %		п	19	"	II	41	
367-12-4	2-Fluorophenol	60.5	15-110 %		11	II .	TI .	**	**	
4165-60-0	Nitrobenzene-d5	61.7	30-130 %		н	и	It	0	11	
4165-62-2	Phenol-d5	62.6	15-110 %		11	"	11	II.	"	
1718-51-0	Terphenyl-dl4	51.4	30-130 %		31	11	11	11	н	
118-79-6	2,4,6-Tribromophenol	56.4	15-110 %		**	11	11	17	н	
Total Mo	etals by EPA 6000/7000 Series	s Methods								
7440-22-4	Silver	BRL	1.05 mg/kg dry	1	SW846 6010B	29-Jun-05	01-Jul-05	5061913	HB	
7440-38-2	Arsenic	12.5	1.58 mg/kg dry	1	11	ti .	u	.,	11	
7440-39-3	Barium	33.3	0.527 mg/kg dry	1	п	р	11	It	n	
7440-43-9	Cadmium	0.917	0.263 mg/kg dry	1	11	tt.	u	- O	U	
7440-47-3	Chromium	17.3	0.527 mg/kg dry	1	п	11	11	"	11	
7439-97-6	Mercury	0.352	0.197 mg/kg dry	1	SW846 7471A		01-Jul-05	5061914	YP	
7439-92-1	Lead	79.2	0.790 mg/kg dry	1	SW846 6010B	u u	01-Jul-05	5061913	B HB	
7782-49-2	Selenium	BRL	1.58 mg/kg dry	1	"	ч	и	"	11	
Toxicity	Characteristics									
	Flashpoint	> 200	°F	1	SW846 1010	30-Jun-05	30-Jun-05	5062077	7 LK	
	рН	8.48	pH Units	1	SW846 9045C	30-Jul-05 11:00	30-Jul-05	507003	I BD	HT-2
Reactivi	ty Cyanide/Sulfide		Prepared by metho	d Gen	eral Preparation					
	Reactivity	Negative	mg/kg dry	1	SW846 Ch. 7.3	29-Jun-05	29-Jun-05	506203	3 LK	
	Reactive Cyanide	BRL	24.6 mg/kg dry	1	u	11	11	"	**	
	Reactive Sulfide	BRL	49.3 mg/kg dry	1	n	Ħ	11	u	н	
General	Chemistry Parameters									
	% Solids	88.9	%	1	SM2540 G Mod.	29-Jun-05	30-Jun-05	506197	4 JAK	
	Specific Conductance (EC)	158	uS/cm	1	SM2510B	01-Jul-05	01-Jul-05	507006	4 BD	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile (	Organic Compounds	AND THE PROPERTY OF THE PROPER								
	VOC Extraction	Field extracted	N/A	1	VOC	28-Jun-05	28-Jun-05	5061926	BD	
Volatile C	Organic Compounds		Prepared by metho	d SW84	l6 5030 Soil (h	igh level)				VOC1
57-64-1	Acetone	BRL	725 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
107-13-1	Acrylonitrile	BRL	36.3 μg/kg dry	50	я	11	11	u	п	
71-43-2	Benzene	BRL	36.3 μg/kg dry	50	n .	u	n	æ	11	
108-86-1	Bromobenzene	BRL	36.3 μg/kg dry	50	11	0	n	п	**	
4-97-5	Bromochloromethane	BRL	36.3 μg/kg dry	50	**	11	н	и	**	
5-27-4	Bromodichloromethane	BRL	36.3 μg/kg dry	50	н	11	u		n	
75-25-2	Bromoform	BRL	36.3 μg/kg dry	50	u	11	11	II	п	
14-83-9	Bromomethane	BRL	72.5 μg/kg dry	50	н	11	u	ti	11	
8-93-3	2-Butanone (MEK)	BRL	363 μg/kg dry	50	11	11	**	**	n	
.04-51-8	n-Butylbenzene	BRL	36.3 μg/kg dry	50	ii.	11	11	н	11	
35-98-8	sec-Butylbenzene	BRL	36.3 μg/kg dry	50	11	It	и	11	n	
8-06-6	tert-Butylbenzene	BRL	36.3 μg/kg dry	50	"	11	n	11	69	
75-15-0	Carbon disulfide	BRL	181 μg/kg dry	50	μ	н	n	u	ft.	
6-23-5	Carbon tetrachloride	BRL	36.3 μg/kg dry	50	11	11	**	u	n	
108-90-7	Chlorobenzene	BRL	36.3 μg/kg dry	50	n	11	II.	**	ij	
75-00-3	Chloroethane	BRL	72.5 µg/kg dry	50	11	н	11	11	ŧŧ	
57-66-3	Chloroform	BRL	36.3 μg/kg dry	50	11	0	н	11	11	
74-87-3	Chloromethane	BRL	72.5 μg/kg dry	50	н	н	н		11	
5-49-8	2-Chlorotoluene	BRL	36.3 μg/kg dry	50	11		•	D.	u	
106-43-4	4-Chlorotoluene	BRL	36.3 μg/kg dry	50	п	n		11	n	
96-12-8	1,2-Dibromo-3-chloropropane	BRL	72.5 μg/kg dry	50	n	n	u	"	11	
124-48-1	Dibromochloromethane	BRL	36.3 μg/kg dry	50	u	If	n	11	11	
106-93-4	1,2-Dibromoethane (EDB)	BRL	36.3 μg/kg dry	50	и	,	u		п	
74-95-3	Dibromomethane	BRL	36.3 μg/kg dry	50	11	11	u	11	11	
95-50-1	1.2-Dichlorobenzene	BRL	36.3 μg/kg dry	50	п	H	· n	и		
541-73-1	1,3-Dichlorobenzene	BRL	36.3 μg/kg dry	50	н	11	н	IP.	**	
106-46-7	1,4-Dichlorobenzene	BRL	36.3 μg/kg dry	50	u	н	11	11		
75-71-8	Dichlorodifluoromethane	BRL	72.5 μg/kg dry	50	0	10	**	n	31	
	(Freon12)							11	11	
75-34-3	1,1-Dichloroethane	BRL	36.3 μg/kg dry	50	11	11	"		"	
107-06-2	1,2-Dichloroethane	BRL	36.3 μg/kg dry	50	н	u				
75-35-4	1,1-Dichloroethene	BRL	36.3 μg/kg dry	50	11	ii	11	"	#	
156-59-2	cis-1,2-Dichloroethene	BRL	36.3 μg/kg dry	50	H	H	II	**	u	
156-60-5	trans-1,2-Dichloroethene	BRL	36.3 μg/kg dry	50	"	н	H	"	11	
78-87-5	1,2-Dichloropropane	BRL	36.3 μg/kg dry	50	n	**	11	11	н	
142-28-9	1,3-Dichloropropane	BRL	36.3 μg/kg dry	50	II	11	ш	п	**	
594-20-7	2,2-Dichloropropane	BRL	36.3 μg/kg dry	50	н	u		11	n	
563-58-6	1,1-Dichloropropene	BRL	36.3 μg/kg dry	50	II	II.	η	п	ii	
10061-01-5	cis-1,3-Dichloropropene	BRL	36.3 μg/kg dry	50	II .	H	11	11	11	
10061-02-6	trans-1,3-Dichloropropene	BRL	36.3 μg/kg dry	50	II.	11	н	"	п	
100-41-4	Ethylbenzene	BRL	36.3 µg/kg dry	50	B	11	11	11	11	
87-68-3	Hexachlorobutadiene	BRL	36.3 μg/kg dry	50	II	11	ш	n	u	
591-78-6	2-Hexanone (MBK)	BRL	363 μg/kg dry	50	Ħ	u	31	11	11	
98-82-8	Isopropylbenzene	BRL	36.3 μg/kg dry	50	11	11	U	н	11	
99-87-6	4-Isopropyltoluene	BRL	36.3 μg/kg dry	50	If	It	п	"		

AS No.	Analyte(s)	Result	*RDL/Units Di	lution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
olatile O	rganic Compounds									
olatile O	rganic Compounds		Prepared by method	SW84	6 5030 Soil (h	igh level)				VOC10
634-04-4	Methyl tert-butyl ether	BRL	36.3 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
08-10-1	4-Methyl-2-pentanone (MIBK)	BRL	363 μg/kg dry	50	II .	П	11	н	ti	
5-09-2	Methylene chloride	BRL	363 μg/kg dry	50	u	ti .	н	п	11	
1-20-3	Naphthalene	BRL	36.3 μg/kg dry	50	11	**	lt	ď	п	
03-65-1	n-Propylbenzene	BRL	36.3 μg/kg dry	50	н	n	u	II.	11	
00-42-5	Styrene	BRL	36.3 μg/kg dry	50	n	D	II.	ii	11	
30-20-6	1,1,1,2-Tetrachloroethane	BRL	36.3 μg/kg dry	50	Ü	11	. "	н	"	
9-34-5	1,1,2,2-Tetrachloroethane	BRL	36.3 μg/kg dry	50	U	и	и	11	It.	
27-18-4	Tetrachloroethene	BRL	36.3 μg/kg dry	50	11	н	11	tt	10	
08-88-3	Toluene	BRL	36.3 μg/kg dry	50	11	11	11	n	ш	
37-61-6	1,2,3-Trichlorobenzene	BRL	36.3 μg/kg dry	50	II .	U	11	11	11	
20-82-1	1,2,4-Trichlorobenzene	BRL	36.3 μg/kg dry	50	tt.	11	N	41	н	
71-55-6	1,1,1-Trichloroethane	BRL	36.3 μg/kg dry	50	n	61	II.	н	н	
79-00-5	1,1,2-Trichloroethane	BRL	36.3 μg/kg dry	50	н	н	11	u	u	
79-01-6	Trichloroethene	BRL	36.3 μg/kg dry	50	11	ıı	11	ш	11	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL	36.3 μg/kg dry	50	#	IF	и	11	11	
96-18-4	1,2,3-Trichloropropane	BRL	36.3 μg/kg dry	50	ii	H	11	17	11	
95-63-6	1,2,4-Trimethylbenzene	BRL	36.3 μg/kg dry	50	n	11	11	11	11	
108-67-8	1,3,5-Trimethylbenzene	BRL	36.3 μg/kg dry	50	"	11	н	11	"	
75-01-4	Vinyl chloride	BRL	36.3 μg/kg dry	50	и	U	п	"	n	
1330-20-7	m,p-Xylene	BRL	72.5 μg/kg dry	50	O.	н	н	n	n	
95-47-6	o-Xylene	BRL	36.3 μg/kg dry	50	и	"	11	11	11	
109-99-9	Tetrahydrofuran	BRL	363 μg/kg dry	50	11	17	п	11	ir	
60-29-7	Ethyl ether	BRL	36.3 μg/kg dry	50	ч	17	U	u	11	
994-05-8	Tert-amyl methyl ether	BRL	36.3 µg/kg dry	50	71	н	11	11	11	
637-92-3	Ethyl tert-butyl ether	BRL	36.3 μg/kg dry	50	10	II	II	"	10	
108-20-3	Di-isopropyl ether	BRL	36.3 μg/kg dry	50	II	17	ш	11	u	
75-65-0	Tert-Butanol / butyl alcohol	BRL	363 µg/kg dry	50	u	11	н	Ħ	**	
123-91-1	1,4-Dioxane	BRL	725 μg/kg dry	50	H	н	11	H		
Surrogate	recoveries:									
460-00-4	4-Bromofluorobenzene	103	70-130 %		11	11	н	П	"	
2037-26-5	Toluene-d8	88.4	70-130 %		**	ч	ŧŧ		11	
17060-07-0	1,2-Dichloroethane-d4	67.4	70-130 %		19	"	ч	**	11	S-0
1868-53-7	Dibromofluoromethane	78.2	70-130 %		R	**	н	11	"	
Extracta	able Petroleum Hydrocarbons									
	<u>00 by GC</u>		Prepared by method	SW	846 3550B					
8006-61-9	Gasoline	BRL	29.8 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	6 01-Jul-05	506203		
68476-30-2	Fuel Oil #2	BRL	29.8 mg/kg dry	1	11	u	11	tı.	11	
68476-31-3	Fuel Oil #4	BRL	29.8 mg/kg dry	1	rr .	и	u	11	11	
68553-00-4	Fuel Oil #6	BRL	29.8 mg/kg dry	1	н	11	п	n	н	
M09800000	Motor Oil	BRL	29.8 mg/kg dry	1	**	11	n	n	и	
8032-32-4	Ligroin	BRL	29.8 mg/kg dry	1	ц	D	u	II.	11	
100100000	Aviation Fuel	BRL	29.8 mg/kg dry	1	u	ŧi	11	n	п	
	Unidentified	BRL	29.8 mg/kg dry	1	п	11	п	11	н .	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Extractal	ole Petroleum Hydrocarbons									
TPH 8100	0 by GC		Prepared by method	SW84	46 3550B					
	Other Oil	BRL	29.8 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	KG	
	Total Petroleum Hydrocarbons	BRL	29.8 mg/kg dry	1	n	ы		11		
Surrogate	recoveries:									
3386-33-2	1-Chlorooctadecane	59.8	40-140 %		14	"	41	11	n	
Semivola	tile Organic Compounds by Go	С								
olychlo	rinated Biphenyls by SW846 808	22	Prepared by method	sw8	46 3545A					
2674-11-2	PCB 1016	BRL	27.6 μg/kg dry	1	SW846 8082	29-Jun-05	30-Jun-05	5061936	TG/	
1104-28-2	PCB 1221	BRL	27.6 μg/kg dry	1	u	U	11	n.	n	
1141-16-5	PCB 1232	BRL	27.6 μg/kg dry	1	н	п	u	t <del>)</del>	11	
3469-21-9	PCB 1242	BRL	27.6 μg/kg dry	1	п	ш	tt	Ir	"	
12672-29-6	PCB 1248	BRL	27.6 μg/kg dry	1	11	n	п	ш	u.	
11097-69-1	PCB 1254	BRL	27.6 μg/kg dry	1	11	и	0	11	п	
11096-82-5	PCB 1260	BRL	27.6 μg/kg dry	1	4		11	"	п	
37324-23-5	PCB 1262	BRL	27.6 μg/kg dry	1	u	"	**	"	п	
11100-14-4	PCB 1268	BRL	27.6 μg/kg dry	1	**	II.	n	п	**	
Surragate	recoveries:		5	****			***************************************			
3 <i>ur r</i> 0gate 10386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	85.1	30-150 %		ii	11	11	11	n	
2051-24-3	Decachlorobiphenyl (Sr)	<i>85.1</i>	30-150 %		ii	11	u	u	н .	
Saminal	atile Organic Compounds by G	CMS								
			Prepared by metho	a SW8	346 3545A					
	atile Organic Compounds by SW		•		SW846 8270C	29-Jun-05	01-Jul-05	5061973	3 M.B	
83-32-9	Acenaphthene	BRL	223 μg/kg dry	1	5 W 840 8270C	29-Jun-03	01-341-03	300177.	"	
208-96-8	Acenaphthylene	BRL	223 μg/kg dry	1	n		11		n	
62-53-3	Aniline	BRL	223 μg/kg dry	1	11	11	ıı		н	
120-12-7	Anthracene	BRL	223 μg/kg dry	1	ıı	"	11	,,	11	
1912-24-9	Atrazine	BRL	223 μg/kg dry	1		11	31	0	n	
103-33-3	Azobenzene/Diphenyldiazine	BRL	223 μg/kg dry	1	**		п	11		
92-87-5	Benzidine	BRL	223 μg/kg dry	1		IF.	**	"	**	
56-55-3	Benzo (a) anthracene	BRL	223 µg/kg dry	1.	" "	11	н	u	u	
50-32-8	Benzo (a) pyrene	BRL	223 μg/kg dry	1	#	н	п	H	11	
205-99-2	Benzo (b) fluoranthene	BRL	223 μg/kg dry	1		" u	n	**	11	
191-24-2	Benzo (g,h,i) perylene	BRL	223 μg/kg dry	1	.,	"		ur	**	
207-08-9	Benzo (k) fluoranthene	BRL	223 μg/kg dry	1			11	11		
65-85-0	Benzoic acid	BRL	223 μg/kg dry	1			ti	и	11	
100-51-6	Benzyl alcohol	BRL	223 μg/kg dry	1				n	"	
111-91-1	Bis(2-chloroethoxy)methane	BRL	223 μg/kg dry	1	n	,,	11	a	0	
111-44-4	Bis(2-chloroethyl)ether	BRL	223 μg/kg dry	1	"		н		n	
39638-32-9		BRL	223 μg/kg dry	1	"	"	 u	0	,,	
117-81-7	Bis(2-ethylhexyl)phthalate	BRL	223 μg/kg dry	1				11	17	
101-55-3	4-Bromophenyl phenyl ether	BRL	223 μg/kg dry	1	,,					
85-68-7	Butyl benzyl phthalate	BRL	223 μg/kg dry	1				" D	ıı	
86-74-8	Carbazole	BRL	223 μg/kg dry	1		**		"	н	
59-50-7	4-Chloro-3-methylphenol	BRL	223 μg/kg dry	1		r 11	"	 H	"	
106-47-8	4-Chloroaniline	BRL	223 μg/kg dry	1						
91-58-7	2-Chloronaphthalene	BRL	223 μg/kg dry	1	n	н	"	**	11	

Received 28-Jun-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Semivola	tile Organic Compounds by G	CMS								
Semivola	tile Organic Compounds by SW	846 8270C	Prepared by method	1 SW84	6 3545A					
5-57-8	2-Chlorophenol	BRL	223 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
005-72-3	4-Chlorophenyl phenyl ether	BRL	223 μg/kg dry	1	Ð	"	11	Ħ	**	
18-01-9	Chrysene	BRL	223 μg/kg dry	1	ii	II .	11	n	n	
3-70-3	Dibenzo (a,h) anthracene	BRL	223 μg/kg dry	1	н	II.	n	11	II.	
32-64-9	Dibenzofuran	BRL	223 μg/kg dry	1	n	11	11	11	"	
5-50-1	1,2-Dichlorobenzene	BRL	223 μg/kg dry	1	II.	H	11	0	я	
41-73-1	1,3-Dichlorobenzene	BRL	223 μg/kg dry	1	11	D	н	**	u u	
06-46-7	1,4-Dichlorobenzene	BRL	223 μg/kg dry	1	ti	at .	n n	11	11	
1-94-1	3,3'-Dichlorobenzidine	BRL	223 μg/kg dry	1	n .	н	11	п	ti	
20-83-2	2,4-Dichlorophenol	BRL	223 μg/kg dry	1	11	n	"	n	п	
4-66-2	Diethyl phthalate	BRL	223 μg/kg dry	1	H	II	п	11	11	
31-11-3	Dimethyl phthalate	BRL	223 μg/kg dry	1	п	11	II .	II	"	
05-67-9	2,4-Dimethylphenol	BRL	223 μg/kg dry	1	n	11	n	II.	11	
34-74-2	Di-n-butyl phthalate	BRL	223 μg/kg dry	1	11	11	rt	41	"	
34-52-1	4,6-Dinitro-2-methylphenol	BRL	223 μg/kg dry	1	11	11	11	11	11	
1-28-5	2,4-Dinitrophenol	BRL	223 μg/kg dry	1	и	11	11	п	**	
21-14-2	2,4-Dinitrotoluene	BRL	223 $\mu$ g/kg dry	1	11	u	**	"	n	
06-20-2	2,6-Dinitrotoluene	BRL	223 μg/kg dry	1	11	D	11	"	ii	
17-84-0	Di-n-octyl phthalate	BRL	223 μg/kg dry	1	. "	"	ti .	II	11	
06-44-0	Fluoranthene	BRL	223 μg/kg dry	1	11	**	U	n	tř	
86-73-7	Fluorene	BRL	223 μg/kg dry	1	át .	н	п	"	II.	
118-74-1	Hexachlorobenzene	BRL	223 µg/kg dry	1	"	n	н	u	н	
37-68 <b>-</b> 3	Hexachlorobutadiene	BRL	223 µg/kg dry	1	и	11	11	11	ıı	
77-47-4	Hexachlorocyclopentadiene	BRL	223 μg/kg dry	1	II.	н	II	"	"	
67-72-1	Hexachloroethane	BRL	223 µg/kg dry	1	11	10	n	"	11	
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	223 µg/kg dry	1	**	11	u	11	11	
90-12-0	1-Methylnaphthalene	BRL	223 μg/kg dry	1	U	II	U	**	п	
78-59-1	Isophorone	BRL	223 µg/kg dry	1	п	tŧ	n	"	"	
91-57-6	2-Methylnaphthalene	BRL	223 μg/kg dry	1	н	11	ti	п	**	
95-48-7	2-Methylphenol	BRL	223 μg/kg dry	1	11	Ħ	U	n	н	
108-39-4,10	06-43,4-Methylphenol	BRL	223 μg/kg dry	1	11	п	19	Þ	11	
91-20-3	Naphthalene	BRL	223 μg/kg dry	1	u	. "	II	11	tı	
88-74-4	2-Nitroaniline	BRL	223 μg/kg dry	1	U		(I	"	D	
99-09-2	3-Nitroaniline	BRL	223 μg/kg dry	1	11	n	**	11	11	
100-01-6	4-Nitroaniline	BRL	892 μg/kg dry	1	11	IF	U	Đ	n	
98-95-3	Nitrobenzene	BRL	223 μg/kg dry	1	II	#1	#	н	11	
88-75-5	2-Nitrophenol	BRL	223 μg/kg dry	1	u	. "	II	#	11	
100-02-7	4-Nitrophenol	BRL	892 μg/kg dry	1	D	11	o	"	**	
62-75-9	N-Nitrosodimethylamine	BRL	223 μg/kg dry	1	11	u	¢1	и	u	
621-64-7	N-Nitrosodi-n-propylamine	BRL	223 μg/kg dry	l	u	II	n	11	n	
86-30-6	N-Nitrosodiphenylamine	BRL	223 µg/kg dry	ì	11	**	u	"	"	
87-86-5	Pentachlorophenol	BRL	892 μg/kg dry	1	11	u	U	11	п	
85-01-8	Phenanthrene	BRL	223 µg/kg dry	1	ìr	H	ti	n	11	
108-95-2	Phenol	BRL	223 μg/kg dry	1	11	н	п	п	Ш	
129-00-0	Pyrene	BRL	223 μg/kg dry	1	μ	**	ŧŧ	0	**	
110-86-1	Pyridine	BRL	223 μg/kg dry	1	н	п	n	u	n	

CAS No.	Analyte(s)	Result	*RDL/Units 1	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivola	tile Organic Compounds by C	GCMS	ng pangkan di katalan di Katalan yang panggan di Katalan yang matalan Astronomya yang panggan yang bahasa da d							
Semivola	tile Organic Compounds by SV	V846 8270C	Prepared by method	SW84	16 3545A					
120-82-1	1,2,4-Trichlorobenzene	BRL	223 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
95-95-4	2,4,5-Trichlorophenol	BRL	223 μg/kg dry	1	**	11	II.	n	u	
88-06-2	2,4,6-Trichlorophenol	BRL	223 μg/kg dry	1	н	11	u .	11	11	
Surrogate	recoveries:									
321-60-8	2-Fluorobiphenyl	70.7	30-130 %		II	**	"	0	"	
367-12-4	2-Fluorophenol	52.4	15-110 %		11	н	n	u	н	
4165-60-0	Nitrobenzene-d5	<i>40.1</i>	30-130 %		<b>\$1</b>	11	II.	"		
4165-62-2	Phenol-d5	65.8	15-110 %		н	ti.	п	"	"	
1718-51-0	Terphenyl-dl4	89.8	30-130 %		n.	#1	**	es	11	
118-79-6	2,4,6-Tribromophenol	55.6	15-110 %		11	H	Ð	11	U	
Total M	etals by EPA 6000/7000 Serie	s Methods								
7440-22-4	Silver	BRL	0.998 mg/kg dry	1 -	SW846 6010B	29-Jun-05	01-Jul-05	5061913	HB	
7440-38-2	Arsenic	9.96	1.50 mg/kg dry	1	"	Đ	u	**	11	
7440-39-3	Barium	24.8	0.499 mg/kg dry	1	II.	11	**		11	
7440-43-9	Cadmium	BRL	0.250 mg/kg dry	1	ti.	н	11	41	Ħ	
7440-47-3	Chromium	18.2	0.499 mg/kg dry	1	tt.	U	n	"	"	
7439-97-6	Mercury	BRL	0.168 mg/kg dry	1	SW846 7471A		01-Jul-05	5061914	YP	
7439-92-1	Lead	3.70	0.749 mg/kg dry	1	SW846 6010B	n	01-Jul-05	5061913	HB	
7782-49-2	Selenium	BRL	1.50 mg/kg dry	1	0	Ħ	**	0	"	
Toxicity	Characteristics									
	Flashpoint	> 200	°F	1	SW846 1010	30-Jun-05	30-Jun-05	5062077	7 LK	
	pН	8.01	pH Units	1	SW846 9045C	30-Jul-05 11:00	30-Jul-05	507003	BD BD	HT-2
Reactivi	ity Cyanide/Sulfide		Prepared by metho	d Gen	eral Preparation	1				
	Reactivity	Negative	mg/kg dry	1	SW846 Ch. 7.3	29-Jun-05	29-Jun-05	5062033	3 LK	
	Reactive Cyanide	BRL	24.9 mg/kg dry	1	u	u	11	11	n	
	Reactive Sulfide	BRL	49.8 mg/kg dry	1	II	н	H	п	11	
Genera	l Chemistry Parameters									
	% Solids	96.0	%	1	SM2540 G Mod.	29-Jun-05	30-Jun-05	506197	4 JAK	
	Specific Conductance (EC)	76.3	uS/cm	1	SM2510B	01-Jul-05	01-Jul-05	507006	4 BD	

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CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile C	Organic Compounds	Machine Countries Announce (agree) and Countries Announce (agree) and Countries Announce (agree) and Countries Announce (agree) and Countries (agree) and								
	VOC Extraction	Field extracted	N/A	1	VOC	28-Jun-05	28-Jun-05	5061926	BD	
Volatile C	Organic Compounds		Prepared by method	SW84	6 5030 Soil (h	igh level)				VOC
57-64-1	Acetone	BRL	909 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
07-13-1	Acrylonitrile	BRL	45.4 μg/kg dry	50	11	n n	11	п	n	
71-43-2	Benzene	BRL	45.4 μg/kg dry	50	и	п	n	n	**	
108-86-1	Bromobenzene	BRL	45.4 μg/kg dry	50	0	п	н	n	ii	
74-97-5	Bromochloromethane	BRL	45.4 μg/kg dry	50	lt.	n	o o	v	II.	
75-27-4	Bromodichloromethane	BRL	45.4 μg/kg dry	50	tt.	0	v	11	ш	
75-25-2	Bromoform	BRL	45.4 μg/kg dry	50	n	11	**	п	11	
4-83-9	Bromomethane	BRL	90.9 μg/kg dry	50	п	и	It		n	
18-93-3	2-Butanone (MEK)	BRL	454 μg/kg dry	50	II	n	n	**	IF	
04-51-8	n-Butylbenzene	BRL	45.4 μg/kg dry	50	11	п	**		11	
135-98-8	sec-Butylbenzene	BRL	45.4 μg/kg dry	50	II .	u	n	0	и	
98-06-6	tert-Butylbenzene	BRL	45.4 μg/kg dry	50	**	11	"	31	н	
75-15-0	Carbon disulfide	BRL	227 μg/kg dry	50	n	**	н	œ	n	
56-23-5	Carbon tetrachloride	BRL	45.4 μg/kg dry	50	U	IF	19	ш	п	
108-90-7	Chlorobenzene	BRL	45.4 μg/kg dry	50	11	п	11	п	u	
75-00-3	Chloroethane	BRL	90.9 μg/kg dry	50	11	11	n	**	н	
67-66-3	Chloroform	BRL	45.4 μg/kg dry	50	n	v	п	41	н	
74-87-3	Chloromethane	BRL	90.9 μg/kg dry	50	II	11		n	II	
95-49-8	2-Chlorotoluene	BRL	45.4 μg/kg dry	50		11	11		11	
106-43-4	4-Chlorotoluene	BRL	45.4 μg/kg dry	50	0	11	"	**	"	
96-12-8	1,2-Dibromo-3-chloropropane	BRL	90.9 μg/kg dry	50	n	н	н		"	
124-48-1	Dibromochloromethane	BRL	45.4 μg/kg dry	50	n	11	ıt	n	īī	
106-93-4	1,2-Dibromoethane (EDB)	BRL	45.4 μg/kg dry	50	u	n	11	11	0	
74-95-3	Dibromomethane	BRL	45.4 μg/kg dry	50	ч	**	и	11	n	
95-50-1	1,2-Dichlorobenzene	BRL	45.4 μg/kg dry	50	н		**		н	
541-73-1	1,3-Dichlorobenzene	BRL	45.4 μg/kg dry	50	D	11	n	11	D.	
106-46-7	,	BRL	45.4 μg/kg dry	50	11	11	11	**	11	
75-71-8	1,4-Dichlorobenzene	BRL	90.9 μg/kg dry	50	н	n	n	**	*1	
73-71-6	Dichlorodifluoromethane (Freon12)	DKL	ου.ο μεκ <b>κ</b> αι γ							
75-34-3	1,1-Dichloroethane	BRL	45.4 μg/kg dry	50	n	**	**	"	n	
107-06-2	1,2-Dichloroethane	BRL	45.4 μg/kg dry	50	n	"	11	0	u	
75-35-4	1,1-Dichloroethene	BRL	45.4 µg/kg dry	50	11	u	u	u	O	
156-59-2	cis-1,2-Dichloroethene	BRL	45.4 μg/kg dry	50	n	н	н	н	11	
156-60-5	trans-1,2-Dichloroethene	BRL	45.4 μg/kg dry	50	n	II	п	11	u	
78-87-5	1,2-Dichloropropane	BRL	45.4 μg/kg dry	50	н	a a	u	n	11	
142-28-9	1,3-Dichloropropane	BRL	45.4 μg/kg dry	50	n	n	n n	n	н	
594-20-7	2,2-Dichloropropane	BRL	45.4 μg/kg dry	50	и	11	п	11		
563-58-6	1,1-Dichloropropene	BRL	45.4 μg/kg dry	50	11	11	**	41	п	
10061-01-5		BRL	45.4 μg/kg dry	50	11	п	ш	н	п	
10061-02-6	· · · · · · · · · · · · · · · · · · ·	BRL	45.4 μg/kg dry	50	н	11	11	If	11	
100-41-4	Ethylbenzene	BRL	45.4 μg/kg dry	50	н	"	ti	41	11	
87-68-3	Hexachlorobutadiene	BRL	45.4 μg/kg dry	50	II	п	11	11	п	
591-78-6	2-Hexanone (MBK)	BRL	454 μg/kg dry	50	а	**	**	11	n -	
98-82-8	Isopropylbenzene	BRL	45.4 μg/kg dry	50	ii.	11	п	n		
20-02-0	4-Isopropyltoluene	BRL	45.4 μg/kg dry	50	n	н	n	п	n	

'AS No.	Analyte(s)	Result	*RDL/Units Di	lution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
olatile O	rganic Compounds									
olatile O	rganic Compounds		Prepared by method	SW84	6 5030 Soil (h	igh level)				VOC
534-04-4	Methyl tert-butyl ether	BRL	45.4 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
08-10-1	4-Methyl-2-pentanone (MIBK)	BRL	454 μg/kg dry	50	U	11	11	п	n	
5-09-2	Methylene chloride	BRL	454 μg/kg dry	50	11		11	п	R	
1-20-3	Naphthalene	BRL	45.4 μg/kg dry	50	11	н	ч	11	н	
03-65-1	n-Propylbenzene	BRL	45.4 μg/kg dry	50	11	D	n	11	u	
00-42-5	Styrene	BRL	45.4 μg/kg dry	50	н	II	н	0	11	
30-20-6	1,1,1,2-Tetrachloroethane	BRL	45.4 μg/kg dry	50	ii	II .	IF.	II	п	
9-34-5	1,1,2,2-Tetrachloroethane	BRL	45.4 µg/kg dry	50	11	и	ŧI	и	11	
27-18-4	Tetrachloroethene	BRL	45.4 µg/kg dry	50	u	II	п	#	n	
08-88-3	Toluene	BRL	45.4 μg/kg dry	50	D	15	н	16	O O	
7-61-6	1,2,3-Trichlorobenzene	BRL	45.4 μg/kg dry	50	u	11	11	п	11	
20-82-1	1,2,4-Trichlorobenzene	BRL	$45.4 \mu g/kg dry$	50	11	11	11	ě1	u	
1-55-6	1,1,1-Trichloroethane	BRL	45.4 μg/kg dry	50	tr	н	и	**	n	
9-00-5	1,1,2-Trichloroethane	BRL	45.4 μg/kg dry	50	п	D.	п	n	"	
9-01-6	Trichloroethene	BRL	45.4 μg/kg đry	50	п	n	ji .	11	11	
5-69-4	Trichlorofluoromethane (Freon 11)	BRL	45.4 μg/kg dry	50	н	11	ч	а	н	
6-18-4	1,2,3-Trichloropropane	BRL	45.4 μg/kg dry	50	н	n	11	11	11	
5-63-6	1,2,4-Trimethylbenzene	BRL	45.4 μg/kg dry	50	. "	n	н	**	tt	
08-67-8	1,3,5-Trimethylbenzene	BRL	45.4 μg/kg dry	50	It	11	п	п	tt	
5-01-4	Vinyl chloride	BRL	45.4 μg/kg dry	50	п	11	n	11	"	
330-20-7	m,p-Xylene	BRL	90.9 μg/kg dry	50	**		n	n	н	
5-47-6	o-Xylene	BRL	45.4 μg/kg dry	50	II.	н	0	п	**	
09-99-9	Tetrahydrofuran	BRL	454 μg/kg dry	50	**	61	n	**	u	
50-29-7	Ethyl ether	BRL	45.4 μg/kg dry	50	n	R	u	11	11	
994-05-8	Tert-amyl methyl ether	BRL	45.4 µg/kg dry	50	11	U	n	11	It.	
537-92-3	Ethyl tert-butyl ether	BRL	45.4 μg/kg dry	50	"	"	u	n	11	
108-20-3	Di-isopropyl ether	BRL	45.4 μg/kg dry	50	n .	u	II	11	It	
75-65-0	Tert-Butanol / butyl alcohol	BRL	454 µg/kg dry	50	u	**	ti	11	u	
123-91-1	1,4-Dioxane	BRL	909 μg/kg dry	50	n	и	ű	H	11	
Surrogate	recoveries:									
460-00-4	4-Bromofluorobenzene	105	70-130 %		#	"	н	n	11	
2037-26-5	Toluene-d8	89.2	70-130 %		II	u	н	"	n	
17060-07-0	1,2-Dichloroethane-d4	72.0	70-130 %		tt	. 11	н	41	я	
1868-53-7	Dibromofluoromethane	80.2	70-130 %		ir	п	В	n	11	
Extracta	able Petroleum Hydrocarbons									
	00 by GC		Prepared by method	SW	846 3550B					
8006-61-9	Gasoline	BRL	33.2 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	506203		
68476-30-2	Fuel Oil #2	BRL	33.2 mg/kg dry	1	u	п	11	31	11	
68476-31-3	Fuel Oil #4	BRL	33.2 mg/kg dry	1	11	11	п	11	"	
68553-00-4	Fuel Oil #6	BRL	33.2 mg/kg dry	1	11	u	14	11	U	
M09800000	Motor Oil	BRL	33.2 mg/kg dry	1	11	11	н	D.	11	
8032-32-4	Ligroin	BRL	33.2 mg/kg dry	1	II .	и	u	ш	0	
J00100000	Aviation Fuel	BRL	33.2 mg/kg dry	1	'n	н	et	**	n	
	Unidentified	BRL	33.2 mg/kg dry	1	tt	u	п	0	n	

4S No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
ktractab	le Petroleum Hydrocarbons						•			
PH 8100	by GC		Prepared by method	1 SW84	16 3550B					
	Other Oil	BRL	33.2 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	KG .	
	Total Petroleum Hydrocarbons	BRL	33.2 mg/kg dry	1	н	11	l¥	"	II	.,,-
ırrogate 1	recoveries:									
86-33-2	I-Chlorooctadecane	59.7	40-140 %		11	ıŧ	11	11	. 11	
emivolat	tile Organic Compounds by G	С								
olychlor	inated Biphenyls by SW846 808	<u> 22</u>	Prepared by metho	d SW8	46 3545A					
674-11-2	PCB 1016	BRL	30.5 μg/kg dry	1	SW846 8082	29-Jun-05	30-Jun-05	5061936	TG/	
104-28-2	PCB 1221	BRL	30.5 μg/kg dry	1	11	11	11	н	11	
141-16-5	PCB 1232	BRL	30.5 μg/kg dry	1	Ħ	tı	e	п	ii .	
469-21-9	PCB 1242	BRL	30.5 μg/kg dry	1	II.	II.	n	п	IF.	
672-29-6	PCB 1248	BRL	30.5 μg/kg dry	1	11	11	n	n	II	
097-69-1	PCB 1254	BRL	30.5 μg/kg dry	1	#	**	11	"	11	
096-82-5	PCB 1260	BRL	30.5 μg/kg dry	1	n	IJ	n	D.	O.	
7324-23-5	PCB 1262	BRL	30.5 μg/kg dry	1	U	11	и	"	ti.	
100-14-4	PCB 1268	BRL	30.5 μg/kg dry	1	u	"	II.	11	**	
urrogate	recoveries:									
386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	89.8	30-150 %		н	U	11	D	0	
051-24-3	Decachlorobiphenyl (Sr)	75.1	30-150 %		n .	**	и	11	11	
amivale	itile Organic Compounds by G	CMS								
			D	. 1 577/8	346 3545A					
<u>emivola</u>	tile Organic Compounds by SW		Prepared by metho			20.1.05	01 1-1 05	6061077	. MD	
3-32-9	Acenaphthene	BRL	231 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	3 M.B	
08-96-8	Acenaphthylene	BRL	231 μg/kg dry	1	0				-0	
2-53-3	Aniline	BRL	231 μg/kg dry	1		и	"			
20-12-7	Anthracene	BRL	231 μg/kg dry	1	0		" H	ir		
912-24-9	Atrazine	BRL	231 μg/kg dry	1	11	"	0	"	**	
03-33-3	Azobenzene/Diphenyldiazine	BRL	231 μg/kg dry	1	"	"				
2-87-5	Benzidine	BRL	231 μg/kg dry	1	19	н	"	n	"	
6-55-3	Benzo (a) anthracene	BRL	231 μg/kg dry	1	41	D	п	11	"	
0-32-8	Benzo (a) pyrene	BRL	231 μg/kg dry	1	11	11	ti.	"	11	
05-99-2	Benzo (b) fluoranthene	BRL	231 μg/kg dry	1	11	н	Ħ	D	n	
91-24-2	Benzo (g,h,i) perylene	BRL	231 μg/kg dry	1	н	11	"	11	íi .	
207-08-9	Benzo (k) fluoranthene	BRL	231 μg/kg dry	1	II	н	11	н	11	
55-85-0	Benzoic acid	BRL	231 μg/kg dry	1	11	D	u	II.	11	
100-51-6	Benzyl alcohol	BRL	231 μg/kg dry	1	U	11	"	"	n	
111-91-1	Bis(2-chloroethoxy)methane	BRL	231 μg/kg dry	1	Ħ	н	9	11	11	
111-44-4	Bis(2-chloroethyl)ether	BRL	231 μg/kg dry	1	11	u	n	Ш	n	
39638-32-9	Bis(2-chloroisopropyl)ether	BRL	231 μg/kg dry	1	ii	Ħ	11	"	n	
117-81-7	Bis(2-ethylhexyl)phthalate	BRL	231 μg/kg dry	1	II	**	n	II	n.	
101-55-3	4-Bromophenyl phenyl ether	BRL	231 μg/kg dry	1	u	"	II	ď	11	
85-68-7	Butyl benzyl phthalate	BRL	231 μg/kg dry	1	и	0	n	"	**	
86-74-8	Carbazole	BRL	231 μg/kg dry	1	п	11	ıı	II.	ıı	
59-50-7	4-Chloro-3-methylphenol	BRL	231 μg/kg dry	1	11	и	**	"	**	
106-47-8	4-Chloroaniline	BRL	231 μg/kg dry	1	н	u	IJ	и	0	
					11	H	а	u	**	
91-58-7	2-Chloronaphthalene	BRL	231 μg/kg dry	1		11	11 11	п н п	п п и и	11 H U U H

emivolati 5-57-8	ile Organic Compounds by Gile Organic Compounds by SW	CMS								
5-57-8 005-72-3	ile Organic Compounds by SW									
005-72-3		<u>846 8270C</u>	Prepared by method	1 SW84	6 3545A					
005-72-3	2-Chlorophenol	BRL	231 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
8-01-9	4-Chlorophenyl phenyl ether	BRL	231 μg/kg dry	1	II	н	и	11	n .	
	Chrysene	BRL	231 μg/kg dry	1	н	II	11	п	**	
3-70-3	Dibenzo (a,h) anthracene	BRL	231 μg/kg dry	1	U	Ħ	tı	"	It	
	Dibenzofuran	BRL	231 μg/kg dry	1	u	u	11	п	11	
5-50-1	1,2-Dichlorobenzene	BRL	231 μg/kg dry	1	н	u	tt	u	H.	
41-73-1	1,3-Dichlorobenzene	BRL	231 μg/kg dry	1	41	11	n	tr	11	
06-46-7	1,4-Dichlorobenzene	BRL	231 μg/kg dry	1	11	11	n	*	0	
1-94-1	3,3'-Dichlorobenzidine	BRL	231 μg/kg dry	1	ш	u	n	п	*1	
20-83-2	2,4-Dichlorophenol	BRL	231 μg/kg dry	1	н	u	II	п	n	
4-66-2	Diethyl phthalate	BRL	231 μg/kg dry	1	II.	u	11	n	и	
	Dimethyl phthalate	BRL	231 μg/kg dry	1	u	u	и		0	
	2,4-Dimethylphenol	BRL	231 µg/kg dry	1	11	D.	v	п	**	
	Di-n-butyl phthalate	BRL	231 μg/kg dry	1	u	я	п	n	D	
34-52-1	4,6-Dinitro-2-methylphenol	BRL	231 µg/kg dry	1	n		"	11	11	
1-28-5	2,4-Dinitrophenol	BRL	231 μg/kg dry	1	II .	n	u.	10	n	
21-14-2	2,4-Dinitrotoluene	BRL	231 μg/kg dry	1	#1	U	rr	**	11	
06-20-2	2,6-Dinitrotoluene	BRL	231 μg/kg dry	1	II		11	11	II.	
17-84-0	Di-n-octyl phthalate	BRL	231 μg/kg dry	1	11	11	и	н	н	
06-44-0	Fluoranthene	BRL	231 μg/kg dry	1	u	u	u	11	11	
6-73-7	Fluorene	BRL	231 μg/kg dry	1	u	n	п	e e		
18-74-1	Hexachlorobenzene	BRL	231 μg/kg dry	1	11	tt	п	"	11	
7-68-3	Hexachlorobutadiene	BRL	231 μg/kg dry	1	ų	н	"	n	"	
7-47-4	Hexachlorocyclopentadiene	BRL	231 μg/kg dry	1	n	11	п			
7-72-1	Hexachloroethane	BRL	231 μg/kg dry	1	11	n	п	н	11	
93-39-5	Indeno (1,2,3-cd) pyrene	BRL	231 μg/kg dry	1	II.	"	W	п	n	
0-12-0	1-Methylnaphthalene	BRL	231 μg/kg dry	1	н	**	11	"	11	
8-59-1	Isophorone	BRL	231 μg/kg dry	I	u u	и	ш	11	16	
1-57-6	2-Methylnaphthalene	BRL	231 μg/kg dry	1	u	п	11	п	,,	
15-48-7	2-Methylphenol	BRL	231 μg/kg dry	1	н	11	"	,,	17	
	-43,4-Methylphenol	BRL	231 μg/kg dry	1	11	п	u	11	0	
91-20-3	Naphthalene	BRL	231 μg/kg dry	1	U		n .	11	А	
38-74-4	2-Nitroaniline	BRL	231 μg/kg dry	1	tı	11	"		41	
99-09-2	3-Nitroaniline	BRL	231 μg/kg dry 231 μg/kg dry	1	11	п	n		н	
100-01-6	4-Nitroaniline	BRL	231 μg/kg dry 922 μg/kg dry	1	u	в	н		*1	
98-95-3	Nitrobenzene	BRL	231 μg/kg dry	1	11	и		а		
38-75-5	2-Nitrophenol	BRL	231 μg/kg dry	1	11	u	u	1)	n	
100-02-7	4-Nitrophenol	BRL	922 μg/kg dry	1	H		11	u	n	
52-75-9		BRL	231 μg/kg dry	1	n	п	n	**	**	
	N-Nitrosodimethylamine			1	n	"	п	II	0	
521-64-7	N-Nitrosodi-n-propylamine	BRL	231 μg/kg dry	1	IF.	u	n	"	**	
86-30-6	N-Nitrosodiphenylamine	BRL	231 μg/kg dry	1	n	п		31	11	
87-86-5	Pentachlorophenol	BRL	922 μg/kg dry	1	-11	n n	n	n	н	
85-01-8	Phenanthrene	BRL	231 μg/kg dry		п	u	n	**	11	
108-95-2	Phenol	BRL	231 μg/kg dry	1		,,			"	
129-00-0 110-86-1	Pyrene Pyridine	BRL BRL	231 μg/kg dry 231 μg/kg dry	1 1	"	11	" n	11	"	

<u>Matrix</u> Soil Collection Date/Time 27-Jun-05 10:30 Received 28-Jun-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivola	tile Organic Compounds by	GCMS		****************************	**************************************					***************************************
Semivola	tile Organic Compounds by SV	<u> W846 8270C</u>	Prepared by method	SW84	6 3545A					
120-82-1	1,2,4-Trichlorobenzene	BRL	231 μg/kg dry	1	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
95-95-4	2,4,5-Trichlorophenol	BRL	231 μg/kg dry	1	11	D.	п	и	0	
88-06-2	2,4,6-Trichlorophenol	BRL	231 μg/kg dry	1	н	n		11	11	
Surrogate	recoveries:		***************************************							
321-60-8	2-Fluorobiphenyl	62.7	30-130 %		tt	n	11	n	u	
367-12-4	2-Fluorophenol	55.4	15-110 %		**	п	II.	D	n	
4165-60-0	Nitrobenzene-d5	51.5	30-130 %		11	n	II .	"	11	
4165-62-2	Phenol-d5	50.2	15-110 %		11	*	**	11	и	
1718-51-0	Terphenyl-dl4	70.4	30-130 %		и .	11	n	ır	u	
118-79-6	2,4,6-Tribromophenol	48.5	15-110 %		O.	n	11	er.	11	
Total Me	etals by EPA 6000/7000 Series	s Methods								
7440-22-4	Silver	BRL	1.06 mg/kg dry	1	SW846 6010B	29-Jun-05	01-Jul-05	5061913	HB	
7440-38-2	Arsenic	8.50	1.59 mg/kg dry	1	11	n .	n		n	
7440-39-3	Barium	.31.7	0.528 mg/kg dry	1	"	11	u u	11	10	
7440-43-9	Cadmium	BRL	0.264 mg/kg dry	1	11	n	u	n	U	
7440-47-3	Chromium	23.0	0.528 mg/kg dry	1	11	**	п	n.	11	
7439-97-6	Mercury	BRL	0.184 mg/kg dry	1	SW846 7471A	"	01-Jul-05	5061914	YP	
7439-92-1	Lead	35.4	0.793 mg/kg dry	1	SW846 6010B	**	01-Jul-05	5061913	HB	
7782-49-2	Selenium	BRL	1.59 mg/kg dry	1	U	41	"	n	11	
Toxicity	Characteristics									
	Flashpoint	> 200	°F	1	SW846 1010	30-Jun-05	30-Jun-05	5062077	LK	
	pH	9.34	pH Units	1	SW846 9045C	30-Jul-05 11:00	30-Jul-05	5070031	BD	HT-2
Reactivit	y Cyanide/Sulfide		Prepared by method	I Gener	ral Preparation					
	Reactivity	Negative	mg/kg dry	1	SW846 Ch. 7.3	29-Jun-05	29-Jun-05	5062033	LK	
	Reactive Cyanide	BRL	24.6 mg/kg dry	1	II	п	"	11	. "	
	Reactive Sulfide	BRL	49.2 mg/kg dry	1	п	н	u	11	11	
General	Chemistry Parameters									
	% Solids	90.1	%	1	SM2540 G Mod.	29-Jun-05	30-Jun-05	5061974	JAK	
	Specific Conductance (EC)	159	uS/cm	1	SM2510B	01-Jul-05	01-Jul-05	5070064	BD	

Client Project # HE3351

Matrix Soil Collection Date/Time 27-Jun-05 12:00

Received 28-Jun-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile (	Organic Compounds						**************************************	***************************************	· · · · · · · · · · · · · · · · · · ·	***************************************
	VOC Extraction	Field extracted	N/A	1	VOC	28-Jun-05	28-Jun-05	5061926	BD	
Volatile (	Organic Compounds		Prepared by method	SW84	l6 5030 Soil (h	igh level)				
67-64-1	Acetone	BRL	1010 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
107-13-1	Acrylonitrile	BRL	50.6 μg/kg dry	50	п	"	**	п	п	
71-43-2	Benzene	BRL	50.6 μg/kg dry	50	11	11	11	Ir	**	
108-86-1	Bromobenzene	BRL	50.6 μg/kg dry	50	**	н	n	n	н	
74-97-5	Bromochloromethane	BRL	50.6 μg/kg dry	50	u	ıı	п	ti	ш	
75-27-4	Bromodichloromethane	BRL	50.6 μg/kg dry	50	u	n .	u	11	п	
75-25-2	Bromoform	BRL	50.6 μg/kg dry	50	н	п	It	μ	и	
74-83-9	Bromomethane	BRL	101 μg/kg dry	50	п	n	11		п	
78-93-3	2-Butanone (MEK)	BRL	506 μg/kg dry	50	и	tr	"	"	п	
104-51-8	n-Butylbenzene	BRL	50.6 μg/kg dry	50	"	n	11	u u	47	
135-98-8	sec-Butylbenzene	BRL	50.6 μg/kg dry	50	н	u	u	n .	n	
98-06-6	tert-Butylbenzene	BRL	50.6 μg/kg dry	50	II.	II.	u	u	11	
75-15-0	Carbon disulfide	BRL	253 μg/kg dry	50	u	н	u	п	ti.	
56-23-5	Carbon tetrachloride	BRL	50.6 μg/kg dry	50	ar .	**	n	n	11	
108-90-7	Chlorobenzene	BRL	50.6 μg/kg dry	50	п	11	п	0	II.	
75-00-3	Chloroethane	BRL	101 μg/kg dry	50	n	H	u	11	II	
67-66-3	Chloroform	BRL	50.6 μg/kg dry	50	п	11	11	и	u u	
74-87-3	Chloromethane	BRL	101 μg/kg dry	50	H	10	If	11	u	
95-49-8	2-Chlorotoluene	BRL	50.6 μg/kg dry	50	tr	11	ш	n	n	
106-43-4	4-Chlorotoluene	BRL	50.6 μg/kg dry	50	**	II	11	n	u	
96-12-8	1,2-Dibromo-3-chloropropane	BRL	101 μg/kg dry	50	11	ir .		**		
124-48-I	Dibromochloromethane	BRL	50.6 μg/kg dry	50	п	п	**	11	0	
106-93-4	1,2-Dibromoethane (EDB)	BRL	50.6 μg/kg dry	50	II.	"	ш	"	**	
74-95-3	Dibromomethane	BRL	50.6 µg/kg dry	50	и	п	н	н	n	
95-50-1	1,2-Dichlorobenzene	BRL	50.6 μg/kg dry	50	п	н	11	II.	11	
541-73-1	1,3-Dichlorobenzene	BRL	50.6 μg/kg dry	50	n .	17	U	n	D	
106-46-7	1,4-Dichlorobenzene	BRL	50.6 μg/kg dry	50	"	U	19	11	н	
75-71-8	Dichlorodifluoromethane	BRL	101 μg/kg dry	50	н	tt	11	ш	11	
75 24 2	(Freon12)	pnr	70.C 8 1	<b>50</b>	ш				"	
75-34-3 107-06-2	1,1-Dichloroethane	BRL	50.6 μg/kg dry	50		,				
75-35-4	1,2-Dichloroethane	BRL	50.6 μg/kg dry	50	15		,,			
156-59-2	1,1-Dichloroethene cis-1,2-Dichloroethene	BRL	50.6 μg/kg dry	50	,,				 Ir	
156-60-5	·	BRL	50.6 μg/kg dry	50	"			,,	 n	
78-87-5	trans-1,2-Dichloroethene	BRL	50.6 μg/kg dry	50		"				
142-28-9	1,2-Dichloropropane	BRL	50.6 μg/kg dry	50	u					
594-20-7	1,3-Dichloropropane	BRL	50.6 μg/kg dry	50	,,					
563-58-6	2,2-Dichloropropane 1,1-Dichloropropene	BRL	50.6 μg/kg dry	50 50	11		11	н	"	
10061-01-5	cis-1,3-Dichloropropene	BRL	50.6 μg/kg dry	50 50	II.	··			"	
10061-01-3		BRL	50.6 μg/kg dry	50		"			"	
100-41-4	trans-1,3-Dichloropropene	BRL	50.6 μg/kg dry	50		"	"		"	
87-68-3	Ethylbenzene	BRL	50.6 μg/kg dry	50	u	"		"		
	Hexachlorobutadiene	BRL	50.6 μg/kg dry	50	a	"		"	"	
591-78-6	2-Hexanone (MBK)	BRL	506 μg/kg dry	50	,, 11			11	"	
98-82-8	Isopropylbenzene	BRL	50.6 μg/kg dry	50				11		
99-87-6	4-Isopropyltoluene	BRL	50.6 μg/kg dry	50	"	ti .	"	11	U	

<u>Matrix</u> Soil Collection Date/Time 27-Jun-05 12:00 Received 28-Jun-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fl
Volatile C	Organic Compounds									
Volatile C	rganic Compounds		Prepared by method	SW84	6 5030 Soil (h	igh level)				
1634-04-4	Methyl tert-butyl ether	BRL	50.6 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL	506 μg/kg dry	50	Ü	и	н	ш	**	
75-09-2	Methylene chloride	BRL	506 μg/kg dry	50	Ü	17	п	17		
91-20-3	Naphthalene	BRL	50.6 μg/kg dry	50	п	n	n	II.		
103-65-1	n-Propylbenzene	BRL	50.6 μg/kg dry	50	u .	n	11	11	"	
100-42-5	Styrene	BRL	50.6 μg/kg dry	50	tt	ņ	п	11	**	
530-20-6	1,1,1,2-Tetrachloroethane	BRL	50.6 μg/kg dry	50	11	п		"	er er	
79-34-5	1,1,2,2-Tetrachloroethane	BRL	50.6 μg/kg dry	50	11	**	"	**	**	
127-18-4	Tetrachloroethene	BRL	50.6 μg/kg dry	50	n	н	и	11	o o	
108-88-3	Toluene	BRL	50.6 μg/kg dry	50	11	17	"	e e	0	
87-61-6	1,2,3-Trichlorobenzene	BRL	50.6 μg/kg dry	50	II.	tr	11	п	. 11	
120-82-1	1,2,4-Trichlorobenzene	BRL	50.6 μg/kg dry	50	n	11	**	"	11	
71-55-6	1,1,1-Trichloroethane	BRL	50.6 μg/kg dry	50	п	п	"	n	11	
79-00-5	1,1,2-Trichloroethane	BRL	50.6 μg/kg dry	50	#	и	tt	(t	11	
79-01-6	Trichloroethene	BRL	50.6 μg/kg dry	50	**	п	n	н	,,	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL	50.6 μg/kg dry	50	n	u	11	ш	11	
96-18-4	1,2,3-Trichloropropane	BRL	50.6 μg/kg dry	50	II	19	u u	н	"	
95-63-6	1,2,4-Trimethylbenzene	BRL	50.6 μg/kg dry	50	а	**	"	11	11	
08-67-8	1,3,5-Trimethylbenzene	BRL	50.6 μg/kg dry	50	11		u	II.	"	
75-01-4	Vinyl chloride	BRL	50.6 μg/kg dry	50	· ·	11	n	**	н	
1330-20-7	m,p-Xylene	BRL	101 μg/kg dry	50	11	II.	tř	п	11	
95-47-6	o-Xylene	BRL	50.6 μg/kg dry	50	11	0	11	"	**	
109-99-9	Tetrahydrofuran	BRL	506 μg/kg dry	50	*	)1	**	n n	IF	
50-29-7	Ethyl ether	BRL	50.6 μg/kg dry	50	II.	tr.	п	"	11	
994-05-8	Tert-amyl methyl ether	BRL	50.6 μg/kg dry	50	11	н	11	It	D	
537-92-3	Ethyl tert-butyl ether	BRL	50.6 μg/kg dry	50	11	u	u	19	n	
108-20-3	Di-isopropyl ether	BRL	50.6 μg/kg dry	50	Ħ	11	11	u.	*1	
75-65-0	Tert-Butanol / butyl alcohol	BRL	506 μg/kg dry	50	и	o o	и	#	u.	
123-91-1	1,4-Dioxane	BRL	1010 μg/kg dry	50	ti.	11	11	u	**	
			hB nP m1							
Surrogate 460-00-4	recoveries: 4-Bromofluorobenzene	105	70-130 %		н	**	n	IF	"	
2037-26-5	Toluene-d8	89.4	70-130 %		н	п			u	
17060-07-0	1,2-Dichloroethane-d4	72.8	70-130 %		lt·	"	п		,1	
		81.6	70-130 %		H	н		17	п	
1868-53-7	Dibromofluoromethane	01.0	70-130 70							
	ble Petroleum Hydrocarbons									
TPH 810	<u>0 by GC</u>		Prepared by metho	d SW8	46 3550B					
8006-61-9	Gasoline	BRL	32.1 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062030		
68476-30-2	Fuel Oil #2	BRL	32.1 mg/kg dry	1		**	**	11		
68476-31-3	Fuel Oil #4	BRL	32.1 mg/kg dry	1	u	II	"	11	11	
68553-00-4	Fuel Oil #6	Calculated as	32.1 mg/kg dry	1	If .	п	**	"	II+	
M09800000	Motor Oil	BRL	32.1 mg/kg dry	1	п	"	II.	11	II	
8032-32-4	Ligroin	BRL	32.1 mg/kg dry	1	ш	11	п	U	11	
J00100000	Aviation Fuel	BRL	32.1 mg/kg dry	1	"	**	"	н	н	
	Unidentified	197	32.1 mg/kg dry	1	11	н	п	11	11	

		Result	*RDL/Units	Dilution	Method Ref.	Prepared		****************	12111117	Flag
Extractal	ble Petroleum Hydrocarbons									
<i>TPH 810</i> 0	<u>0 by GС</u>		Prepared by method	SW84	l6 3550B					
	Other Oil	BRL	32.1 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	KG	
	Total Petroleum Hydrocarbons	197	32.1 mg/kg dry	1	п	n	п	u	U	
urrogate	recoveries:									
386-33-2	1-Chlorooctadecane	71.2	40-140 %		*1	n	н	ti	U	
Semivola	itile Organic Compounds by G	С								
olychloi	rinated Biphenyls by SW846 808	<u>32</u>	Prepared by method	SW84	16 3545A					
2674-11-2	PCB 1016	BRL	28.3 μg/kg dry	1	SW846 8082	29-Jun-05	30-Jun-05	5061936	TG/	
1104-28-2	PCB 1221	BRL	28.3 μg/kg dry	1	ıı	n.	19	u	11	
1141-16-5	PCB 1232	BRL	28.3 μg/kg dry	1	11	91	n .	11	10	
3469-21-9	PCB 1242	BRL	28.3 μg/kg dry	1	n	11	н	If	ti	
2672-29-6	PCB 1248	BRL	28.3 μg/kg dry	1	11	11	-11	"	11	
1097-69-1	PCB 1254	BRL	28.3 μg/kg dry	1	10	и	н	11	11	
1096-82-5	PCB 1260	BRL	28.3 μg/kg dry	1	n	n	**	11	**	
7324-23-5	PCB 1262	BRL	28.3 μg/kg dry	1	и	n	11	n	11	
1100-14-4	PCB 1268	BRL	28.3 μg/kg dry	1	н	n	, u	**	11	
Surrogate	recoveries:									
0386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	90.1	30-150 %		Tř.	**	п	n	11	
051-24-3	Decachlorobiphenyl (Sr)	110	30-150 %		n	II.	n	**	II.	
Semivals	atile Organic Compounds by G	CMS								
	atile Organic Compounds by SW		Prepared by method	4 SW8	46 3545A					
			-	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
33-32-9	Acenaphthene	BRL	477 μg/kg dry	2	3 17 640 62700	27-Jun-05	01-341-03	"	112.25	
208-96-8	Acenaphthylene	BRL BRL	477 μg/kg dry	2	u	n		п	15	
52-53-3	Aniline	BRL	477 μg/kg dry	2	11	II.	п	**	11	
120-12-7	Anthracene	BRL	477 μg/kg dry 477 μg/kg dry	2		11	11	D	,,	
1912-24-9	Atrazine	BRL	477 μg/kg dry 477 μg/kg dry	2	11	U	п	**	и	
103-33-3	Azobenzene/Diphenyldiazine Benzidine	BRL	477 μg/kg dry	2	n.	11	11	"	u	
92-87-5		1,130		2	*1	n	ш	n	ır	
56-55-3 50-32-8	Benzo (a) anthracene	1,130	477 μg/kg dry 477 μg/kg dry	2	D	**	**		**	
205-99-2	Benzo (a) pyrene	840	477 μg/kg dry	2	н	II.	п	п	u	
191-24-2	Benzo (b) fluoranthene Benzo (g,h,i) perylene	503	477 μg/kg dry	2	ш	**	**	n	"	
207-08-9	Benzo (k) fluoranthene	675	477 μg/kg dry	2	n	0	U	11	п	
65-85-0	Benzoic acid	BRL	477 μg/kg dry	2	11	n	и		**	
		BRL	477 μg/kg dry 477 μg/kg dry	2	n.	n	**	11	n	
100-51-6 111-91-1	Benzyl alcohol Bis(2-chloroethoxy)methane	BRL	477 μg/kg dry 477 μg/kg dry	2	tl	lt.	п	n	11	
111-44-4	Bis(2-chloroethyl)ether	BRL	477 μg/kg dry	2	ш	**	n	41	ш	
39638-32-9	Bis(2-chloroisopropyl)ether	BRL	477 μg/kg dry	2	11	п	п	11	н	
117-81-7	Bis(2-ethylhexyl)phthalate	BRL	477 μg/kg dry 477 μg/kg dry	2	ii .	**	н	n	u u	
	· · · · · · · · · · · · · · · · · · ·	BRL	477 μg/kg dry 477 μg/kg dry	2	"	н	н	D	*1	
101-55-3	4-Bromophenyl phenyl ether		477 μg/kg dry 477 μg/kg dry	2	II.		n	11	u	
85-68-7	Butyl benzyl phthalate	BRL		2	,,	11	n	ш	п	
86-74-8	Carbazole	BRL	477 μg/kg dry	2	**	n	II.		U	
	4-Chloro-3-methylphenol	BRL	477 μg/kg dry	2						
59-50-7 106-47-8	4-Chloroaniline	BRL	477 μg/kg dry	2	ti	19	Ħ	11	**	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
	tile Organic Compounds by G		######################################		po produce de la composition della composition d			***************************************	and the state of t	OPERSTONAL.
	tile Organic Compounds by SW		Prepared by method	1 SW84	-6 3545A					
			• •	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
2006 70 2	2-Chlorophenol	BRL	477 μg/kg dry	2	J W 640 6270C	27-3411-03	"	"	0	
005-72-3	4-Chlorophenyl phenyl ether	BRL	477 μg/kg dry	2	n	11	11	11	п	
18-01-9	Chrysene  Dihamma (a.b.) authorosona	1,370	477 μg/kg dry	2	u	u	11	п	0	
3-70-3	Dibenzo (a,h) anthracene	BRL	477 μg/kg dry	2	11	11	n	ø	11	
32-64-9	Dibenzofuran	BRL	477 μg/kg dry	2	u	п	11	n	п	
5-50-1	1,2-Dichlorobenzene	BRL BRL	477 μg/kg dry	2	11	n	"	**	*	
41-73-1	1,3-Dichlorobenzene	BRL	477 μg/kg dry 477 μg/kg dry	2	8	11	11		п	
06-46-7	1,4-Dichlorobenzene	BRL	477 μg/kg dry	2	п	,,	н	**	"	
1-94-1 20-83-2	3,3'-Dichlorobenzidine	BRL	477 μg/kg dry	2	II.	11	D		u u	
	2,4-Dichlorophenol	BRL	477 μg/kg dry 477 μg/kg dry	2	11	,,	н	**	11	
4-66-2	Diethyl phthalate	BRL	477 μg/kg dry 477 μg/kg dry	2	н	u	п	и	to	
31-11-3 05-67-9	Dimethyl phthalate	BRL	477 μg/kg dry 477 μg/kg dry	2	11		11	н	п	
4-74-2	2,4-Dimethylphenol Di-n-butyl phthalate	BRL	477 μg/kg dry	2	п	ır	n	st	"	
34-52-1	4,6-Dinitro-2-methylphenol	BRL	477 μg/kg dry	2		,,	"	u	п	
	•	BRL	477 μg/kg dry	2	и		D	er .		
51-28-5	2,4-Dinitrophenol 2,4-Dinitrotoluene	BRL	477 μg/kg dry 477 μg/kg dry	2	u	a		11	11	
21-14-2	·	BRL		2		**		n	и	
06-20-2	2,6-Dinitrotoluene	BRL	477 μg/kg đry	2	п	u	п	a	,,	
17-84-0	Di-n-octyl phthalate		477 μg/kg dry	2	п	ш		D.	n	
06-44-0	Fluoranthene	1,680	477 μg/kg dry	2	11	11	u	**		
6-73-7	Fluorene	BRL	477 μg/kg dry	2	u	tt	"	н	ır	
18-74-1	Hexachlorobenzene	BRL	477 μg/kg dry	2	н	11	п		"	
37-68-3	Hexachlorobutadiene	BRL	477 μg/kg dry	2	54	**	11	"	н .	
17-47-4	Hexachlorocyclopentadiene	BRL	477 μg/kg dry	2	п	11	tt.	11	n	
57-72-1	Hexachloroethane	BRL	477 μg/kg dry		н	п	U	"	ır	
193-39-5	Indeno (1,2,3-cd) pyrene	559 DDI	477 μg/kg dry	2	ŧŧ	п	"		**	
90-12-0	1-Methylnaphthalene	BRL	477 μg/kg dry	2	"	п	ш	11		
78-59-1	Isophorone	BRL	477 μg/kg dry	2	"	,,	11	H	n n	
91-57-6	2-Methylnaphthalene	BRL	477 μg/kg dry		11	п	ıı		n	
95-48 <b>-</b> 7	2-Methylphenol	BRL	477 μg/kg dry	2	"	,,	11	.,	11	
	6-43,4-Methylphenol	BRL	477 μg/kg dry	2	u	ш	ıı		н	
91-20-3	Naphthalene	BRL	477 μg/kg dry	2	,,	ti	d			
88-74-4	2-Nitroaniline	BRL	477 μg/kg dry	2	п		"	ır	11	
99-09-2	3-Nitroaniline	BRL	477 μg/kg dry	2	,,	,,	11	11		
100-01-6	4-Nitroaniline	BRL	1910 μg/kg dry	2		n ·				
98-95-3	Nitrobenzene	BRL	477 μg/kg dry	2	н	,,	11		u	
88-75-5	2-Nitrophenol	BRL	477 μg/kg dry	2	11	n n	n .	11	ır.	
100-02-7	4-Nitrophenol	BRL	1910 μg/kg dry	2	"	и		п	59	
62-75-9	N-Nitrosodimethylamine	BRL	477 μg/kg dry	2	.,	"	" #			
621-64-7	N-Nitrosodi-n-propylamine	BRL	477 μg/kg dry	2	17	**	"			
86-30-6	N-Nitrosodiphenylamine	BRL	477 μg/kg dry	2		"	"		"	
87-86-5	Pentachlorophenol	BRL	1910 μg/kg dry	2	"				"	
85-01-8	Phenanthrene	781	477 μg/kg dry	2			11		"	
108-95-2	Phenol	BRL	477 μg/kg dry	2			**		" "	
129-00-0	Pyrene	1,790	477 μg/kg dry	2	н	tr.	11	"		
110-86-1	Pyridine	BRL	477 μg/kg dry	2	11	11	"	**	н	

Client Project # HE3351 <u>Matrix</u> Soil Collection Date/Time 27-Jun-05 12:00 Received 28-Jun-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivola	tile Organic Compounds by C	GCMS	QQQ CXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		AND LAND STREET, SALES					
<u>Semivola</u>	tile Organic Compounds by SW	V846 8270C	Prepared by method	SW84	16 3545A					
120-82-1	1,2,4-Trichlorobenzene	BRL	477 μg/kg dry	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
95-95-4	2,4,5-Trichlorophenol	BRL	477 μg/kg dry	2	н	11	11	II	n n	
88-06-2	2,4,6-Trichlorophenol	BRL	477 μg/kg dry	2	11		н	11	11	
Surrogate	recoveries:									
321-60-8	2-Fluorobiphenyl	62.7	30-130 %		н	**	н	18	11	
367-12-4	2-Fluorophenol	61.0	15-110 %		0	11	Ħ	ıt	11	
4165-60-0	Nitrobenzene-d5	78.4	30-130 %		11	н	n	11	п	
4165-62-2	Phenol-d5	84.2	15-110 %		"	п	n .	**	11	
1718-51-0	Terphenyl-dl4	77.6	30-130 %		u	**	11	11	п	
118-79-6	2,4,6-Tribromophenol	60.2	15-110 %		н	11	и	19	11	
Total M	etals by EPA 6000/7000 Series	s Methods								
7440-22-4	Silver	BRL	1.04 mg/kg dry	1	SW846 6010B	29-Jun-05	01-Jul-05	5061913	HB	
7440-38-2	Arsenic	7.42	1.56 mg/kg dry	1	11	11	11	n	11	
7440-39-3	Barium	37.7	0.519 mg/kg dry	1	п	Ħ	**	11	**	
7440-43-9	Cadmium	1.35	0.259 mg/kg dry	1	11	η	н	"	19	
7440-47-3	Chromium	17.7	0.519 mg/kg dry	1	н	"	0	11	н	
7439-97-6	Mercury	0.489	0.196 mg/kg dry	1	SW846 7471A	n	01-Jul-05	5061914	YP	
7439-92-1	Lead	120	0.778 mg/kg dry	1	SW846 6010B	"	01-Jul-05	5061913	HB	
7782-49-2	Selenium	BRL	1.56 mg/kg dry	1	tı	n	11	n	"	
Toxicity	Characteristics									
	Flashpoint	> 200	°F	1	SW846 1010	30-Jun-05	30-Jun-05	5062077	LK	
	рН	8.20	pH Units	1	SW846 9045C	30-Jul-05 11:00	30-Jul-05	5070031	BD	HT-2
Reactivi	ty Cyanide/Sulfide		Prepared by method	d Gene	eral Preparation					
	Reactivity	Negative	mg/kg dry	1	SW846 Ch. 7.3	29-Jun-05	29-Jun-05	5062033	B LK	
	Reactive Cyanide	BRL	25.0 mg/kg dry	1	п	tt	1)	ш	n	
	Reactive Sulfide	BRL	50.0 mg/kg dry	1	**	u	tr.	n	n	
General	Chemistry Parameters									
	% Solids	89.8	%	1	SM2540 G Mod.	29-Jun-05	30-Jun-05	506197	4 JAK	
	Specific Conductance (EC)	89.1	uS/cm	1	SM2510B	01-Jul-05	01-Jul-05	507006	4 BD	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Volatile (	Organic Compounds									
	VOC Extraction	Field extracted	N/A	1	VOC	28-Jun-05	28-Jun-05	5061926	BD	
Volatile (	Organic Compounds		Prepared by method	1 SW84	16 5030 Soil (h	igh level)				
57-64-1	Acetone	BRL	1020 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
07-13-1	Acrylonitrile	BRL	51.0 μg/kg dry	50	11	11	0	11	16	
1-43-2	Benzene	BRL	51.0 μg/kg dry	50	· ·	п	n	0	11	
08-86-1	Bromobenzene	BRL	51.0 μg/kg dry	50	n .	41	"	11	u ·	
4-97-5	Bromochloromethane	BRL	51.0 μg/kg dry	50		п	11	ti.		
5-27-4	Bromodichloromethane	BRL	51.0 μg/kg dry	50	п	16	п	и	11	
5-25-2	Bromoform	BRL	51.0 μg/kg dry	50	"	п	11	11	11	
4-83-9	Bromomethane	BRL	102 μg/kg dry	50	u	a	tr.	н	"	
8-93-3	2-Butanone (MEK)	BRL	510 μg/kg dry	50	n	н	11	"	"	
04-51-8	n-Butylbenzene	BRL	51.0 μg/kg dry	50	0	H	II.	н	**	
35-98-8	sec-Butylbenzene	BRL	51.0 μg/kg dry	50	11	п	n	#	o	
8-06-6	tert-Butylbenzene	BRL	51.0 μg/kg dry	50	**	**	n	n	п	
5-15-0	Carbon disulfide	BRL	255 μg/kg dry	50	u	n n	11		н	
6-23-5	Carbon tetrachloride	BRL	51.0 μg/kg dry	50	u	11	D	u	n n	
08-90-7	Chlorobenzene	BRL	51.0 μg/kg dry	50	11	н	II.	#1	**	
5-00-3	Chloroethane	BRL	102 μg/kg dry	50	п	II.	11	n	41	
7-66-3	Chloroform	BRL	51.0 μg/kg dry	50	н	17	u	n		
4-87-3	Chloromethane	BRL	102 μg/kg dry	50	**	u	n	19	"	
5-49-8	2-Chlorotoluene	BRL	51.0 μg/kg dry	50	u	"	u	п	11	
)6-43-4	4-Chlorotoluene	BRL	51.0 μg/kg dry	50	11	n	н	"		
6-12-8	1,2-Dibromo-3-chloropropane	BRL	102 μg/kg dry	50	ii .	**	u	п	"	
24-48-1	Dibromochloromethane	BRL	51.0 μg/kg đry	50	*1	п	11	**	11	
06-93-4	1,2-Dibromoethane (EDB)	BRL	51.0 μg/kg dry	50	tr	н	11	ır	11	
4-95-3	Dibromomethane	BRL	51.0 μg/kg dry	50	R	п	н	11	n	
5-50-1	1,2-Dichlorobenzene	BRL	51.0 μg/kg dry	50	**	и .	**	11	10	
41-73-1	1,3-Dichlorobenzene	BRL	51.0 μg/kg dry	50	я	W	u	11	**	
06-46-7	1,4-Dichlorobenzene	BRL	51.0 μg/kg dry	50	и	u	**	11	**	
75-71-8	Dichlorodifluoromethane	BRL	102 μg/kg dry	50	n n	н	II.	"	11	
	(Freon12)		, , , ,							
5-34-3	1,1-Dichloroethane	BRL	51.0 μg/kg dry	50	"	11	II .	11	41	
07-06-2	1,2-Dichloroethane	BRL	51.0 μg/kg dry	50	п	u	11	н	**	
15-35-4	1,1-Dichloroethene	BRL	51.0 μg/kg dry	50	11	H	II .	II.	ч	
56-59-2	cis-1,2-Dichloroethene	BRL	51.0 μg/kg dry	50	н	n	"	H	н	
56-60-5	trans-1,2-Dichloroethene	BRL	51.0 μg/kg dry	50	11	**	11	ij	n	
78-87-5	1,2-Dichloropropane	BRL	51.0 μg/kg dry	50	n	11	**	n	31	
42-28-9	1,3-Dichloropropane	BRL	51.0 μg/kg dry	50	п	H	n	**	11	
594-20-7	2,2-Dichloropropane	BRL	51.0 μg/kg dry	50	"	η	41	II	н	
563-58-6	1,1-Dichloropropene	BRL	51.0 μg/kg dry	50	11	n	п	"	u	
10061-01-5	cis-1,3-Dichloropropene	BRL	51.0 μg/kg dry	50	tt.	n	14	u	11	
10061-02-6	trans-1,3-Dichloropropene	BRL	51.0 μg/kg dry	50	п	n n	II.	**	"	
100-41-4	Ethylbenzene	BRL	51.0 μg/kg dry	50		"	11	п	u	
87-68-3	Hexachlorobutadiene	BRL	51.0 μg/kg dry	50	II	и	11	n	**	
591-78-6	2-Hexanone (MBK)	BRL	510 μg/kg dry	50	Ħ	п	u	и	11	
98-82-8	Isopropylbenzene	BRL	51.0 μg/kg dry	50	н	o	11	11	U	
99-87-6	4-Isopropyltoluene	BRL	51.0 μg/kg dry	50	11	11	ш	п	"	

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Fla
Volatile (	Organic Compounds									
Volatile C	Organic Compounds		Prepared by method	SW84	6 5030 Soil (h	igh level)				
1634-04-4	Methyl tert-butyl ether	BRL	51.0 μg/kg dry	50	SW 846 8260B	30-Jun-05	30-Jun-05	5062038	tim	
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL	510 μg/kg dry	50	N	н	21	0	н	
75-09-2	Methylene chloride	BRL	510 μg/kg dry	50	II .	II.	п	0	н	
01-20-3	Naphthalene	BRL	76.5 μg/kg dry	50	u u	9	п	11	п	
103-65-1	n-Propylbenzene	BRL	51.0 μg/kg dry	50	11	н	11	ır	"	
00-42-5	Styrene	BRL	51.0 μg/kg dry	50	łf	ii .	u	"	ч	
30-20-6	1,1,1,2-Tetrachloroethane	BRL	51.0 μg/kg dry	50	19	"	n	II.	11	
79-34-5	1,1,2,2-Tetrachloroethane	BRL	51.0 μg/kg dry	50	II	II	11	u	11	
127-18-4	Tetrachioroethene	BRL	51.0 μg/kg dry	50	(f	II .	0	**	n	
108-88-3	Toluene	BRL	51.0 μg/kg dry	50	11	n .	"	II		
87-61-6	1,2,3-Trichlorobenzene	BRL	51.0 μg/kg dry	50	u .	n	11	н	10	
120-82-1	1,2,4-Trichlorobenzene	BRL	51.0 μg/kg dry	50	н	11	n	11	11	
71-55-6	1,1,1-Trichloroethane	BRL	51.0 μg/kg dry	50	п	п	11	"	u	
79-00-5	1,1,2-Trichloroethane	BRL	51.0 μg/kg dry	50	n	н	н	0	•	
79-01-6	Trichloroethene	BRL	51.0 μg/kg dry	50	11	U	1)	**	"	
75-69-4	Trichlorofluoromethane (Freon 11)	BRL	51.0 μg/kg dry	50	u	tt	II	п	<b>51</b>	
96-18-4	1,2,3-Trichloropropane	BRL	51.0 μg/kg dry	50	"	11	tt	11	п	
95-63-6	1,2,4-Trimethylbenzene	BRL	51.0 μg/kg dry	50	п	п	11	Ð	н	
108-67-8	1,3,5-Trimethylbenzene	BRL	51.0 μg/kg dry	50	U	n	U		11	
75-01-4	Vinyl chloride	BRL	51.0 μg/kg dry	50	*1	0	н	19	rı .	
1330-20-7	m,p-Xylene	BRL	102 μg/kg dry	50	11	II	и	11	u	
95-47-6	o-Xylene	BRL	51.0 μg/kg dry	50	n	"	п	"	**	
109-99-9	Tetrahydrofuran	BRL	510 μg/kg dry	50	11	II	"	**	11	
60-29-7	Ethyl ether	BRL	51.0 μg/kg dry	50	и	11	п	"	11	
994-05-8	Tert-amyl methyl ether	BRL	51.0 μg/kg đry	50	n	11	16	п	11	
637-92-3	Ethyl tert-butyl ether	BRL	51.0 μg/kg dry	50	n	19	п	"	- 11	
108-20-3	Di-isopropyl ether	BRL	51.0 μg/kg dry	50	u	п		п	"	
75-65-0	Tert-Butanol / butyl alcohol	BRL	510 μg/kg dry	50	П	**	u	**	11	
123-91-1	1,4-Dioxane	BRL	1020 μg/kg dry	50	ıt	п	п	п	"	
Surrogate	recoveries:									
460-00-4	4-Bromofluorobenzene	105	70-130 %		II.	н	ч	n	D.	
2037-26-5	Toluene-d8	91.2	70-130 %		11	11	11	н	11	
17060-07-0	1,2-Dichloroethane-d4	71.6	70-130 %		ii	11	ш		**	
1868-53-7	Dibromofluoromethane	81.6	70-130 %		tt	It	н	0	ч	
Extracta	able Petroleum Hydrocarbons									
	00 by GC		Prepared by metho	d SW8	46 3550B					
8006-61-9	Gasoline	BRL	33.0 mg/kg dry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	5 KG	
68476-30-2	Fuel Oil #2	BRL	33.0 mg/kg dry	1	,,	17	ij	11	tt	
68476-31-3	Fuel Oil #4	BRL	33.0 mg/kg dry	1	ш	**	И	н	н	
68553-00-4	Fuel Oil #6	Calculated as	33.0 mg/kg dry	1	11	u	u	"	If	
M09800000		BRL	33.0 mg/kg dry	1	п	"	п	n	n	
8032-32-4	Ligroin	BRL	33.0 mg/kg dry	1	п	11	n	п	II.	
J00100000	Aviation Fuel	BRL	33.0 mg/kg dry	1	"	п	u	11	n	
	Unidentified	344	33.0 mg/kg dry	1	"	,,	11	п	п	

	Analyte(s)	Result	*RDL/Units L	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Extracta	ble Petroleum Hydrocarbons									
TPH 810	00 by GC		Prepared by method	SW84	6 3550B					
	Other Oil	BRL	33.0 mg/kg đry	1	+SW846 8100Mod.	30-Jun-05	01-Jul-05	5062036	KG	
	Total Petroleum Hydrocarbons	344	33.0 mg/kg dry	1	п	п	и	н	и	
Surrogate	recoveries:									
386-33-2	1-Chlorooctadecane	180	40-140 %		11	11	11	, "	n n	S-02
Semivola	atile Organic Compounds by G	С								
Polychlo	rinated Biphenyls by SW846 808	<u>32</u>	Prepared by method	SW84	16 3545A					
2674-11-2	PCB 1016	BRL	28.4 μg/kg dry	1	SW846 8082	29-Jun-05	30-Jun-05	5061936	TG/	
1104-28-2	PCB 1221	BRL	28.4 μg/kg dry	1	**	11	н	11	11	
1141-16-5	PCB 1232	BRL	28.4 μg/kg dry	1	ii	п	и	n	п	
3469-21-9	PCB 1242	BRL	28.4 μg/kg dry	1	n .	"	**	н	**	
2672-29-6	PCB 1248	BRL	28.4 μg/kg dry	1	ü	n	11	**	а	
1097-69-1	PCB 1254	BRL	28.4 μg/kg dry	1	и	11	"	II.	11	
1096-82-5	PCB 1260	BRL	28.4 μg/kg dry	1	tr	n	1r	"	н	
37324-23-5	PCB 1262	BRL	28.4 μg/kg dry	1	n	11	н	п	11	
11100-14-4	PCB 1268	BRL	28.4 μg/kg dry	1	II.	ц	1)	**	n	
Surrogate	e recoveries:									
0386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	100	30-150 %		11	R	11	"	".	
051-24-3	Decachlorobiphenyl (Sr)	100	30-150 %		u	n	11	**	"	
Semivol	atile Organic Compounds by G	CMS								
	atile Organic Compounds by SW		Prepared by method	SW8	46 3545A					
83-32-9	Acenaphthene	BRL	461 μg/kg dry	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
208-96-8	Acenaphthylene	BRL	461 μg/kg dry	2	0	п	11	n	н	
52-53-3	Aniline	BRL	461 μg/kg dry	2	11	"	"	u	**	
120-12-7	Anthracene	BRL	461 μg/kg dry	2	н	11	11	11	o o	
1912-24-9	Atrazine	BRL	461 μg/kg dry	2	u	n	**	"	n	
103-33-3	Azobenzene/Diphenyldiazine	BRL	461 μg/kg dry	2	II.	**	O O	17	11	
92-87-5	Benzidine	BRL	461 μg/kg dry	2	u	п	11	н	n	
56-55-3	Benzo (a) anthracene	939	461 μg/kg dry	2		"	u	и		
	` '	,		Z	п					
50-32-8	Benzo (a) pyrene	923		2	11 to	и	11	и	11	
	Benzo (a) pyrene Benzo (b) fluoranthene	923 581	461 μg/kg dry			и	"	11	n n	
205-99-2	Benzo (b) fluoranthene	581	461 μg/kg dry 461 μg/kg dry	2		н	11 11	11 11	n n	
205-99-2 191-24-2	Benzo (b) fluoranthene Benzo (g,h,i) perylene	581 BRL	461 μg/kg dry	2 2	ti II	н	11 11	и и	n	
205-99-2 191-24-2 207-08-9	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene	581	461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry	2 2 2	0 0	н	17 11 11		n	
205-99-2 191-24-2 207-08-9 65-85-0	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid	581 BRL 668	461 µg/kg dry 461 µg/kg dry 461 µg/kg dry	2 2 2 2	0 0 0	н	11 11 11 11		n	
205-99-2 191-24-2 207-08-9 65-85-0 100-51-6	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene	581 BRL 668 BRL	461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry	2 2 2 2 2	0 0 0	н	11 11 11 11 11 11 11 11 11 11 11 11 11		0 11 11	
205-99-2 191-24-2 207-08-9	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol	581 BRL 668 BRL BRL	461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry	2 2 2 2 2 2	0 0 0	н	11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11	
205-99-2 191-24-2 207-08-9 65-85-0 100-51-6 111-91-1	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether	581 BRL 668 BRL BRL BRL	461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry 461 µg/kg dry	2 2 2 2 2 2 2 2	11 11 11 11	н	11 11 11 11 11 11 11 11 11 11 11 11 11	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0	
205-99-2 191-24-2 207-08-9 65-85-0 100-51-6 111-91-1 111-44-4	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether	581 BRL 668 BRL BRL BRL BRL	461 µg/kg dry	2 2 2 2 2 2 2 2 2	11 11 11 11	н	1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (	n n n n n n n n n n n n n n n n n n n	0 0 0 0 0	
205-99-2 191-24-2 207-08-9 65-85-0 100-51-6 111-91-1 111-44-4 39638-32-9	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether	581 BRL 668 BRL BRL BRL BRL BRL	461 µg/kg dry	2 2 2 2 2 2 2 2 2 2 2 2	11 11 11 11	н	11 11 11 11 11 11 11 11 11 11 11 11 11	n n n n n n n n n n n n n n n n n n n	11 11 11 11 11 11 11 11 11 11 11 11 11	
205-99-2 191-24-2 207-08-9 65-85-0 100-51-6 111-91-1 111-44-4 39638-32-5 117-81-7	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether Bis(2-ethylhexyl)phthalate	581 BRL 668 BRL BRL BRL BRL BRL BRL	461 µg/kg dry	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11 11 11 11	н	11 11 11 11 11 11 11 11 11 11 11 11 11	11 11 11 11 11 11 11 11 11 11 11 11 11	0 0 0 11 11 11	
205-99-2 191-24-2 207-08-9 65-85-0 100-51-6 111-91-1 111-44-4 39638-32-9 117-81-7	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether Bis(2-ethylhexyl)phthalate 4-Bromophenyl phenyl ether	581 BRL 668 BRL BRL BRL BRL BRL BRL BRL	461 µg/kg dry	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11 11 11 11	н	11 11 11 11 11 11 11 11 11 11 11 11 11		n n n n n n n n n n n n n n n n n n n	
207-08-9 65-85-0 100-51-6 111-91-1 111-44-4 39638-32-5 117-81-7 101-55-3 85-68-7	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether Bis(2-ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate Carbazole	581 BRL 668 BRL	461 µg/kg dry	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11 11 11 11	н			n n n n n n n n n n n n n n n n n n n	
205-99-2 191-24-2 207-08-9 65-85-0 100-51-6 111-91-1 111-44-4 39638-32-5 117-81-7 101-55-3 85-68-7 86-74-8	Benzo (b) fluoranthene Benzo (g,h,i) perylene Benzo (k) fluoranthene Benzoic acid Benzyl alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether Bis(2-ethylhexyl)phthalate 4-Bromophenyl phenyl ether Butyl benzyl phthalate	581 BRL 668 BRL BRL BRL BRL BRL BRL BRL BRL BRL	461 µg/kg dry	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	11 11 11 11	н	10 10 10 10 10 10 10 10 10 10 10 10 10 1			

							**************		*************	Fla
,	tile Organic Compounds by G	CMS								
<u>emivolati</u>	ile Organic Compounds by SW	<u>′846 8270C</u>	Prepared by metho	d SW84	16 3545A					
5-57-8	2-Chlorophenol	BRL	461 μg/kg dry	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
005-72-3	4-Chlorophenyl phenyl ether	BRL	461 μg/kg dry	2	u u	11	u	II.	41	
18-01-9	Chrysene	1,010	461 μg/kg dry	2	н	ti	11	17	п	
3-70-3	Dibenzo (a,h) anthracene	BRL	461 μg/kg dry	2	\$f	u	u	а	п	
32-64-9	Dibenzofuran	BRL	461 μg/kg dry	2	n	n	**	н	#	
5-50-1	1,2-Dichlorobenzene	BRL	461 μg/kg dry	2	n	II .	u	"	ш	
11-73-1	1,3-Dichlorobenzene	BRL	461 μg/kg dry	2	ii .	**	"	n	19	
6-46-7	1,4-Dichlorobenzene	BRL	461 μg/kg dry	2	W	п	u u	41	0	
1-94-1	3,3'-Dichlorobenzidine	BRL	461 μg/kg dry	2	н	ч	19	n	**	
20-83-2	2,4-Dichlorophenol	BRL	461 μg/kg dry	2	n	n	0	**	19	
1-66-2	Diethyl phthalate	BRL	461 μg/kg dry	2	п	n	11	n n	и	
31-11-3	Dimethyl phthalate	BRL	461 μg/kg dry	2	11	er	11	11	11	
05-67-9	2,4-Dimethylphenol	BRL	461 μg/kg dry	2	"	n	"	n	0	
4-74-2	Di-n-butyl phthalate	BRL	461 μg/kg dry	2	п	**	**	u u	11	
34-52-1	4,6-Dinitro-2-methylphenol	BRL	461 μg/kg dry	2	n	н	II.	"	11	
1-28-5	2,4-Dinitrophenol	BRL	461 μg/kg dry	2	n	**	n	n	u	
21-14-2	2,4-Dinitrotoluene	BRL	461 μg/kg dry	2	п	u	и	n	11	
06-20-2	2,6-Dinitrotoluene	BRL .	461 μg/kg dry	2	11	"	п	17	11	
17-84-0	Di-n-octyl phthalate	BRL	461 μg/kg dry	2	u	11	19	в	H	
06-44-0	Fluoranthene	1,500	461 μg/kg dry	2	Ħ	II.	u		jt.	
6-73-7	Fluorene	BRL	461 μg/kg dry	2	н	н	16	· ·	41	
18-74-1	Hexachiorobenzene	BRL	461 μg/kg dry	2	и	fl fl	u	н	"	
7-68-3	Hexachlorobutadiene	BRL	461 μg/kg dry	2	rr	н	11	н	u	
7-47-4	Hexachlorocyclopentadiene	BRL	461 μg/kg dry	2	n	11	н		**	
i7-72-1	Hexachloroethane	BRL	461 μg/kg dry	2	tt	n	u	11	"	
93-39-5	Indeno (1,2,3-cd) pyrene	468	461 μg/kg dry	2	st	n	н	"	11	
90-12-0	1-Methylnaphthalene	BRL	461 μg/kg dry	2	0	11	n	n	D	
78-59-1	Isophorone	BRL	461 μg/kg dry	2	n	ti.	п	**	n	
91-57-6	2-Methylnaphthalene	BRL	461 μg/kg dry	2	tt	п	lt.	••	"	
95-48-7	2-Methylphenol	BRL	461 μg/kg dry	2	ıı	11	п		0	
	5-43,4-Methylphenol	BRL	461 μg/kg dry	2	11	ŧŧ	и	**	11	
91-20-3	Naphthalene	BRL	461 μg/kg dry	2	n	n	H	ч	"	
88-74-4	2-Nitroaniline	BRL	461 μg/kg dry	2	18	u	и	11	n	
99-09-2	3-Nitroaniline	BRL	461 μg/kg dry	2	u	п	ч	и	41	
100-01-6	4-Nitroaniline	BRL	1840 μg/kg dry	2	11	"	п	n	n	
98-95-3	Nitrobenzene	BRL	461 μg/kg dry	2	**	и	в		п	
88-75-5	2-Nitrophenol	BRL	461 μg/kg dry	2	п	n	п		11	
100-02-7	4-Nitrophenol	BRL	1840 μg/kg dry	2	19	п	ıı	0	14	
62-75-9	N-Nitrosodimethylamine	BRL	461 μg/kg dry	2	ш	11	ti.		п	
621-64-7	N-Nitrosodi-n-propylamine	BRL	461 μg/kg dry	2	n	u	u	II.	n	
86-30-6		BRL	461 μg/kg dry	2	tt.	u	n	"	(1	
	N-Nitrosodiphenylamine	BRL	1840 μg/kg dry	2	n	19	н	11	n	
87-86-5	Pentachlorophenol	649	1840 μg/kg dry 461 μg/kg dry	2	n	п	er	11	n	
85-01-8	Phenanthrene		461 μg/kg dry	2	11		n	n	II.	
108-95-2	Phenol	BRL 1.540	461 μg/kg dry 461 μg/kg dry	2	н	п	п	11	п	
129-00-0 110-86-1	Pyrene Pyridine	1,540 BRL	461 μg/kg dry 461 μg/kg dry	2	н	77	и	n		

Client Project # HE3351 Matrix Soil Collection Date/Time 27-Jun-05 12:45 Received 28-Jun-05

CAS No.	Analyte(s)	Result	*RDL/Units 1	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivola	ntile Organic Compounds by C	GCMS								
<u>Semivola</u>	tile Organic Compounds by SH	V846 8270C	Prepared by method	SW84	46 3545A					
120-82-1	1,2,4-Trichlorobenzene	BRL	461 μg/kg dry	2	SW846 8270C	29-Jun-05	01-Jul-05	5061973	M.B	
95-95-4	2,4,5-Trichlorophenol	BRL	461 μg/kg dry	2	11	11	· ·	10	18	
88-06-2	2,4,6-Trichlorophenol	BRL	461 μg/kg dry	2	u	ы	11	ti	"	
Surrogate	recoveries;									
321-60-8	2-Fluorobiphenyl	67.0	30-130 %		п	*	11	"	II .	
367-12-4	2-Fluorophenol	60.1	15-110 %		11	11	п	11	11	
4165-60-0	Nitrobenzene-d5	61.8	30-130 %		н	u	v	o o	It	
4165-62-2	Phenol-d5	79.4	15-110 %		11	11	н	и	11	
1718-51-0	Terphenyl-dl4	74.2	30-130 %		н	u	"	п	11	
118-79-6	2,4,6-Tribromophenol	56.2	15-110 %		n .	11	п	II .	n	
Total Me	etals by EPA 6000/7000 Series	s Methods								
7440-22-4	Silver	BRL	1.08 mg/kg dry	1	SW846 6010B	29-Jun-05	01-Jul-05	5061913	HB	
7440-38-2	Arsenic	7.54	1.62 mg/kg dry	1	11	11	li .	17	n	
7440-39-3	Barium	37.9	0.539 mg/kg dry	1	н	"	**	11	**	
7440-43-9	Cadmium	1.23	0.269 mg/kg dry	1	1f	*1	U	ŧ)	п	
7440-47-3	Chromium	18.2	0.539 mg/kg dry	1	•	п	n	n n	"	
7439-97-6	Mercury	0.436	0.188 mg/kg dry	1	SW846 7471A	**	01-Jul-05	5061914	YP	
7439-92-1	Lead	124	0.808 mg/kg dry	1	SW846 6010B	11	01-Jul-05	5061913	HB	
7782-49-2	Selenium	BRL	1.62 mg/kg dry	1	rt	II	п	0	"	
Toxicity	Characteristics									
	Flashpoint	> 200	°F	1	SW846 1010	30-Jun-05	30-Jun-05	5062077	LK	
	pH	7.80	pH Units	1	SW846 9045C	30-Jul-05 11:00	30-Jul-05	5070031	BD	HT-2
Reactivi	ty Cyanide/Sulfide		Prepared by method	d Gene	eral Preparation					
	Reactivity	Negative	mg/kg dry	1	SW846 Ch. 7.3	29-Jun-05	29-Jun-05	5062033	LK	
	Reactive Cyanide	BRL	24.7 mg/kg dry	1	11	11	п	u	п	
	Reactive Sulfide	BRL	49.4 mg/kg dry	1	11	п	н	11	11	
General	l Chemistry Parameters			•						
	% Solids	90.4	%	1	SM2540 G Mod.	29-Jun-05	30-Jun-05	5061974	JAK	
	Specific Conductance (EC)	92.8	uS/cm	1	SM2510B	01-Jul-05	01-Jul-05	5070064	\$ BD	

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5062038 - SW846 5030 Soil (hig	gh level)								
Blank (5062038-BLK1)			Prepared &	k Analyzed:	30-Jun-05				
Acetone	BRL	20.0 μg/kg wet			······································				
Acrylonitrile	BRL	1.0 μg/kg wet							
Benzene	BRL	1.0 μg/kg wet							
Bromobenzene	BRL	1.0 μg/kg wet							
Bromochloromethane	BRL	1.0 μg/kg wet							
Bromodichloromethane	BRL	1.0 μg/kg wet							
Bromoform	BRL	1.0 μg/kg wet							
Bromomethane	BRL	2.0 μg/kg wet							
2-Butanone (MEK)	BRL	10.0 μg/kg wet							
n-Butylbenzene	BRL	1.0 μg/kg wet							
sec-Butylbenzene	BRL	1.0 μg/kg wet							
tert-Butylbenzene	BRL	1.0 μg/kg wet							
Carbon disulfide	BRL	5.0 μg/kg wet							
Carbon tetrachloride	BRL	1.0 μg/kg wet							
Chlorobenzene	BRL	1.0 µg/kg wet							
Chloroethane	BRL	2.0 μg/kg wet							
Chloroform	BRL	1.0 µg/kg wet							
Chloromethane	BRL	2.0 µg/kg wet							
2-Chlorotoluene	BRL	1.0 µg/kg wet							
4-Chlorotoluene	BRL	1.0 µg/kg wet							
1,2-Dibromo-3-chloropropane	BRL	2.0 μg/kg wet							
Dibromochloromethane	BRL	1.0 μg/kg wet							
1,2-Dibromoethane (EDB)	BRL	1.0 µg/kg wet							
, ,	BRL	1.0 μg/kg wet	,						
Dibromomethane	BRL	1.0 µg/kg wet							
1,2-Dichlorobenzene	BRL	1.0 μg/kg wet							
1,3-Dichlorobenzene	BRL	1.0 µg/kg wet							
1,4-Dichlorobenzene	BRL	2.0 μg/kg wet							
Dichlorodifluoromethane (Freon12)	BRL	1.0 μg/kg wet							
1,1-Dichloroethane	BRL	1.0 μg/kg wet							
1,2-Dichloroethane	BRL	1.0 μg/kg wet							
1,1-Dichloroethene	BRL	1.0 μg/kg wet							
cis-1,2-Dichloroethene	BRL	1.0 μg/kg wet							
trans-1,2-Dichloroethene	BRL								
1,2-Dichloropropane		1.0 μg/kg wet							
1,3-Dichloropropane	BRL BRL	1.0 μg/kg wet 1.0 μg/kg wet							
2,2-Dichloropropane	BRL	1.0 µg/kg wet							
1,1-Dichloropropene	BRL	1.0 µg/kg wet							
cis-1,3-Dichloropropene	BRL	1.0 μg/kg wet							
trans-1,3-Dichloropropene	BRL	1.0 μg/kg wet 1.0 μg/kg wet							
Ethylbenzene	BRL	1.0 μg/kg wet							
Hexachlorobutadiene		1.0 μg/kg wet 10.0 μg/kg wet							
2-Hexanone (MBK)	BRL BRL	10.0 μg/kg wet							
Isopropylbenzene	BRL	1.0 μg/kg wet							
4-Isopropyltoluene	BRL	1.0 μg/kg wet 1.0 μg/kg wet							
Methyl 2 parter and (MTRK)	BRL	10.0 µg/kg wet							
4-Methyl-2-pentanone (MIBK)		10.0 µg/kg wet							
Methylene chloride	BRL BRL	1.0 μg/kg wet							
Naphthalene									
n-Propylbenzene	BRL	1.0 μg/kg wet							
Styrene	BRL	1.0 μg/kg wet							
I,1,1,2-Tetrachloroethane	BRL	1.0 μg/kg wet							
1,1,2,2-Tetrachloroethane	BRL	1.0 μg/kg wet							
Tetrachloroethene	BRL	1.0 μg/kg wet							
Toluene	BRL	1.0 μg/kg wet							

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5062038 - SW846 5030 Soil (hig	gh level)								
Blank (5062038-BLK1)			Prepared &	k Analyzed:	30-Jun-05				
1,2,3-Trichlorobenzene	BRL	1.0 μg/kg wet							
1,2,4-Trichlorobenzene	BRL	1.0 μg/kg wet							
1,1,1-Trichloroethane	BRL	1.0 μg/kg wet							
1,1,2-Trichloroethane	BRL	1.0 μg/kg wet							
Trichloroethene	BRL	1.0 μg/kg wet							
Trichlorofluoromethane (Freon 11)	BRL	1.0 μg/kg wet							
,2,3-Trichloropropane	BRL	1.0 µg/kg wet							
1,2,4-Trimethylbenzene	BRL	1.0 μg/kg wet							
1,3,5-Trimethylbenzene	BRL	1.0 μg/kg wet							
Vinyl chloride	BRL	1.0 μg/kg wet							
m,p-Xylene	BRL	2.0 μg/kg wet							
o-Xylene	BRL	1.0 μg/kg wet							
Tetrahydrofuran	BRL	10.0 μg/kg wet							
Ethyl ether	BRL	1.0 μg/kg wet							
Tert-amyl methyl ether	BRL	1.0 μg/kg wet							
Ethyl tert-butyl ether	BRL	1.0 μg/kg wet							
Di-isopropyl ether	BRL	1.0 μg/kg wet							
Tert-Butanol / butyl alcohol	BRL	10.0 μg/kg wet							
1,4-Dioxane	BRL	20.0 μg/kg wet							
Surrogate: 4-Bromofluorobenzene	50.1	μg/kg wet	50.0		100	70-130			
Surrogate: Toluene-d8	46.2	μg/kg wet	50.0		92.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	32.9	μg/kg wet	50.0		65.8	70-130			S-(
Surrogate: Dibromofluoromethane	39.4	μg/kg wet	50.0		78.8	70-130			
LCS (5062038-BS1)			Prepared a	& Analyzed	l: 30-Jun-05				
Acetone	23.6	μg/kg wet	20.0		118	23-201			
Acrylonitrile	19.8	μg/kg wet	20.0		99.0	70-130			
Benzene	20.9	μg/kg wet	20.0		104	70-130			
Bromobenzene	22.0	μg/kg wet	20.0		110	70-130			
Bromochloromethane	20.7	μg/kg wet	20.0		104	70-130			
Bromodichloromethane	15.0	μg/kg wet	20.0		75.0	70-130			
Bromoform	19.9	μg/kg wet	20.0		99.5	70-130			
Bromomethane	18.5	μg/kg wet	20.0		92.5	48.9-174			
2-Butanone (MEK)	19.2	μg/kg wet	20.0		96.0	8.02-161			
n-Butylbenzene	18.3	μg/kg wet	20.0		91.5	70-130			
sec-Butylbenzene	21.3	μg/kg wet	20.0		106	70-130			
tert-Butylbenzene	21.4	μg/kg wet	20.0		107	70-130			
Carbon disulfide	23.1	μg/kg wet	20.0		116	70-130			
Carbon tetrachloride	14.9	μg/kg wet	20.0		74.5	70-130			
Chlorobenzene	24.6	μg/kg wet	20.0		123	70-130			
Chloroethane	20.1	μg/kg wet	20.0		100	65.8-146			
	16.5	μg/kg wet μg/kg wet	20.0		82.5	70-130			
Chlorografiana	23.6		20.0		118	70-130			
Chloromethane		μg/kg wet μg/kg wet	20.0		99.0	70-130			
2-Chlorotoluene	19.8		20.0		95.0	70-130			
4-Chlorotoluene	19.0	μg/kg wet	20.0		85.5	70-130			
1,2-Dibromo-3-chloropropane	17.1	μg/kg wet				56.8-157			
Dibromochloromethane	16.2	μg/kg wet	20.0		81.0 94.0	70-130			
1,2-Dibromoethane (EDB)	18.8	μg/kg wet	20.0						
Dibromomethane	17.4	μg/kg wet	20.0		87.0	70-130			
1,2-Dichlorobenzene	21.3	μg/kg wet	20.0		106	70-130			
1,3-Dichlorobenzene	21.3	μg/kg wet	20.0		106	70-130			
1,4-Dichlorobenzene	20.9	μg/kg wet	20.0		104	70-130			
Dichlorodifluoromethane (Freon12)	26.4	μg/kg wet	20.0		132	70-151			
1,1-Dichloroethane	20.4	μg/kg wet	20.0		102	70-130			
1,2-Dichloroethane	14.7	μg/kg wet	20.0		73.5	70-130			

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
atch 5062038 - SW846 5030 Soil (hig	h level)								
LCS (5062038-BS1)			Prepared &	k Analyzed:	30-Jun-05				
1,1-Dichloroethene	17.6	μg/kg wet	20.0		88.0	70-130			
bis-1,2-Dichloroethene	22.8	μg/kg wet	20.0		114	70-130			
rans-1,2-Dichloroethene	21.1	μg/kg wet	20.0		106	70-130			
,2-Dichloropropane	21.6	μg/kg wet	20.0		108	70-130			
1,3-Dichloropropane	19.7	μg/kg wet	20.0		98.5	70-130			
2,2-Dichloropropane	10.2	μg/kg wet	20.0		51.0	70-130			QC-
1,1-Dichloropropene	18.2	μg/kg wet	20.0		91.0	70-130			
cis-1,3-Dichloropropene	17.4	μg/kg wet	20.0		87.0	70-130			
rans-1,3-Dichloropropene	15.6	μg/kg wet	20.0		78.0	70-130			
Ethylbenzene	21.5	μg/kg wet	20.0		108	70-130			
Hexachlorobutadiene	17.9	μg/kg wet	20.0		89.5	70-146			
2-Hexanone (MBK)	18.0	μg/kg wet	20.0		90.0	70-130			
(sopropylbenzene	20.6	μg/kg wet	20.0		103	70-130			
* **	20.5	μg/kg wet	20.0		102	70-130			
4-Isopropyltoluene Methyl tert-butyl ether	20.5 17.5	μg/kg wet μg/kg wet	20.0		87.5	70-130			
•	17.3	μg/kg wet μg/kg wet	20.0		95.5	43.1-155			
4-Methyl-2-pentanone (MIBK)			20.0		108	70-130			
Methylene chloride	21.7	μg/kg wet	20.0		110	70-130			
Naphthalene	21.9	μg/kg wet	20.0		103	70-130			
n-Propylbenzene	20.6	μg/kg wet				70-130			
Styrene	24.4	μg/kg wet	20.0		122				
1,1,1,2-Tetrachloroethane	19.9	μg/kg wet 	20.0		99.5	70-130			
1,1,2,2-Tetrachloroethane	16.0	μg/kg wet	20.0		80.0	70-130			
Tetrachloroethene	19.7	μg/kg wet	20.0		98.5	70-130			
Toluene	20.4	μg/kg wet	20.0		102	70-130			
1,2,3-Trichlorobenzene	21.0	μg/kg wet	20.0		105	70-130			
1,2,4-Trichlorobenzene	20.5	μg/kg wet	20.0		102	70-130			
1,1,1-Trichloroethane	15.1	μg/kg wet	20.0		75.5	70-130			
1,1,2-Trichloroethane	20.1	μg/kg wet	20.0		100	70-130			
Trichloroethene	22.8	μg/kg wet	20.0		114	70-130			
Trichlorofluoromethane (Freon 11)	15.7	μg/kg wet	20.0		78.5	70-138			
1,2,3-Trichloropropane	21.0	μg/kg wet	20.0		105	70-130			
1,2,4-Trimethylbenzene	19.8	μg/kg wet	20.0		99.0	70-130			
1,3,5-Trimethylbenzene	20.2	μg/kg wet	20.0		101	70-130			
Vinyl chloride	17.2	μg/kg wet	20.0		86.0	70-130			
m,p-Xylene	47.0	μg/kg wet	40.0		118	70-130			
o-Xylene	24.4	μg/kg wet	20.0		122	70-130			
Tetrahydrofuran	14.3	μg/kg wet	20.0		71.5	70-130			
Ethyl ether	19.8	μg/kg wet	20.0		99.0	70-143			
Tert-amyl methyl ether	19.2	μg/kg wet	20.0		96.0	70-130			
Ethyl tert-butyl ether	18.3	μg/kg wet	20.0		91.5	70-130			
Di-isopropyl ether	21.6	μg/kg wet	20.0		108	70-130			
Tert-Butanol / butyl alcohol	166	μg/kg wet	200		83.0	70-130			
1,4-Dioxane	135	μg/kg wet	200		67.5	27.7-146			
Surrogate: 4-Bromofluorobenzene	48.4	μg/kg wet	50.0		96.8	70-130			
Surrogate: Toluene-d8	47.1	μg/kg wet	50.0		94.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	35.2	μg/kg wet	50.0		70.4	70-130			
Surrogate: Dibromofluoromethane	40.3	μg/kg wet	50.0		80.6	70-130			
LCS Dup (5062038-BSD1)			Prepared	& Analyze	d: 30-Jun-0:	5			
Acetone	23.6	μg/kg wet	20.0		118	23-201	0.00	50	
Acrylonitrile	21.8	μg/kg wet	20.0		109	70-130	9.62	25	
Benzene	22.0	μg/kg wet	20.0		110	70-130	5.61	25	
Bromobenzene	23.5	μg/kg wet	20.0		118	70-130	7.02	25	
Bromochloromethane	21.6	μg/kg wet	20.0		108	70-130	3.77	25	
Bromodichloromethane	16.5	μg/kg wet	20.0		82.5	70-130	9.52	25	

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5062038 - SW846 5030 Soil (high l	evel)								
LCS Dup (5062038-BSD1)			Prepared &	k Analyzed:	30-Jun-05				
Bromoform	21.0	μg/kg wet	20.0		105	70-130	5.38	25	
Bromomethane	18.4	μg/kg wet	20.0		92.0	48.9-174	0.542	50	
2-Butanone (MEK)	20.2	μg/kg wet	20.0		101	8.02-161	5.08	50	
n-Butylbenzene	19.2	μg/kg wet	20.0		96.0	70-130	4.80	25	
sec-Butylbenzene	22.0	μg/kg wet	20.0		110	70-130	3.70	25	
tert-Butylbenzene	21.3	μg/kg wet	20.0		106	70-130	0.939	25	
Carbon disulfide	23.1	μg/kg wet	20.0		116	70-130	0.00	25	
Carbon tetrachloride	15.5	μg/kg wet	20.0		77.5	70-130	3.95	25	
Chlorobenzene	25.7	μg/kg wet	20.0		128	70-130	3.98	25	
Chloroethane	20.1	μg/kg wet	20.0		100	65.8-146	0.00	50	
Chloroform	16.6	μg/kg wet	20.0		83.0	70-130	0.604	25	
Chloromethane	23.5	μg/kg wet	20.0		118	70-130	0.00	25	
2-Chlorotoluene	21.1	μg/kg wet	20.0		106	70-130	6.83	25	
4-Chlorotoluene	20.0	μg/kg wet	20.0		100	70-130	5.13	25	
1,2-Dibromo-3-chloropropane	18.8	μg/kg wet	20.0		94.0	70-130	9.47	25	
Dibromochloromethane	17.1	μg/kg wet	20.0		85.5	56.8-157	5.41	50	
1,2-Dibromoethane (EDB)	20.3	μg/kg wet	20.0		102	70-130	8.16	25	
Dibromomethane	18.2	μg/kg wet	20.0		91.0	70-130	4.49	25	
1,2-Dichlorobenzene	22.0	μg/kg wet	20.0		110	70-130	3.70	25	
1,3-Dichlorobenzene	22.3	μg/kg wet	20.0		112	70-130	5.50	25	
1,4-Dichlorobenzene	21.1	μg/kg wet	20.0		106	70-130	1.90	25	
Dichlorodifluoromethane (Freon12)	27.8	μg/kg wet .	20.0		139	70-151	5.17	50	
1,1-Dichloroethane	20.8	μg/kg wet	20.0		104	70-130	1.94	25	
1,2-Dichloroethane	15.5	μg/kg wet	20.0		77.5	70-130	5.30	25	
1,1-Dichloroethene	18.3	μg/kg wet	20.0		91.5	70-130	3.90	25	
cis-1,2-Dichloroethene	23.8	μg/kg wet	20.0		119	70-130	4.29	25	
trans-1,2-Dichloroethene	21.5	μg/kg wet	20.0		108	70-130	1.87	25	
1,2-Dichloropropane	22.3	μg/kg wet	20.0		112	70-130	3.64	25	
1,3-Dichloropropane	20.8	μg/kg wet	20.0		104	70-130	5.43	25	
2,2-Dichloropropane	10.5	μg/kg wet	20.0		52.5	70-130	2.90	25	QC-2
1,1-Dichloropropene	18.7	μg/kg wet	20.0		93.5	70-130	2,71	25	
cis-1,3-Dichloropropene	17.9	μg/kg wet	20.0		89.5	70-130	2.83	25	
trans-1,3-Dichloropropene	16.6	μg/kg wet	20.0		83.0	70-130	6.21	25	
Ethylbenzene	21.7	μg/kg wet	20.0		108	70-130	0.00	25	
Hexachlorobutadiene	18.7	μg/kg wet	20.0		93.5	70-146	4.37	50	
2-Hexanone (MBK)	19.4	μg/kg wet	20.0		97.0	70-130	7.49	25	
Isopropylbenzene	21.5	μg/kg wet	20.0		108	70-130	4.74	25	
4-Isopropyltoluene	20.6	μg/kg wet	20.0		103	70-130	0.976	25	
Methyl tert-butyl ether	19.0	μg/kg wet	20.0		95.0	70-130	8.22	25	
4-Methyl-2-pentanone (MIBK)	18.9	μg/kg wet	20.0		94.5	43.1-155	1.05	50	
Methylene chloride	23.4	μg/kg wet	20.0		117	70-130	8.00	25	
Naphthalene	23.1	μg/kg wet	20.0		116	70-130	5.31	25	
n-Propylbenzene	21.0	μg/kg wet	20.0		105	70-130	1.92	25	
Styrene	25.2	μg/kg wet	20.0		126	70-130	3.23	25	
1,1,1,2-Tetrachloroethane	20.7	μg/kg wet	20.0		104	70-130	4.42	25	
1,1,2,2-Tetrachloroethane	17.3	μg/kg wet	20.0		86.5	70-130	7.81	25	
Tetrachloroethene	20.4	μg/kg wet	20.0		102	70-130	3.49	25	
Toluene	21.0	μg/kg wet	20.0		105	70-130	2.90	25	
1,2,3-Trichlorobenzene	22.7	μg/kg wet	20.0		114	70-130	8.22	25	
1,2,4-Trichlorobenzene	21.1	μg/kg wet	20.0		106	70-130	3.85	25	
1,1,1-Trichloroethane	15.5	μg/kg wet	20.0		77.5	70-130	2.61	25	
1,1,2-Trichloroethane	22.2	μg/kg wet	20.0		111	70-130	10.4	25	
Trichloroethene	22.6	μg/kg wet	20.0		113	70-130	0.881	25	
Trichlorofluoromethane (Freon 11)	16.1	μg/kg wet μg/kg wet	20.0		80.5	70-130	2.52	50	

			Spike	Source		%REC		RPD	
Analyte(s)	Result	*RDL Units	Level	Result	%REC	Limits	RPD	Limit	Flag
Batch 5062038 - SW846 5030 Soil (high	level)								
LCS Dup (5062038-BSD1)			Prepared &	& Analyzed	: 30-Jun-05				
1,2,3-Trichloropropane	22.9	μg/kg wet	20.0		114	70-130	8.22	25	
1,2,4-Trimethylbenzene	20.8	μg/kg wet	20.0		104	70-130	4.93	25	
1,3,5-Trimethylbenzene	20.9	μg/kg wet	20.0		104	70-130	2.93	25	
Vinyl chloride	16.9	μg/kg wet	20.0		84.5	70-130	1.76	25	
m,p-Xylene	48.3	μg/kg wet	40.0		121	70-130	2.51	25	
o-Xylene	26.0	μg/kg wet	20.0		130	70-130	6.35	25	
Tetrahydrofuran	17.1	μg/kg wet	20.0		85.5	70-130	17.8	25	
Ethyl ether	20.3	μg/kg wet	20.0		102	70-143	2.99	50	
Tert-amyl methyl ether	20.3	μg/kg wet	20.0		102	70-130	6.06	25	
Ethyl tert-butyl ether	19.5	μg/kg wet	20.0		97.5	70-130	6.35	25	
Di-isopropyl ether	23.1	μg/kg wet	20.0		116	70-130	7.14	25	
Tert-Butanol / butyl alcohol	187	μg/kg wet	200		93.5	70-130	11.9	25	
1,4-Dioxane	154	μg/kg wet	200		77.0	27.7-146	13.1	25	
Surrogate: 4-Bromofluorobenzene	49.6	μg/kg wet	50.0		99.2	70-130			
Surrogate: Toluene-d8	48.0	μg/kg wet	50.0		96.0	70-130			
Surrogate: 1,2-Dichloroethane-d4	35.6	μg/kg wet	50.0		71.2	70-130			
Surrogate: Dibromofluoromethane	41.0	μg/kg wet	50.0		82.0	70-130			
Matrix Spike (5062038-MS1)	Sour	ce: SA29887-02	Prepared &	& Analyzed	: 30-Jun-05				
Benzene	20.5	μg/kg dry	20.0	BRL	102	70-130			
Chlorobenzene	26.7	μg/kg dry	20.0	BRL	134	70-130			QM-07
1,1-Dichloroethene	15.4	μg/kg dry	20.0	BRL	77.0	70-130			
Toluene	20.0	μg/kg dry	20.0	BRL	100	70-130			
Trichloroethene	17.6	μg/kg dry	20.0	BRL	0.88	70-130			
Surrogate: 4-Bromofluorobenzene	50.1	μg/kg dry	50.0		100	70-130			
Surrogate: Toluene-d8	46.6	μg/kg dry	50.0		93.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	35.8	μg/kg dry	50.0		71.6	70-130			
Surrogate: Dibromofluoromethane	41.7	μg/kg dry	50.0		83.4	70-130			
Matrix Spike Dup (5062038-MSD1)	Sour	ce: SA29887-02	Prepared a	& Analyzed	l: 30 <b>-</b> Jun-05	i			
Benzene	21.2	μg/kg dry	20.0	BRL	106	70-130	3.85	30	
Chlorobenzene	27.6	μg/kg dry	20.0	BRL	138	70-130	2.94	30	QM-01
1,1-Dichloroethene	16.5	μg/kg dry	20.0	BRL	82.5	70-130	6.90	30	-
Toluene	20.8	μg/kg dry	20.0	BRL	104	70-130	3.92	30	
Trichloroethene	18.4	μg/kg dry	20.0	BRL	92.0	70-130	4.44	30	
Surrogate: 4-Bromofluorobenzene	50.0	μg/kg dry	50.0		100	70-130			
Surrogate: Toluene-d8	46.7	μg/kg dry	50.0		93.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	35.1	μg/kg dry	50.0		70.2	70-130			
Surrogate: Dibromofluoromethane	41.4	μg/kg dry	50.0		82.8	70-130			

# **Extractable Petroleum Hydrocarbons - Quality Control**

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5062036 - SW846 3550B									
Blank (5062036-BLK1)			Prepared:	30-Jun-05 A	nalyzed: 0	I-Jul-05			
Gasoline	BRL	13.3 mg/kg wet		***************************************					
Fuel Oil #2	BRL	13.3 mg/kg wet							
Fuel Oil #4	BRL	13.3 mg/kg wet							
Fuel Oil #6	BRL	13.3 mg/kg wet							
Motor Oil	BRL	13.3 mg/kg wet							
Ligroin	BRL	13.3 mg/kg wet							
Aviation Fuel	BRL	13.3 mg/kg wet							
Unidentified	BRL	13.3 mg/kg wet							
Other Oil	BRL	13.3 mg/kg wet							
Total Petroleum Hydrocarbons	BRL	13.3 mg/kg wet							
Surrogate: 1-Chlorooctadecane	1.93	mg/kg wet	3.33		58.0	40-140			
LCS (5062036-BS1)			Prepared:	30-Jun-05 A	Analyzed: 0	1-Jul-05			
Fuel Oil #2	700	13.3 mg/kg wet	667		105	40-140			
Duplicate (5062036-DUP1)	Sour	ce: SA30139-04	Prepared:	30-Jun-05 A	Analyzed: 0	1-Jul-05			
Gasoline	BRL	30.0 mg/kg dry		BRL				50	
Fuel Oil #2	BRL	30.0 mg/kg dry		BRL				50	
Fuel Oil #4	BRL	30.0 mg/kg dry		BRL				50	
Fuel Oil #6	BRL	30.0 mg/kg dry		BRL				50	
Motor Oil	BRL	30.0 mg/kg dry		BRL				50	
Ligroin	BRL	30.0 mg/kg dry		BRL				50	
Aviation Fuel	BRL	30.0 mg/kg dry		BRL				50	
Unidentified	BRL	30.0 mg/kg dry		BRL				50	
Other Oil	BRL	30.0 mg/kg dry		BRL				50	
Total Petroleum Hydrocarbons	BRL	30.0 mg/kg dry		BRL				50	
Surrogate: 1-Chlorooctadecane	2.27	mg/kg dry	3.77		60.2	40-140			

			Spike	Source		%REC		RPD	-
Analyte(s)	Result	*RDL Units	Level	Result	%REC	Limits	RPD	Limit	Flag
Batch 5061936 - SW846 3545A									
Blank (5061936-BLK1)			Prepared: 2	19-Jun-05 A	nalyzed: 30	)-Jun-05			
PCB 1016	BRL	28.6 μg/kg wet							
PCB 1221	BRL	28.6 μg/kg wet							
PCB 1232	BRL	28.6 μg/kg wet							
PCB 1242	BRL	28.6 μg/kg wet							
PCB 1248	BRL	28.6 μg/kg wet							
PCB 1254	BRL	28.6 μg/kg wet							
PCB 1260	BRL	28.6 μg/kg wet							
PCB 1262	BRL	28.6 μg/kg wet							
PCB 1268	BRL	28.6 μg/kg wet	0000000						
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	25.7	μg/kg wet	28.6		89.9	30-150			
Surrogate: Decachlorobiphenyl (Sr)	24.3	μg/kg wet	28.6		85.0	30-150			
LCS (5061936-BS1)			Prepared: 2	29-Jun-05 <i>A</i>	analyzed: 3	0-Jun-05			
PCB 1016	360	28.6 μg/kg wet	357		101	40-140			
PCB 1260	394	28.6 μg/kg wet	357		110	40-140			
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	22.9	μg/kg wet	28.6		80.1	30-150			
Surrogate: Decachlorobiphenyl (Sr)	22.9	μg/kg wet	28.6		80.1	30-150			
<b>Duplicate (5061936-DUP1)</b>	Sour	ce: SA30139-01	Prepared:	29-Jun-05 A	Analyzed: 3	0-Jun-05			
PCB 1016	BRL	28.9 μg/kg dry		BRL				40	
PCB 1221	BRL	28.9 μg/kg dry		BRL				40	
PCB 1232	BRL	28.9 μg/kg dry		BRL				40	
PCB 1242	BRL	28.9 μg/kg dry		BRL				40	
PCB 1248	BRL	28.9 μg/kg dry		BRL				40	
PCB 1254	BRL	28.9 μg/kg dry		BRL				40	
PCB 1260	BRL	28.9 μg/kg dry		BRL				40	
PCB 1262	BRL	28.9 μg/kg dry		BRL				40	
PCB 1268	BRL	28.9 μg/kg dry		BRL				40	
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	23.1	μg/kg dry	28.8		80.2	30-150			
Surrogate: Decachlorobiphenyl (Sr)	24.5	μg/kg dry	28.8		85.1	30-150			
Matrix Spike (5061936-MS1)	Sour	ce: SA30139-01	Prepared:	29-Jun-05 A	Analyzed: 3	80-Jun-05			
PCB 1016	383	29.1 μg/kg dry	364	BRL	105	40-140			
PCB 1260	304	29.1 μg/kg dry	364	BRL	83.5	40-140			
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	24.7	μg/kg dry	29.1		84.9	30-150			
Surrogate: Decachlorobiphenyl (Sr)	29.1	μg/kg dry	29.1		100	30-150			
Matrix Spike Dup (5061936-MSD1)	Sour	rce: SA30139-01	Prepared:	29-Jun-05	Analyzed: 3	30-Jun-05			
PCB 1016	351	28.0 μg/kg dry	349	BRL	101	40-140	3.88	50	
PCB 1260	286	28.0 μg/kg dry	349	BRL	81.9	40-140	1.93	50	
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	23.7	μg/kg dry	27.9		84.9	30-150			
Surrogate: Decachlorobiphenyl (Sr)	26.5	μg/kg dry	27.9		95.0	30-150			

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5061973 - SW846 3545A									
Blank (5061973-BLK1)			Prepared: 2	29-Jun-05 A	nalyzed: 30	0-Jun-05			
Acenaphthene	BRL	330 μg/kg wet							
Acenaphthylene	BRL	330 μg/kg wet							
Aniline	BRL	330 μg/kg wet							
Anthracene	BRL	330 μg/kg wet							
Atrazine	BRL	330 μg/kg wet							
Azobenzene/Diphenyldiazine	BRL	330 μg/kg wet							
Benzidine	BRL	330 μg/kg wet							
Benzo (a) anthracene	BRL	330 μg/kg wet							
Benzo (a) pyrene	BRL	330 μg/kg wet							
Benzo (b) fluoranthene	BRL	330 μg/kg wet							
Benzo (g,h,i) perylene	BRL	330 μg/kg wet							
Benzo (k) fluoranthene	BRL	330 µg/kg wet							
Benzoic acid	BRL	330 μg/kg wet							
Benzyl alcohol	BRL	330 µg/kg wet							
Bis(2-chloroethoxy)methane	BRL	330 μg/kg wet							
Bis(2-chloroethyl)ether	BRL	330 μg/kg wet							
Bis(2-chloroisopropyl)ether	BRL	330 μg/kg wet							
Bis(2-ethylhexyl)phthalate	BRL	330 μg/kg wet						·	
4-Bromophenyl phenyl ether	BRL	330 μg/kg wet							
Butyl benzyl phthalate	BRL -	330 μg/kg wet							
Carbazole	BRL	330 μg/kg wet							
4-Chloro-3-methylphenol	BRL	330 μg/kg wet							
4-Chloroaniline	BRL	330 µg/kg wet							
2-Chloronaphthalene	BRL	330 µg/kg wet							
2-Chlorophenol	BRL	330 μg/kg wet							
4-Chlorophenyl phenyl ether	BRL	330 μg/kg wet							
Chrysene	BRL	330 μg/kg wet							
Dibenzo (a,h) anthracene	BRL	330 µg/kg wet							
Dibenzofuran	BRL	330 µg/kg wet							
1,2-Dichlorobenzene	BRL	330 µg/kg wet							
1,3-Dichlorobenzene	BRL	330 μg/kg wet							
1,4-Dichlorobenzene	BRL	330 µg/kg wet							
3,3'-Dichlorobenzidine	BRL	330 µg/kg wet							
2,4-Dichlorophenol	BRL	330 μg/kg wet							
Diethyl phthalate	BRL	330 µg/kg wet							
Dimethyl phthalate	BRL	330 μg/kg wet							
2,4-Dimethylphenol	BRL	330 μg/kg wet							
Di-n-butyl phthalate	BRL	330 μg/kg wet							
4,6-Dinitro-2-methylphenol	BRL	330 µg/kg wet							
2,4-Dinitrophenol	BRL	330 μg/kg wet							
2,4-Dinitrotoluene	BRL	330 μg/kg wet							
2,6-Dinitrotoluene	BRL	330 μg/kg wet							
Di-n-octyl phthalate	BRL	330 µg/kg wet							
Fluoranthene	BRL	330 µg/kg wet							
Fluorene	BRL	330 μg/kg wet							
Hexachlorobenzene	BRL	330 μg/kg wet							
Hexachlorobutadiene	BRL	330 µg/kg wet							
Hexachlorocyclopentadiene	BRL	330 μg/kg wet							
Hexachloroethane	BRL	330 µg/kg wet							
Indeno (1,2,3-cd) pyrene	BRL	330 µg/kg wet							
1-Methylnaphthalene	BRL	330 μg/kg wet							
Isophorone	BRL	330 µg/kg wet							
2-Methylnaphthalene	BRL	330 µg/kg wet							
2-Methylphenol	BRL	330 µg/kg wet							

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5061973 - SW846 3545A									
Blank (5061973-BLK1)			Prepared: 2	29-Jun-05 A	nalyzed: 30	)-Jun-05			
3,4-Methylphenol	BRL	330 μg/kg wet					.,,,		
Naphthalene	BRL	330 μg/kg wet							
2-Nitroaniline	BRL	330 μg/kg wet							
3-Nitroaniline	BRL	330 μg/kg wet							
4-Nitroaniline	BRL	1320 μg/kg wet							
Nitrobenzene	BRL	330 μg/kg wet							
2-Nitrophenol	BRL	330 μg/kg wet							
4-Nitrophenol	BRL	1320 μg/kg wet							
N-Nitrosodimethylamine	BRL	330 μg/kg wet							
N-Nitrosodi-n-propylamine	BRL	330 μg/kg wet							
N-Nitrosodiphenylamine	BRL	330 μg/kg wet							
Pentachlorophenol	BRL	1320 μg/kg wet							
Phenanthrene	BRL	330 μg/kg wet							
Phenol	BRL	330 μg/kg wet							
Pyrene	BRL	330 µg/kg wet							
Pyridine	BRL	330 μg/kg wet							
· ·	BRL	330 µg/kg wet							
1,2,4-Trichlorobenzene	BRL	330 µg/kg wet							
2,4,5-Trichlorophenol									
2,4,6-Trichlorophenol	BRL	330 μg/kg wet				<del>/                                    </del>			
Surrogate: 2-Fluorobiphenyl	3380	μg/kg wet	6670		50.7	30-130			
Surrogate: 2-Fluorophenol	3310	μg/kg wet	6670		49.6	15-110			
Surrogate: Nitrobenzene-d5	2740	μg/kg wet	6670		41.1	30-130			
Surrogate: Phenol-d5	3270	μg/kg wet	6670		49.0	15-110			
Surrogate: Terphenyl-dl4	4290	μg/kg wet	6670		64.3	30-130			
Surrogate: 2,4,6-Tribromophenol	2730	μg/kg wet	6670		40.9	15-110			
LCS (5061973-BS1)				29-Jun-05 A					
Acenaphthene	4870	330 μg/kg wet	6670		73.0	40-130			
Acenaphthylene	5190	330 μg/kg wet	6670		77.8	40-130			
Aniline	5500	330 μg/kg wet	6670		82.5	40-130			
Anthracene	5620	330 μg/kg wet	6670		84.3	40-130			
Atrazine	6690	330 μg/kg wet	6670		100	40-130			
Azobenzene/Diphenyldiazine	4640	330 μg/kg wet	6670		69.6	40-130			
Benzidine	682	330 µg/kg wet	6670		10.2	40-130			QC-
Benzo (a) anthracene	4940	330 μg/kg wet	6670		74.1	40-130			
Benzo (a) pyrene	4680	330 μg/kg wet	6670		70.2	40-130			
Benzo (b) fluoranthene	4150	330 μg/kg wet	6670		62.2	40-130			
Benzo (g,h,i) perylene	4620	330 µg/kg wet	6670		69.3	40-130			
Benzo (k) fluoranthene	5880	330 μg/kg wet	6670		88.2	40-130			
Benzoic acid	141	330 μg/kg wet	6670		2.11	40-130			QC-
Benzyl alcohol	4330	330 μg/kg wet	6670		64.9	40-130			
Bis(2-chloroethoxy)methane	3560	330 μg/kg wet	6670		53.4	40-130			
Bis(2-chloroethyl)ether	6610	330 µg/kg wet	6670		99.1	40-130			
Bis(2-chloroisopropyl)ether	5980	330 μg/kg wet	6670		89.7	40-130			
Bis(2-ethylhexyl)phthalate	5210	330 μg/kg wet	6670		78.1	40-130			
4-Bromophenyl phenyl ether	4940	330 μg/kg wet	6670		74.1	40-130			
Butyl benzyl phthalate	4580	330 μg/kg wet	6670		68.7	40-130			
Carbazole	8500	330 μg/kg wet	6670		127	40-130			
4-Chloro-3-methylphenol	3720	330 μg/kg wet	6670		55.8	40-130			
4-Chloroaniline	5290	330 μg/kg wet	6670		79.3	40-130			
2-Chloronaphthalene	4570	330 μg/kg wet	6670		68.5	40-130			
2-Chlorophenol	5020	330 µg/kg wet	6670		75.3	40-130			
4-Chlorophenyl phenyl ether	5290	330 μg/kg wet	6670		73.3 79.3	40-130			
	3290	oou μg/kg wet	00/0		17.3	40-130			
Chrysene	5370	330 μg/kg wet	6670		80.5	40-130			

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5061973 - SW846 3545A									
LCS (5061973-BS1)			Prepared: 2	29-Jun-05 A	nalyzed: 30	)-Jun-05			
Dibenzofuran	4980	330 μg/kg wet	6670		74.7	40-130			
1,2-Dichlorobenzene	5210	330 μg/kg wet	6670		78.1	40-130			
1,3-Dichlorobenzene	4940	330 µg/kg wet	6670		74.1	40-130			
,4-Dichlorobenzene	4810	330 μg/kg wet	6670		72.1	40-130			
3,3'-Dichlorobenzidine	3790	330 µg/kg wet	6670		56.8	40-130			
2,4-Dichlorophenol	3650	330 µg/kg wet	6670		54.7	40-130			
Diethyl phthalate	5120	330 μg/kg wet	6670		76.8	40-130			
Dimethyl phthalate	5100	330 μg/kg wet	6670		76.5	40-130			
2,4-Dimethylphenol	3210	330 µg/kg wet	6670		48.1	40-130			
Di-n-butyl phthalate	5810	330 µg/kg wet	6670		87.1	40-130			
4,6-Dinitro-2-methylphenol	3500	330 µg/kg wet	6670		52.5	40-130			
2,4-Dinitrophenol	2320	330 μg/kg wet	6670		34.8	40-130			QC-
2,4-Dinitrotoluene	5340	330 µg/kg wet	6670		80.1	40-130			
2,6-Dinitrotoluene	5740	330 μg/kg wet	6670		86.1	40-130			
Di-n-octyl phthalate	4970	330 µg/kg wet	6670		74.5	40-130			
Fluoranthene	5830	330 μg/kg wet	6670		87.4	40-130			
Fluorene	5140	330 μg/kg wet	6670		77.1	40-130			
Hexachlorobenzene	5270	330 μg/kg wet	6670		79.0	40-130			
Hexachlorobutadiene	4290	330 μg/kg wet	6670		64.3	40-130			
Hexachlorocyclopentadiene	5450	330 µg/kg wet	6670		81.7	40-130			
Hexachloroethane	5850	330 μg/kg wet	6670		87.7	40-130			
Indeno (1,2,3-cd) pyrene	4860	330 μg/kg wet	6670		72.9	40-130			
1-Methylnaphthalene	4240	330 μg/kg wet	6670		63.6	40-140			
Isophorone	4240	330 μg/kg wet	6670		63.6	40-130			
•	3950	330 μg/kg wet	6670		59.2	40-130			
2-Methylnaphthalene	5160	330 μg/kg wet	6670		77.4	40-130			
2-Methylphenol	5570	330 μg/kg wet	6670		83.5	40-130			
3,4-Methylphenol	3750	330 μg/kg wet	6670		56.2	40-130			
Naphthalene		330 μg/kg wet	6670		63.3	40-130			
2-Nitroaniline	4220 5220	330 μg/kg wet	6670		78.3	40-130			
3-Nitroaniline									
4-Nitroaniline	6310	1320 μg/kg wet	6670		94.6	40-130			
Nitrobenzene	3450	330 μg/kg wet	6670		51.7	40-130			
2-Nitrophenol	2920	330 μg/kg wet	6670		43.8	40-130			
4-Nitrophenol	4890	1320 μg/kg wet	6670		73.3	40-130			
N-Nitrosodimethylamine	3030	330 μg/kg wet	6670		45.4	40-130			
N-Nitrosodi-n-propylamine	6120	330 μg/kg wet	6670		91.8	40-130			
N-Nitrosodiphenylamine	5240	330 μg/kg wet	6670		78.6	40-130			
Pentachlorophenol	5570	1320 μg/kg wet	6670		83.5	40-130			
Phenanthrene	4860	330 μg/kg wet	6670		72.9	40-130			
Phenol	4590	330 μg/kg wet	6670		68.8	40-130			
Pyrene	4460	330 μg/kg wet	6670		66.9	40-130			
Pyridine	2820	330 μg/kg wet	6670		42.3	40-130			
1,2,4-Trichlorobenzene	3910	330 μg/kg wet	6670		58.6	40-130			
2,4,5-Trichlorophenol	5040	330 μg/kg wet	6670		75.6	40-130			
2,4,6-Trichlorophenol	4240	330 μg/kg wet	6670		63.6	40-130			
Surrogate: 2-Fluorobiphenyl	3980	μg/kg wet	6670		59.7	30-130			
Surrogate: 2-Fluorophenol	2760	μg/kg wet	6670		41.4	15-110			
Surrogate: Nitrobenzene-d5	3100	μg/kg wet	6670		46.5	30-130			
Surrogate: Phenol-d5	3570	μg/kg wet	6670		53.5	15-110			
Surrogate: Terphenyl-dl4	4010	μg/kg wet	6670		60.1	30-130			
Surrogate: 2,4,6-Tribromophenol	4160	μg/kg wet	6670		62.4	15-110			
Duplicate (5061973-DUP1)	Sou	rce: SA30139-01	Prepared:	29-Jun-05	Analyzed: (	)1-Jul-05			
Acenaphthene	BRL	222 μg/kg dry	r	BRL	,			50	
Acenaphthylene	BRL	222 μg/kg dry 222 μg/kg dry		BRL				50	

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5061973 - SW846 3545A									
Duplicate (5061973-DUP1)	Sour	ce: SA30139-01	Prepared: 29	9-Jun-05 <i>A</i>	nalyzed: 0	1-Jul-05			
Aniline	BRL	222 μg/kg dry		BRL		***************************************		50	
Anthracene	BRL	222 μg/kg dry		BRL				50	
Atrazine	BRL	222 μg/kg dry		BRL				50	
Azobenzene/Diphenyldiazine	BRL	222 μg/kg dry		BRL				50	
Benzidine	BRL	222 μg/kg dry		BRL				50	
Benzo (a) anthracene	BRL	222 μg/kg dry		BRL				50	
Benzo (a) pyrene	BRL	222 μg/kg dry		BRL				50	
Benzo (b) fluoranthene	BRL	222 μg/kg dry		BRL				50	
Benzo (g,h,i) perylene	BRL	222 μg/kg dry		BRL				50	
Benzo (k) fluoranthene	BRL	222 μg/kg dry		BRL				50	
Benzoic acid	BRL	222 μg/kg dry		BRL				50	
Benzyl alcohol	BRL	222 μg/kg dry		BRL				50	
Bis(2-chloroethoxy)methane	BRL	222 μg/kg dry		BRL				50	
Bis(2-chloroethyl)ether	BRL	222 μg/kg dry		BRL				50	
Bis(2-chloroisopropyl)ether	BRL	222 μg/kg dry		BRL				50	
Bis(2-ethylhexyl)phthalate	BRL	222 μg/kg dry		BRL				50	
4-Bromophenyl phenyl ether	BRL	222 μg/kg dry		BRL				50	
Butyl benzyl phthalate	BRL	222 μg/kg dry		BRL				50	
Carbazole	BRL	222 μg/kg dry		BRL				50	
4-Chloro-3-methylphenol	BRL	222 μg/kg dry		BRL				50	
4-Chloroaniline	BRL	222 μg/kg dry		BRL				50	
2-Chloronaphthalene	BRL	222 μg/kg dry		BRL				50	
2-Chlorophenol	BRL	222 μg/kg dry		BRL				50	
4-Chlorophenyl phenyl ether	BRL	222 μg/kg dry		BRL				50	
Chrysene	BRL	222 μg/kg dry		BRL				50	
Dibenzo (a,h) anthracene	BRL	222 μg/kg dry		BRL				50	
Dibenzofuran	BRL	222 μg/kg dry		BRL	٠			50	
1,2-Dichlorobenzene	BRL	222 μg/kg dry		BRL				50	
1,3-Dichlorobenzene	BRL	222 μg/kg dry		BRL				50	
1,4-Dichlorobenzene	BRL	222 μg/kg dry		BRL				50	
3,3'-Dichlorobenzidine	BRL	222 μg/kg dry		BRL				50	
2,4-Dichlorophenol	BRL	222 μg/kg dry		BRL				50	
Diethyl phthalate	BRL	222 μg/kg dry		BRL				50	
Dimethyl phthalate	BRL	222 μg/kg dry		BRL				50	
2,4-Dimethylphenol	BRL	222 μg/kg dry		BRL				50	
Di-n-butyl phthalate	BRL	222 μg/kg dry		BRL				50	
4,6-Dinitro-2-methylphenol	BRL	222 μg/kg dry		BRL				50	
2,4-Dinitrophenol	BRL	222 μg/kg dry		BRL				50	
2,4-Dinitrotoluene	BRL	222 μg/kg dry		BRL				50	
2,6-Dinitrotoluene	BRL	222 μg/kg dry		BRL				50	
Di-n-octyl phthalate	BRL	222 μg/kg dry		BRL				50	
Fluoranthene	BRL	222 μg/kg dry		BRL				50	
Fluorene	BRL	222 μg/kg dry		BRL				50	
Hexachlorobenzene	BRL	222 μg/kg dry		BRL				50	
Hexachlorobutadiene	BRL	222 μg/kg dry		BRL				50	
Hexachlorocyclopentadiene	BRL	222 μg/kg dry		BRL				50	
Hexachloroethane	BRL	222 μg/kg dry		BRL				50	
Indeno (1,2,3-cd) pyrene	BRL	222 μg/kg dry		BRL				50	
Isophorone	BRL	222 μg/kg dry		BRL				50	
1-Methylnaphthalene	BRL	222 μg/kg dry		BRL				50	
2-Methylnaphthalene	BRL	222 μg/kg dry		BRL				50	
2-Methylphenol	BRL	222 μg/kg dry		BRL				50	
3,4-Methylphenoi	BRL	222 μg/kg dry		BRL				50	
Naphthalene	BRL	222 μg/kg dry		BRL				50	

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5061973 - SW846 3545A									
Duplicate (5061973-DUP1)	Sour	ce: SA30139-01	Prepared: 2	29 <b>-</b> Jun-05 <i>A</i>	Analyzed: 0	1-Jul-05			
2-Nitroaniline	BRL	222 μg/kg dry		BRL				50	
3-Nitroaniline	BRL	222 μg/kg dry		BRL				50	
4-Nitroaniline	BRL	890 μg/kg dry		BRL				50	
Nitrobenzene	BRL	222 μg/kg dry		BRL				50	
2-Nitrophenol	BRL	222 μg/kg dry		BRL				50	
4-Nitrophenol	BRL	890 μg/kg dry		BRL				50	
N-Nitrosodimethylamine	BRL	222 μg/kg dry		BRL				50	
N-Nitrosodi-n-propylamine	BRL	222 μg/kg dry		BRL				50	
N-Nitrosodiphenylamine	BRL	222 μg/kg dry		BRL				50	
Pentachlorophenol	BRL	890 μg/kg dry		BRL				50	
Phenanthrene	BRL	222 μg/kg dry		BRL				50	
Phenol	BRL	222 μg/kg dry		BRL				50	
Pyrene	BRL	222 μg/kg dry		BRL				50	
Pyridine	BRL	222 μg/kg dry		BRL				50	
1,2,4-Trichlorobenzene	BRL	222 μg/kg dry		BRL				50	
2,4,5-Trichlorophenol	BRL	222 μg/kg dry		BRL				50	
2,4,6-Trichlorophenol	BRL	222 μg/kg dry		BRL				50	
	1640	μg/kg dry	2250		72.9	30-130			
Surrogate: 2-Fluorobiphenyl	1290		2250		57.3	15-110			
Surrogate: 2-Fluorophenol		μg/kg dry			56.9	30-130			
Surrogate: Nitrobenzene-d5	1280	μg/kg dry	2250		30.9 44.9	15-110			
Surrogate: Phenol-d5	1010	μg/kg dry	2250		80.9	30-130			
Surrogate: Terphenyl-dl4	1820	μg/kg dry	2250		50.9	15-110			
Surrogate: 2,4,6-Tribromophenol	1130	μg/kg dry	2250						
Matrix Spike (5061973-MS1)	Sour	rce: SA30139-01	Prepared:	29-Jun-05	Analyzed: (	)1-Jul-05			
Acenaphthene	2990	224 μg/kg dry	4520	BRL	66.2	40-140			
4-Chloro-3-methylphenol	2910	224 μg/kg dry	4520	BRL	64.4	30-130			
2-Chlorophenol	3480	224 μg/kg dry	4520	BRL	77.0	30-130			
1,4-Dichlorobenzene	4070	224 µg/kg dry	4520	BRL	90.0	40-140			
2,4-Dinitrotoluene	3540	224 μg/kg dry	4520	BRL	78.3	40-140			
4-Nitrophenol	3480	896 μg/kg dry	4520	BRL	77.0	30-130			
N-Nitrosodi-n-propylamine	4110	224 μg/kg dry	4520	BRL	90.9	40-140			
Pentachlorophenol	3690	896 μg/kg dry	4520	BRL	81.6	30-130			
Phenol	3100	224 μg/kg dry	4520	BRL	68.6	30-130			
Pyrene	2040	224 μg/kg dry	4520	BRL	45.1	40-140			
1,2,4-Trichlorobenzene	2370	224 μg/kg dry	4520	BRL	52.4	40-140			
Surrogate: 2-Fluorobiphenyl	2310	μg/kg dry	4520		51.1	30-130			
Surrogate: 2-Fluorophenol	2100	μg/kg dry	4520		46.5	15-110			
Surrogate: Nitrobenzene-d5	2040	μg/kg dry	4520		45.1	30-130			
Surrogate: Phenol-d5	2470	μg/kg dry	4520		54.6	15-110			
Surrogate: Terphenyl-dl4	1680	μg/kg dry	4520		37.2	30-130			
Surrogate: 2,4,6-Tribromophenol	2540	μg/kg dry	4520		56.2	15-110			
Matrix Spike Dup (5061973-MSD1)		rce: SA30139-01	Prepared:	29-Inn-05	Analyzed:	01-Inl-05			
Acenaphthene	3530	226 μg/kg dry	4570	BRL	77.2	40-140	15.3	30	
4-Chloro-3-methylphenol	3380	226 μg/kg dry 226 μg/kg dry	4570	BRL	74.0	30-130	13.9	30	
2-Chlorophenol	4140	226 μg/kg dry	4570	BRL	90.6	30-130	16.2	30	
1,4-Dichlorobenzene	3600	226 μg/kg dry	4570	BRL	78.8	40-140	13.3	30	
	4300	226 μg/kg dry 226 μg/kg dry	4570	BRL	94.1	40-140	18.3	30	
2,4-Dinitrotoluene	3360	220 μg/kg dry 904 μg/kg dry	4570	BRL	73.5	30-130	4.65	30	
4-Nitrophenol		904 μg/kg dry 226 μg/kg dry	4570	BRL	97.4	40-140	6.90	30	
N-Nitrosodi-n-propylamine	4450						21.2	30	
Pentachlorophenol	4610	904 μg/kg dry	4570 4570	BRL	101	30-130		30	
Phenol	3480	226 μg/kg dry	4570	BRL	76.1	30-130	10.4		
Pyrene	2470	226 μg/kg dry	4570	BRL	54.0	40-140	18.0	30	
1,2,4-Trichlorobenzene	2720	226 μg/kg dry	4570	BRL	59.5	40-140	12.7	30	

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5061973 - SW846 3545A	- 64 (464) (4) (4) (4) (4) (4) (4) (4) (4) (4) (	activas activamas proprietas de ejecto por Antonio Ant					COMMUNICATION CONTRACTOR		
Matrix Spike Dup (5061973-MSD1)	Sour	ce: SA30139-01	Prepared: 2	29-Jun-05 A	nalyzed: 0	1-Jul-05			
Surrogate: 2-Fluorobiphenyl	2590	μg/kg dry	4570		56.7	30-130			
Surrogate: 2-Fluorophenol	2280	μg/kg dry	4570		49.9	15-110			
Surrogate: Nitrobenzene-d5	2150	μg/kg dry	4570		47.0	30-130			
Surrogate: Phenol-d5	2720	μg/kg dry	4570		59.5	15-110			
Surrogate: Terphenyl-dl4	1980	μg/kg dry	4570		43.3	30-130			
Surrogate: 2,4,6-Tribromophenol	2930	μg/kg dry	4570		64.1	15-110			

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5061913 - SW846 3050B									
Blank (5061913-BLK1)			Prepared: 2	29-Jun-05 A	nalyzed: 0	1-Jul-05			
Selenium	BRL	1.50 mg/kg wet							
Lead	BRL	0.750 mg/kg wet							
Silver	BRL	1.00 mg/kg wet							
Arsenic	BRL	1.50 mg/kg wet							
Chromium	BRL	0.500 mg/kg wet							
Cadmium	BRL	0.250 mg/kg wet							
Barium	BRL	0.500 mg/kg wet							
LCS (5061913-BS1)			Prepared:	29-Jun <b>-</b> 05 <i>A</i>	Analyzed: 0	1-Jul-05			
Lead	88.4	0.750 mg/kg wet	100		88.4	85-115			
Selenium	96.8	3.00 mg/kg wet	100		96.8	85-115			
Cadmium	88.4	0.250 mg/kg wet	100		88.4	85-115			
Chromium	91.2	0.500 mg/kg wet	100		91.2	85-115			
Silver	47.8	2.00 mg/kg wet	50.0		95.6	85-115			
Arsenic	89.5	1.50 mg/kg wet	100		89.5	85-115			
Barium	87.8	0.500 mg/kg wet	100		87.8	85-115			
<b>Duplicate (5061913-DUP1)</b>	Sour	ce: SA29658-09	Prepared:	29-Jun-05 A	Analyzed: 0	1-Jul-05			
Selenium	BRL	1.60 mg/kg dry		BRL				35	
Lead	1320	0.799 mg/kg dry		1300			1.53	35	
Silver	BRL	1.07 mg/kg dry		BRL				35	
Chromium	13.5	0.533 mg/kg dry		14.0			3.64	35	
Cadmium	0.954	0.266 mg/kg dry		0.932			2.33	35	
Arsenic	7.31	1.60 mg/kg dry		7.48			2.30	35	
Barium	113	0.533 mg/kg dry		114			0.881	35	
Duplicate (5061913-DUP2)	Sou	rce: SA30139-04	Prepared:	29-Jun-05	Analyzed: (	1-Jul-05			
Lead	6.02	0.743 mg/kg dry		3.70			47.7	35	QR-05
Selenium	BRL	1.49 mg/kg dry		BRL				35	
Chromium	14.8	0.495 mg/kg dry		18.2			20.6	35	
Cadmium	BRL	0.248 mg/kg dry		0.0250				35	
Arsenic	9.60	1.49 mg/kg dry		9.96			3.68	35	
Silver	BRL	0.990 mg/kg dry		BRL				35	
Barium	17.7	0.495 mg/kg dry		24.8			33.4	35	
Matrix Spike (5061913-MS1)	Sou	rce: SA29658-01	Prepared	29-Jun-05	Analyzed:	01-Jul-05			
Lead	597	0.817 mg/kg dry	109	504	85.3	75-125			
Selenium	88.2	1.63 mg/kg dry	109	BRL	80.9	75-125			
Chromium	113	0,544 mg/kg dry	109	11.9	92.8	75-125			
Cadmium	93.9	0.272 mg/kg dry	109	0.205	86.0	75-125			
Arsenic	102	1.63 mg/kg dry	109	8.01	86.2	75-125			
Silver	33.1	1.09 mg/kg dry	54.4	BRL	60.8	75-125			QM-07
Barium	214	0.544 mg/kg dry	109	114	91.7	75-125			
Matrix Spike (5061913-MS2)	Sou	rce: SA30139-01	Prepared	: 29-Jun-05	Analyzed:	01-Jul-05			
Selenium	79.3	1.49 mg/kg dry	99.1	BRL	80.0	75-125			
Lead	88.3	0.743 mg/kg dry	99.1	6.40	82.6	75-125			
Chromium	104	0.495 mg/kg dry	99.1	12.9	91.9	75-125			
Cadmium	84.7	0.248 mg/kg dry	99.1	BRL	85.5	75-125			
Silver	29.4	0.991 mg/kg dry	49.5	BRL	59.4	75-125			QM-07
Arsenic	95.7	1.49 mg/kg dry	99.1	8.71	87.8	75-125			
Barium	108	0.495 mg/kg dry	99.1	17.9	90.9	75-125			
Matrix Spike Dup (5061913-MSD1)	Soi	ırce: SA29658-01	Prepared	l: 29-Jun-05	Analyzed:	01-Jul-05			
Lead	633	0.819 mg/kg dry	109	504	118	75-125	5.85	35	
Selenium	89.7	1.64 mg/kg dry	109	BRL	82.3	75-125	1.69	35	
Chromium	113	0.546 mg/kg dry	109	11.9	92.8	75-125	0.00	35	
Cadmium	96.3	0.273 mg/kg dry	109	0.205	88.2	75-125	2.52	35	

# Total Metals by EPA 6000/7000 Series Methods - Quality Control

A polysto(a)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Analyte(s)	ICSUIT	NDL OIRS	130 4 01	TOBUT	701050			TO SECURE A PROPERTY OF THE PARTY OF THE PAR	mrennenmenenene
Batch 5061913 - SW846 3050B			•						
Matrix Spike Dup (5061913-MSD1)	Sour	ce: SA29658-01	Prepared:	29-Jun <b>-</b> 05 <i>A</i>	Analyzed: 0	1-Jul-05			
Arsenic	104	1.64 mg/kg dry	109	8.01	88.1	75-125	1.94	35	
Silver	32.1	1.09 mg/kg dry	54.6	BRL	58.8	75-125	3.07	35	QM-07
Barium	224	0.546 mg/kg dry	109	114	101	75-125	4.57	35	
Matrix Spike Dup (5061913-MSD2)	Sour	ce: SA30139-01	Prepared:	29-Jun-05 <i>A</i>	Analyzed: 0	1-Jul-05			
Lead	95.5	0.763 mg/kg dry	102	6.40	87.4	75-125	7.83	35	
Selenium	83.3	1.53 mg/kg dry	102	BRL	81.7	75-125	4.92	35	
Cadmium	86.5	0.254 mg/kg dry	102	BRL	84.8	75-125	2.10	35	
Chromium	104	0.509 mg/kg dry	102	12.9	89.3	75-125	0.00	35	
Arsenic	96.8	1.53 mg/kg dry	102	8.71	86.4	75-125	1.14	35	
Silver	30.1	1.02 mg/kg dry	50.9	BRL	59.1	75-125	2.35	35	QM-07
Barium	108	0.509 mg/kg dry	102	17.9	88.3	75-125	0.00	35	
Reference (5061913-SRM1)			Prepared:	29 <b>-</b> Jun-05 <i>I</i>	Analyzed: 0	1-Jul-05			
Lead	58.9	0.750 mg/kg wet	65.3		90.2	85-115			
Chromium	26.0	0.500 mg/kg wet	29.5		88.1	85-115			
Cadmium	50.6	0.250 mg/kg wet	59.3		85.3	85-115			
Arsenic	34.3	1.50 mg/kg wet	36.9		93.0	85-115			
Barium	6.48	0.500 mg/kg wet	6.75		96.0	85-115			
Reference (5061913-SRM2)			Prepared:						
Lead	56.5	0.750 mg/kg wet	63,8		88.6	85-115			
Arsenic	33.2	1.50 mg/kg wet	36.0		92.2	85-115			
Barium	6.06	0.500 mg/kg wet	6.59		92.0	85-115			
Batch 5061914 - EPA200/SW7000 Series									
Blank (5061914-BLK1)			Prepared:	29-Jun-05	Analyzed: (	01-Jul-05			
Mercury	BRL	0.179 mg/kg wet						******	
LCS (5061914-BS1)			Prepared:	29-Jun-05	Analvzed: (	01-Jul-05			
Mercury	0.851	0.179 mg/kg wet	0.893		95.3	80-120			
•		rce: SA29658-09		29-Jun-05	Analyzed: (	01-Inl-05			
Duplicate (5061914-DUP1)	0.821	0.191 mg/kg dry	Tropurou	1.24		01 000	40.7	35	QR-04
Mercury		rce: SA30139-04	Drangrad	: 29-Jun-05	Analyzed:	01_101_05			
Duplicate (5061914-DUP2)	BRL	0.176 mg/kg dry	Troparou	BRL	Tillaly 2001.	01.341.03		35	
Mercury			Drangrad	: 29-Jun-05	Analyzad	01_101_05			
Matrix Spike (5061914-MS1)	1.12	0.194 mg/kg dry	0.452	0.607	113	75-125			
Mercury				: 29-Jun-05					
Matrix Spike (5061914-MS2)		0.188 mg/kg dry	0.437	BRL	Anaryzeu.	75-125			<u></u>
Mercury	0.497	~							
Matrix Spike Dup (5061914-MSD1)		rce: SA29658-01		: 29-Jun-05			0.25	35	
Mercury	1.02	0.175 mg/kg dry	0.408	0.607	101	75-125	9,35	33	
Matrix Spike Dup (5061914-MSD2)	Sou	rce: SA30139-01		: 29-Jun-05					
Mercury	0.448	0.181 mg/kg dry	0.421	BRL	106	75-125	10.4	35	

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# **Toxicity Characteristics - Quality Control**

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Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5062033 - General Preparation		antana disenso a erras senso e carre censia mineri e e e e e e e e e e e e e e e e e e		THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TRANSPORT	handalani kanada da k				na anna anna anna anna anna anna anna
Blank (5062033-BLK1)			Prepared &	: Analyzed:	29-Jun-05				
Reactivity	Negative	mg/kg wet	F						
Reactive Cyanide	BRL	25.0 mg/kg wet							
Reactive Sulfide	BRL	50.0 mg/kg wet							
Duplicate (5062033-DUP1)	Sour	ce: SA30047-04	Prepared &	Analyzed:	29-Jun-05				
Reactivity	Negative	mg/kg dry		0.00				200	
Reactive Cyanide	BRL	25.0 mg/kg dry		BRL				20	
Reactive Sulfide	BRL	50.0 mg/kg dry		BRL				20	
Batch 5062077 - General Preparation									
Reference (5062077-SRM1)			Prepared &	Analyzed:	30-Jun-05				
Flashpoint	70	°F	75.0		93.3	81-119			
Batch 5070031 - General Preparation									
Duplicate (5070031-DUP1)	Sour	ce: SA30214-01	Prepared &	k Analyzed					
pH	8.99	pH Units		8.91		0.894	5		
	General Ch	emistry Paramete	ers - Quali	ty Contro	ol				
			Spike	Source		%REC		RPD	
Analyte(s)	Result	*RDL Units	Level	Result	%REC	Limits	RPD	Limit	Flag
Batch 5061974 - General Preparation			-						
Duplicate (5061974-DUP1)	Sour	ce: SA29914-10	Prepared:	29-Jun-05 A	Analyzed: 3	0-Jun-05			
% Solids	82.1	%		77.3		···	6.02	20	
Batch 5070064 - General Preparation									
LCS (5070064-BS1)			Prepared &	& Analyzed					
Specific Conductance (EC)	147	uS/cm	147		100	95-105			
<b>Duplicate (5070064-DUP1)</b>	Sour	rce: SA30233-01	Prepared &	& Analyzed	: 01-Jul-05				
Specific Conductance (EC)	196	uS/cm		198			1.02	5	
Reference (5070064-SRM1)			Prepared a	& Analyzed	l: 01-Jul-05				
Specific Conductance (EC)	198	uS/cm	200		99.0	80-120			

#### Notes and Definitions

*TPH	Calculated as
_F	> 200
HT-2	This sample was received outside the EPA recommended holding time for the analysis specified.
Neg	Negative
QC-2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
QR-04	Analyses are not controlled on RPD values from sample concentrations less than the reporting limit. QC batch accepted based on LCS and/or LCSD QC results
QR-05	RPD out of acceptance range.
S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
vext2	Field extracted
VOC10	The VOC field preserved soil sample is not within the 1:1 weight to volume ratio as recommended by SW846 methods 5030 and 5035 but may be within the 1:1 volume to volume ratio.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
A plug gi	on (+) in the Method Deference column indicates the method is not accredited by NELAC

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

#### Interpretation of Total Petroleum Hydrocarbon Report

Petroleum identification is determined by comparing the GC fingerprint obtained from the sample with a library of GC fingerprints obtained from analyses of various petroleum products. Possible match categories are as follows:

Gasoline - includes regular, unleaded, premium, etc.

Fuel Oil #2 - includes home heating oil, #2 fuel oil, and diesel

Fuel Oil #4 - includes #4 fuel oil

Fuel Oil #6 - includes #6 fuel oil and bunker "C" oil

Motor Oil - includes virgin and waste automobile oil

Ligroin - includes mineral spirits, petroleum naphtha, vm&p naphtha

Aviation Fuel - includes kerosene, Jet A and JP-4

Other Oil - includes lubricating and cutting oil, and silicon oil

At times, the unidentified petroleum product is quantified using a calibration that most closely approximates the distribution of compounds in the sample. When this occurs, the result is qualified as *TPH (Calculated as).

<u>Laboratory Control Sample (LCS)</u>: A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

<u>Matrix Spike</u>: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

<u>Method Blank</u>: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

<u>Surrogate</u>: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Validated by: Hanibal C. Tayeh, Ph.D. Nicole Brown

#### MADEP MCP ANALYTICAL METHOD REPORT CERTIFICATION FORM

MAD	EP RTN ¹ :		ACTOR HOUSE CONTROL CO		AND AND THE PROPERTY OF THE PR	жи пременя выполня на начание пременя на пре								
This 1	form provides	certifications for the f	ollowing Spectrum	Analytical, Inc. wo	ork order #: SA301	39								
Matri	X	☐ Groundwater	☐ Soil/	Sediment	☐ Drinking Water	☐ Other	A Pilote virasi esse esse desse emite desenven en accusacion							
MCP SW-846 Methods Used		□ 8260B	□ 8151A	□ 8330	□ 6010B	□ 7470A/1A								
		□ 8270C	□ 8081A	□ VPH	□ 6020	□ 9014M²								
		□ 8082	□ 8021B	□ ЕРН	□ 7000S ³	□ 7196A								
2 M -	<ol> <li>List Release Tracking Number (RTN), if known</li> <li>M - SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method</li> <li>S - SW-846 Methods 7000 Series List individual method and analyte</li> </ol>													
An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status														
A	Were all samples received by the laboratory in a condition consistent with that described on the Chain of Custody documentation for the data set?													
В	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?													
Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?														
D		E <i>PH methods only</i> : Wons (see Section 11.3 c			l without significant		□ Yes	□ No						
·		A response to	questions E and F	below is required j	for "Presumptive Co	ertainty" status	•							
E	Were all analytical QC performance standards and recommendations for the specified methods achieved?													
F	Were result	ts for all analyte-list c	ompounds/element	s for the specified r	nethod(s) reported?		☐ Yes	□ No						
All negative responses are addressed in a case narrative on the cover page of this report.														
I, the undersigned, attest under the pains and penaltics of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.  Hanibal C. Tayeh, Ph.D.  President/Laboratory Director  Date: 7/8/2005														

11 Alingree Deive • Agram, Massachuscus 01001 • 413-789-9018 • Fax 413-789-4076 • www.spectrum-malyheal.com	Condition upon receipt: Dioed Diamont PC 6	EDD Format Q The S 4 MWM 018/18/15/10	CIE-meil to Market Mark				(627105 1013494 C S017 2 13 1 1 1 X X X X X	1 Com 0 1 Co 10 2 10 2 10 2 10 2 10 2 10 2 10 2 10	10 m2 16 13 16 19 30 16 m 16 18 19 19 19 19 19 19 19 19 19 19 19 19 19	Coltain	× × × × × × ×	#of !  #of !  #of !  #of !  Voc Svo Rc PC	G-Grab C-Composite  RAMber  Rastic  RA  Shp  Lear C  Lear C  RA  Shp  Lear C  Lear C	Vials r Glass Glass S S S S S S S S S S S S S S S S S S	[=Na ₃ S2O ₃ 2=HCl 3=HSO ₃ 4=HNO ₃ 5=NaOH 6=Ascorbic Acid (Quifamers) Analysiss 2 QA Reporting Notes:	Project Mgr.: E Thiladean Po. No.: HE 3357 RON: Special Samplaris): S. Cicloud	MULCINON MA Sure MA	The control of the co		CHAIN OF CUSTODY RECORD  All TAT - To 10 business days  CHAIN OF CUSTODY RECORD  All TAT - Date Needed: - ZLLCOS  Samples disposed of after 60 days unless otherwise historicid.	Special Handling:	
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Sept 21, 2012 File No. S2042

Gale Associates, Inc. 163 Libbey Parkway Weymouth, MA 02189

Attention: Mr. Sean T. Boyd, EIT

RE: Preliminary Geotechnical Engineering Report

Lincoln Park Community Ice Rink

Washington Street Somerville, MA Gale JN: 715610

Dear Sean:

The Geotechnical Group, Inc. (TGG) is pleased to present the results of our investigation phase geotechnical engineering studies for the above referenced site. The purpose of our studies was to gather subsurface information within the area of the proposed ice skating rink and associated skate rental building In 2002 we performed a series of subsurface investigations throughout the Lincoln Park area and some of the information obtained from that study will also be incorporated into this study. We used this information as a basis for our preliminary recommendations included in this preliminary geotechnical engineering report and for developing additional recommendations regarding foundation and slab support.. Our findings, conclusions and recommendations are subject to the Statement of Limitations attached to this report in Appendix A.

#### SITE AND PROJECT DESCRIPTION

The site, located within Lincoln Park in Somerville, Massachusetts, is bordered by Washington Street and residential properties to the north, the Lincoln Parkway to the south, Perry Street to the west, and Clark Street and residential properties to the east. The existing Lincoln Park Community School is located at the northeastern portion of the site. Pavement and playground areas cover the ground surface around the existing school building. Athletic fields, basketball courts, paved walkways, and landscaping occupy the remainder of the site. The proposed skating rink and concession building will be located at the southwestern corner of the park in the area of the existing basketball court.

The topography of the site is relatively flat with ground surface elevations range from about 13± to 15±. Reportedly, a pond once occupied the central portion of the site but has since been filled in to achieve the current grading at the site.

The proposed development includes the construction of an ice skating rink within that footprint of the existing basketball court and a single story building adjacent to the rink that will be used for skate rental and other accommodations. It is our understanding that the ice rink will be located at an elevation about 1 ft above the existing basketball court. The asphalt covering the court will be overexcavated and the surface will be raised by placing 4inches of crushed stone, 6 inches of stone dust, and 2 inches of insulation prior to placing a 5 to 7 inch thick pad of concrete. It is our understanding that the proposed single story building will have a finish floor elevation close to or just above the existing site grading (Elevation 15±). Keeping proposed site grading as close to the existing grading will be an important design consideration at this site to limit post construction building settlements as discussed later in this report.

#### SUBSURFACE EXPLORATIONS

TGG performed several subsurface exploration tests in the Lincoln park area in 2001, 2002, and 2012. Borings B-1, B-4, and B-5 from the 2002 study are within close proximity to the development area for the proposed ice rink so it will be included in our analysis along with borings TGG-1 and TGG-2 which were performed on July 30, 2012 specifically for the ice rink project. The information gathered from these boring will be directed at assessing the general subsurface conditions, in a preliminary manner, at the site with particular emphasis on identifying the depth to natural ground, and the quality and reuse potential of the on-site soils.

Soil Exploration Corporation performed borings B-1, B-4, and B-5 in 2002 and New England Boring Contractors performed boring TGG-1 and TGG-2 in 2012. All the borings were performed under the full time observation of TGG. Borings B-1, TGG-1, and TGG-2, performed within the proposed construction area, extended through about 3 to 27 feet of existing fill material, and up to 23 feet of natural silty clay, terminating in either natural clay or glacial till at depths varying from 26 to 28 feet below existing grades. Groundwater was detected at depths ranging from 4 to 8 feet below grade elevation. The variation in depth of groundwater could be attributed to seasonal variation and the depth to the natural clay stratum. The groundwater measures for TGG-1 and TGG-2 were estimated from measurement of standing water within the borehole. Groundwater was detected in boring B-1, at a depth of about 4 feet below grade. The measurements for B-1 should be considered more accurate since the measurements were taken from an installed two inch diameter PVC observation well.

The test boring logs, which contain the Standard Penetration Test (SPT) results, soil descriptions and additional information are contained in Appendix B. The soil samples retrieved in the split spoon sampler during each SPT were visually classified in general accordance with the Burmister Soil

Classification System. These classifications are also shown on the attached boring logs.

The exploration locations for both the 2002 and 2012 investigations are shown approximately in Figure 1. There locations were determined by our field staff by pacing, tape measurement and line of sight from the existing site features and should therefore be considered accurate to the degree implied by the methods used.

#### LABORATORY SOIL TESTING

A geotechnical laboratory testing program consisting of consolidation testing, unconfined triaxial compression testing (UC), sieve analysis, Atterberg Limits, and natural water contents was performed on representative soil samples collected during the 2002 exploration phase of this study. The purpose of the testing was to aid in classifying the soil composition and to evaluate soil stress history, and engineering behavior in terms of strength, compressibility and consolidation potential.

The testing was performed in general accordance with the testing requirements of ASTM and the results are discussed in the next section as well as summarized in Appendix C of this report.

#### **SUBSURFACE CONDITIONS**

The subsurface soil conditions within the proposed skating rink and building area can be generally characterized as consisting of surficial fill deposits underlain by natural silty clay. Where the silty clay was fully penetrated, glacial till deposits were encountered to the depths explored. A general description of the main individual deposits encountered is discussed below. Refer to the test boring logs for additional information.

#### **Existing Fill**

Previous site development (playing fields) and landfilling have resulted in the surficial fill deposit that blankets the site. The existing surficial fill within the skating rink area appears to vary in thickness from about  $3\pm$  to  $27\pm$  feet in thickness. The density and composition vary considerably between the 2012 borings and the 2002 boring. The fill material typically consists of fine to coarse sand and gravel with varying amounts of cinders, brick and ash. The fill material was densely compacted at the two 2012 test boring sites (TGG-1 and TGG-2) but loosely compacted at the 2002 (B-1) site. There is an existing light pole located close to test Boring B-1 which seems to indicate that the area around B-1 has been compacted after the 2002 investigation in order to support the pole and provide a firm surface for the basketball court. A boring was scheduled in this area for the 2012 study, however at the time of the boring operation there was not sufficient information available about the location of utilities so that boring was not performed.

#### Natural Marine Deposits (Silty Clay)

At all boring locations within the area of the proposed rink and concession building, a thick deposit of silty clay underlies the fill at depths ranging from  $3\pm$  to  $26\pm$  feet below the grade elevation. The stiffness of the marine clay decreases with depth and ranges from very stiff to medium stiff. At test boring TGG-1 the marine clay deposit was fully penetrated with a thickness of about  $9\pm$  feet terminating in glacial till.

#### **Natural Glacial Till**

A deposit commonly known as glacial till was encountered below the silty marine clay in boring TGG-1 at a depth of about  $19\pm$  feet below grade. The glacial till is considered dense based upon the results of the Standard Penetration Testing and typically consists of a gray, heterogeneous mixture of sand, gravel and silt with the gravel and sand fraction predominating.

#### Groundwater

Groundwater levels for our studies were recorded in the completed test borings at the times and under the conditions noted on the logs. Measurements made within the observation well installed at boring B-1, which is considered more representative than those made in the boreholes upon completion, indicates the groundwater table to be located approximately 4± feet below the existing ground surface in the ice rink and building area. This depth roughly corresponds to an Elevation of about 9.5± to 11± within the proposed skating rink and building area.

Based on this observation, control of groundwater may be a construction issue during excavation and construction of the slab for the ice rink and for the building and will become an issue during installation of the foundation of the building and deep utilities. It should be expected, that groundwater levels will fluctuate due to variations in temperature, rainfall and other factors. Therefore, groundwater levels during construction and thereafter may be different than those reported

# GEOTECHNICAL ENGINEERING CONSIDERATIONS AND RECOMMENDATIONS

The important geotechnical consideration for this project is the foundation support method and compressibility of the soils at and below foundation level. The existing fill at the site may be unsuitable for foundation support due to the general nature of fill which is characterized by erratic density, composition and settlement potential. The proposed skating rink should not be supported above these soils without proper verification to their composition and uniformity of the subsurface as excessive settlements would likely occur under the structural loads. There are several way to provide proper foundation support to the propose ice rink and concession building. The cost for the support methods vary considerably. More subsurface information is necessary to select a cost effective solution to foundation support.

There are three methods commonly used to provide foundation support in areas where the soil is unsuitable for construction. The first method is to excavate the soil and replace with engineered lifts of structural fill. The second method is to use various types of piles to extend through the unsuitable soil and bear on firm natural soil underlying the unsuitable soils. The third method is to condition the soil to be able to support the designed loads.

The depth to firm natural ground beneath existing grades within the skating rental building area appears to be on the order of approximately 10 feet. In our opinion, this depth makes it technically feasible to completely excavate the fill and replace it with engineered lifts of structural fill for support of shallow spread footings with a slab on grade. This is the recommended procedure specified in the Foundation and Concrete Notes, Drawing S101- Concessions and Maintenance Foundation Plan, provided by Gale Associates. However, it will be necessary to deal with groundwater issues during the construction process, Also, there is a premium costs associated with disposing of the excavated fill soils and the economics of excavating and replacing the existing fill may begin to look less attractive unless most of the existing fill can be reused on-site as compacted structural fill. Based upon our limited explorations, we feel that a substantial quantity of the existing fill withing the building footprint may be reusable as structural soil fill provided the uniform composition of the existing fill is verified and that the soil is properly prepared.

The depth to firm natural ground beneath existing grades within the skating rink area appears to between 3 feet to 26 feet. There may be some regions within the footprint of the proposed skating rink where the depth of fill makes it technically unfeasible to completely excavate and replace it with structural fill. Groundwater was located 4 ft below the existing surface so it could be a major issue in deciding the proper support for the rink area.

The area within the footprint of the proposed ice rink seems to have been prepared and compacted after 2002 when the original test borings were performed. Based on the information obtained, the 2012 borings indicate that the fill was densely compacted. The 2002 boring B-1 indicates that the soil is loosely compacted. A visual inspection of the area seems to support the fact that the soil within the proposed area of ice rink has been significantly compacted as evident by the surface quality of the exisiting basketball court. Also, the apparent vertical stability of the lamp post, located very close to test boring B-1 indicates that the area around B-1 must have been compacted after the 2002 subsurface investigation. This should be verified by a test boring.

One possible way to support the ice rink is to condition the soil using geopiers which are equally spaced piers of compacted aggregate rock that extend through the unsuitable soil. Geopiers can be an effectively priced alternative to provide support to a slab on grade. Another alternative is to use deep soil densification and precharging to engineer the existing fill to accept the designed surcharge loading. Since, the slab for the proposed ice rink is located at a finished grade very close to the elevation of the existing basketball court and the slab would impose a very small dead load, this may be the most cost effective way to construct the rink.

A more extensive test boring program is necessary to further evaluate the subsurface conditions at the site and provide the most cost effective alternative for the construction of the ice rink and associated concession building.

We very much appreciate the opportunity to work with you on this project and look forward to assisting you throughout the project. Please feel free to contact us should you have any questions or require additional information.

Very truly yours,

THE GEOTECHNICAL GROUP, INC.

James Kramer, PE. Project Manager

Ce: Mr. John Perry, P.E.

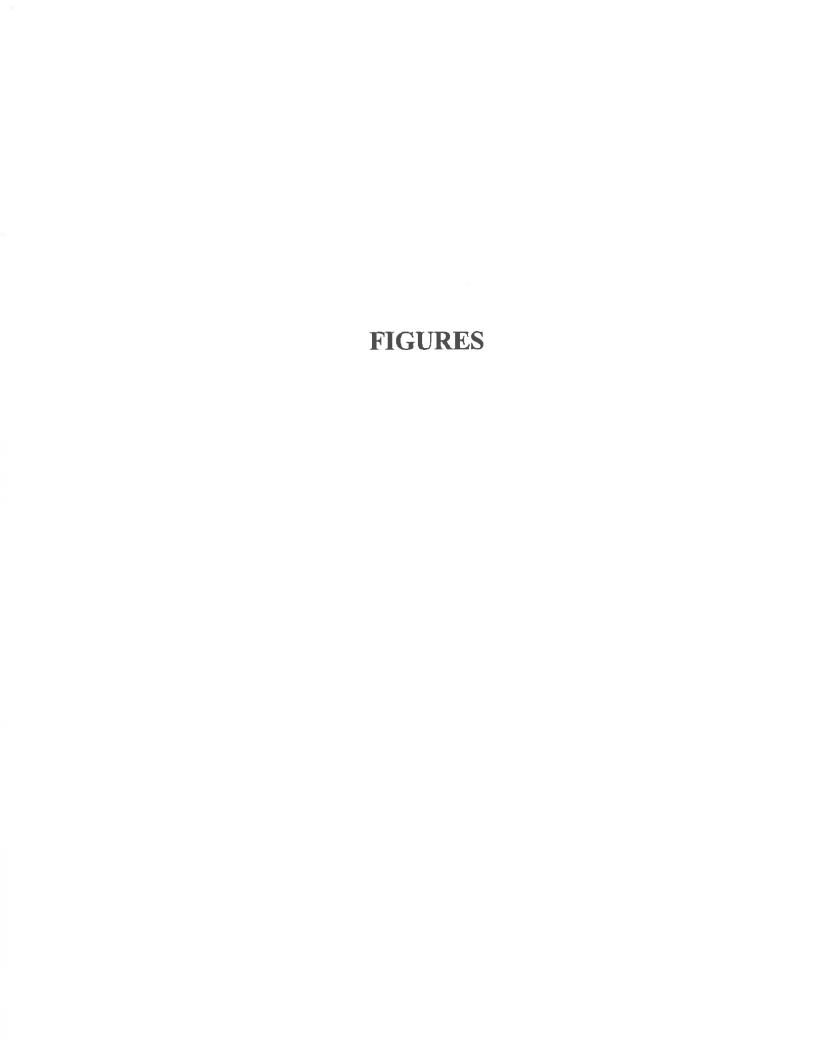
President

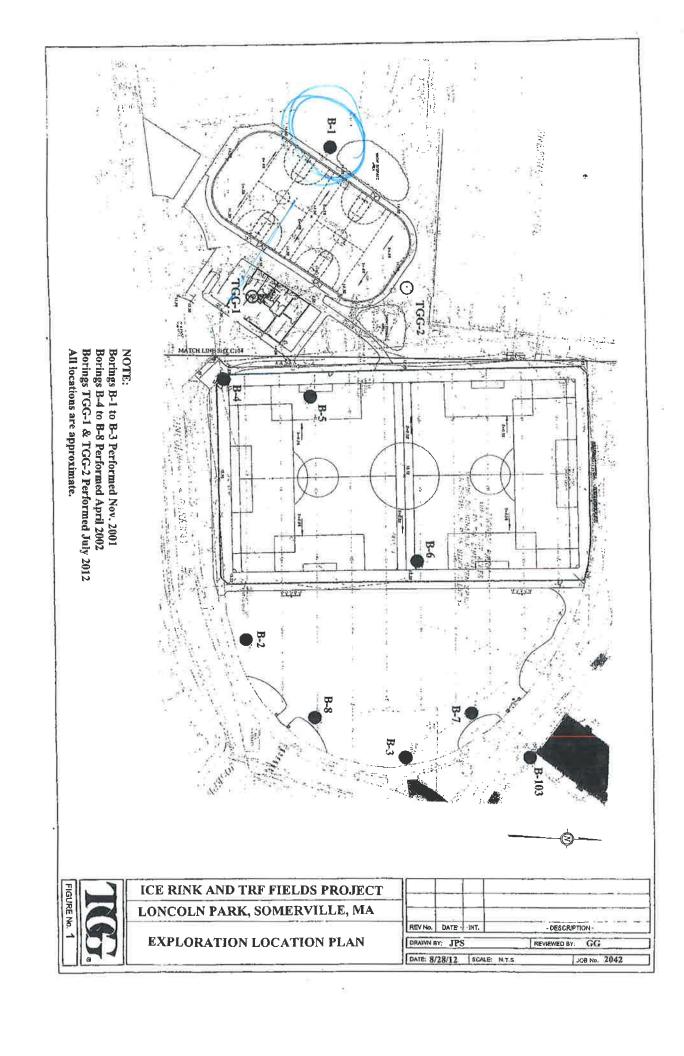
Attachments: Figures 1 and 2 - Exploration Location Sketches

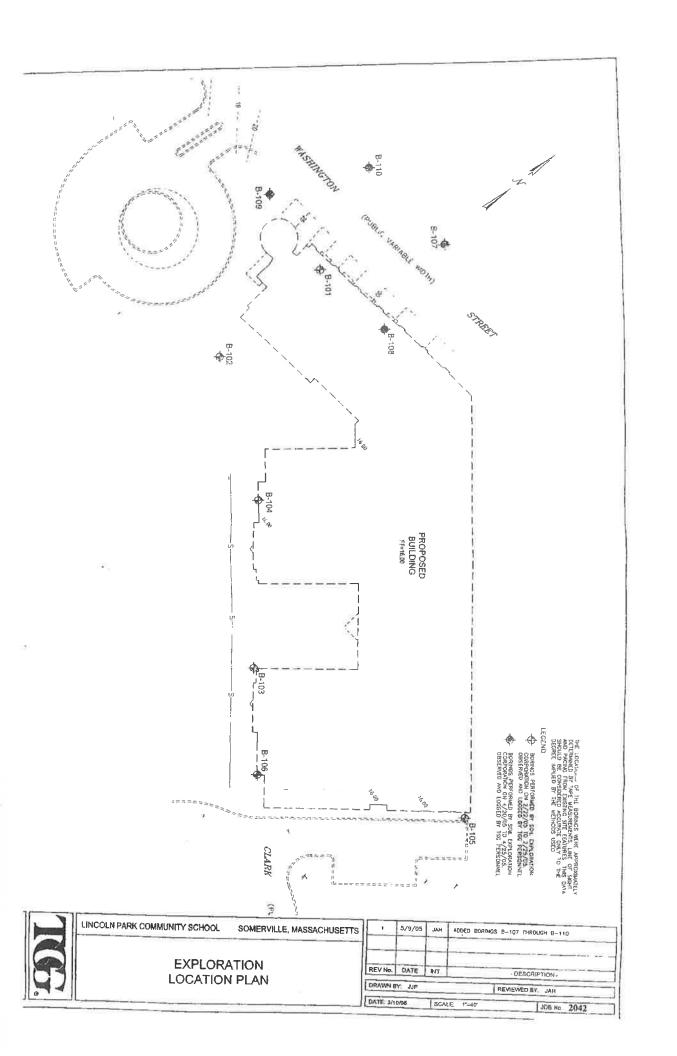
Appendix A - Statement of Limitations

Appendix B - Test Boring Logs

Appendix C - Laboratory Test Results







# APPENDIX A STATEMENT OF LIMITATIONS

## STATEMENT OF LIMITATIONS

## **Explorations**

The analysis and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

The stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

Water level readings have been made in the explorations at the time and under the conditions stated on the logs. This data has been reviewed and interpretations made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors that are different from the time the measurements were made.

### Review

In the event that any change in the nature, design or location of the proposed structure are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that earthwork recommendations may be properly interpreted and implemented in the design and specifications.

## Construction

It is recommended that this firm be retained to provide soil engineering services during the construction phase of the work. This is to observe compliance with design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

## **Use of Report**

This report has been prepared for the exclusive use of Dacon Corporation for specific application to the Proposed Commercial Group in Framingham, Massachusetts, in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

# APPENDIX C LABORATORY TEST RESULTS

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		2			-		
		3	1				
		4					
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		6	Grey Silty Clay				
		7			***************************************		*
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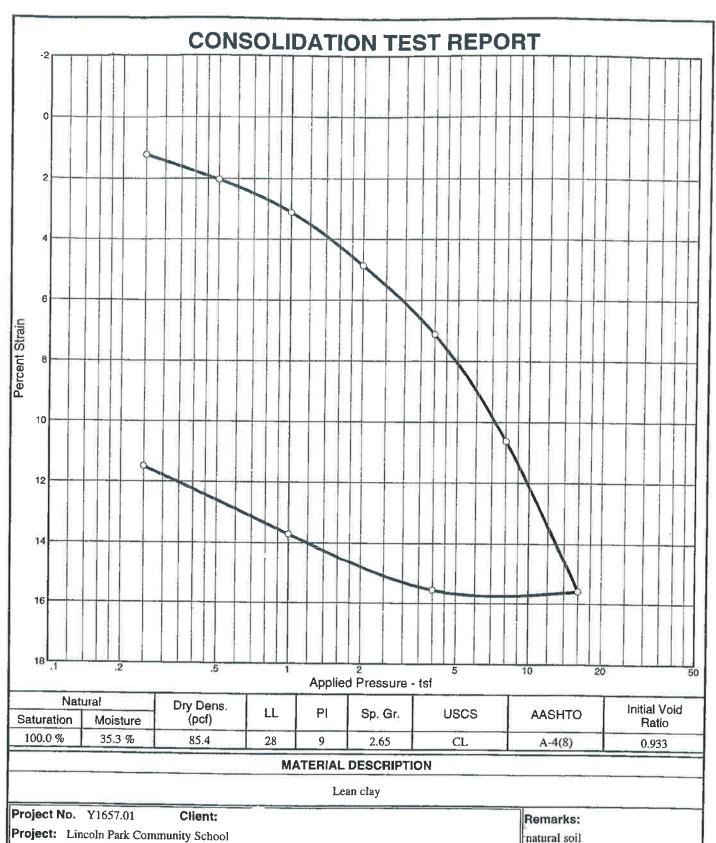
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17		30	Bottom of sample	e			

die.

B.-

Parts.

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		lada v	UNDISTURB	ED TUBE	LOG		
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		6	Grey Silty Clay				-
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Somerville, MA

natural soil

Source: Boring B-6

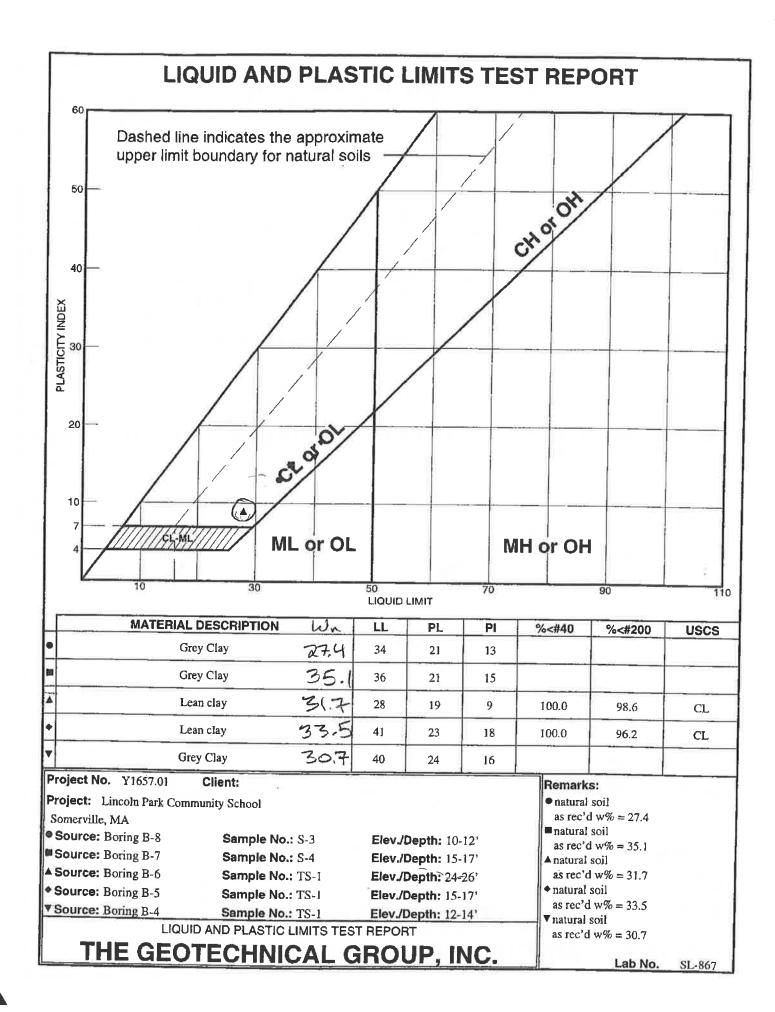
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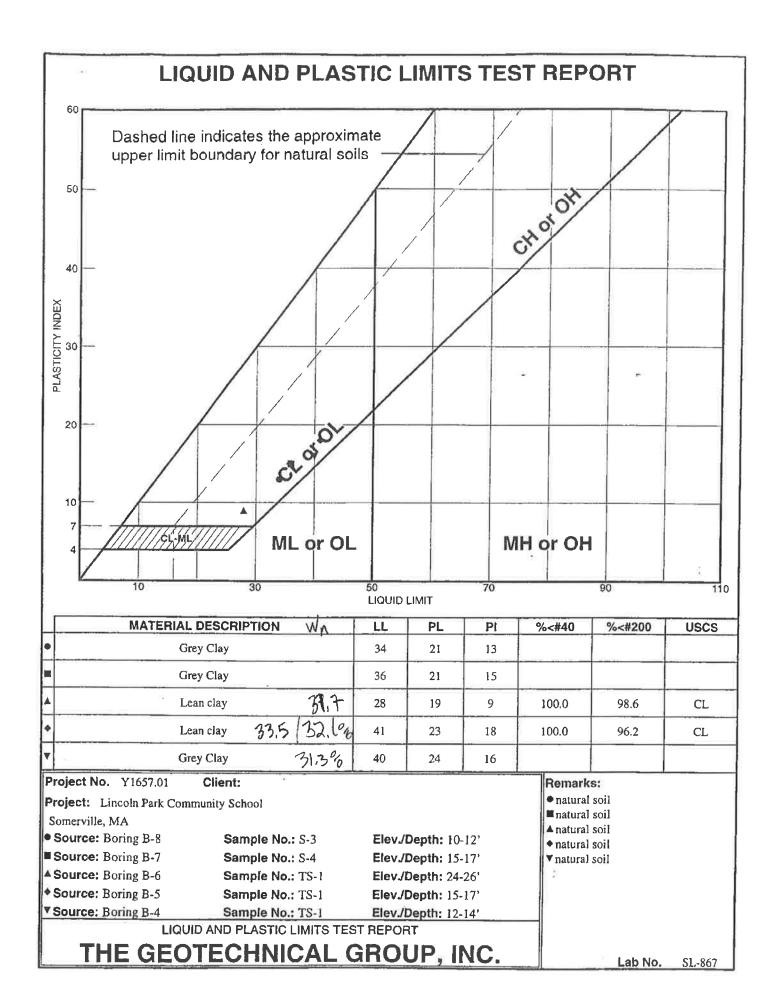
Elev./Depth: 24-26'

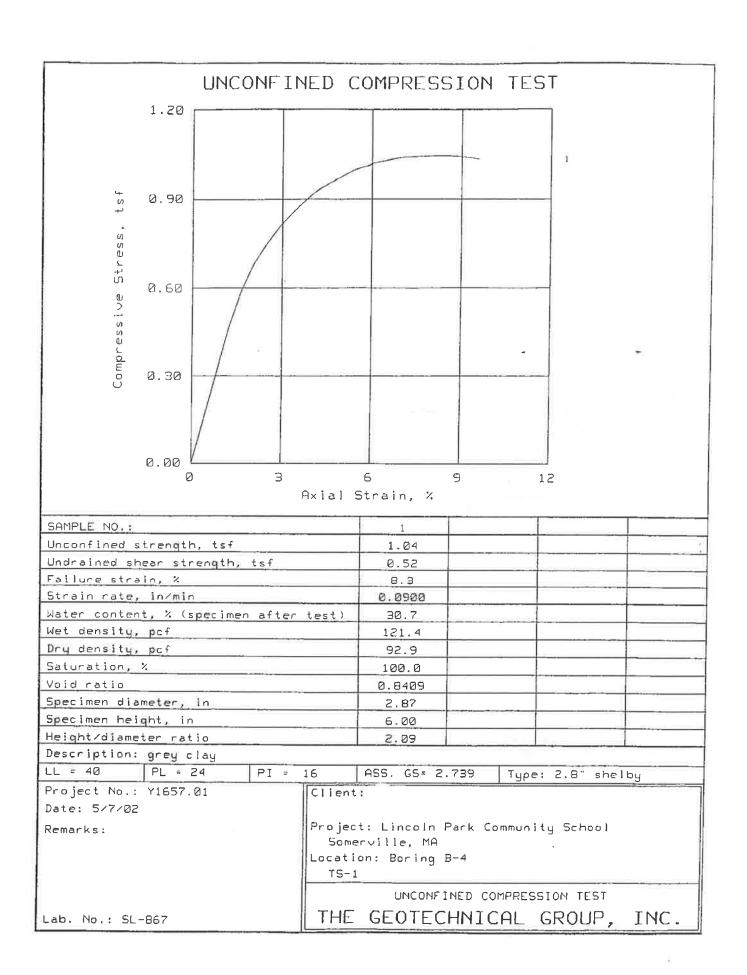
CONSOLIDATION TEST REPORT

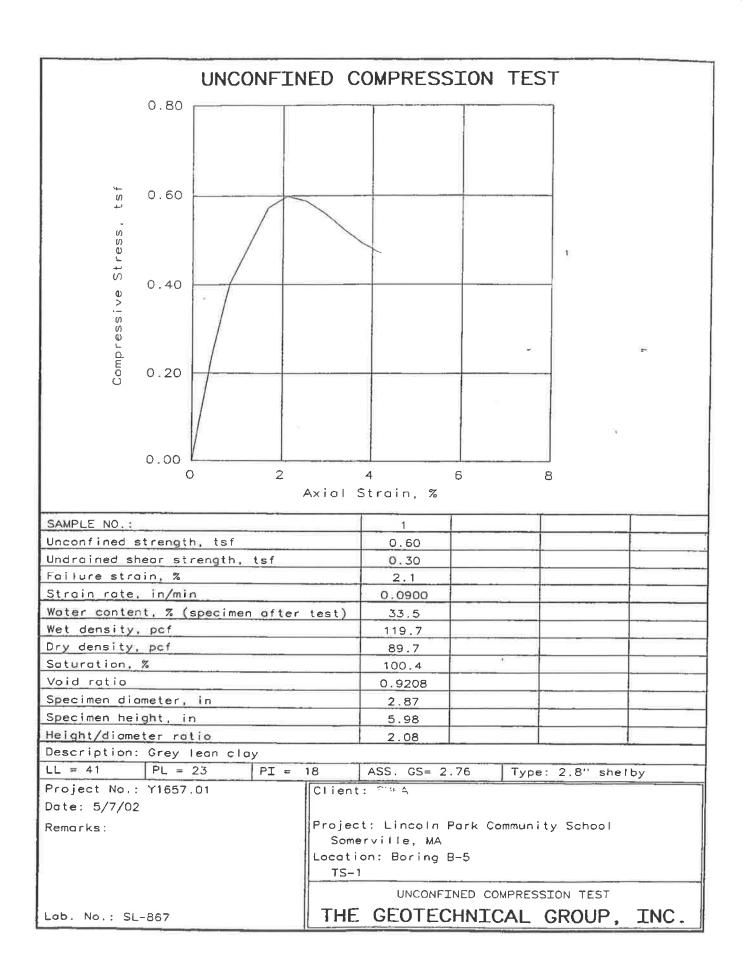
THE GEOTECHNICAL GROUP, INC.

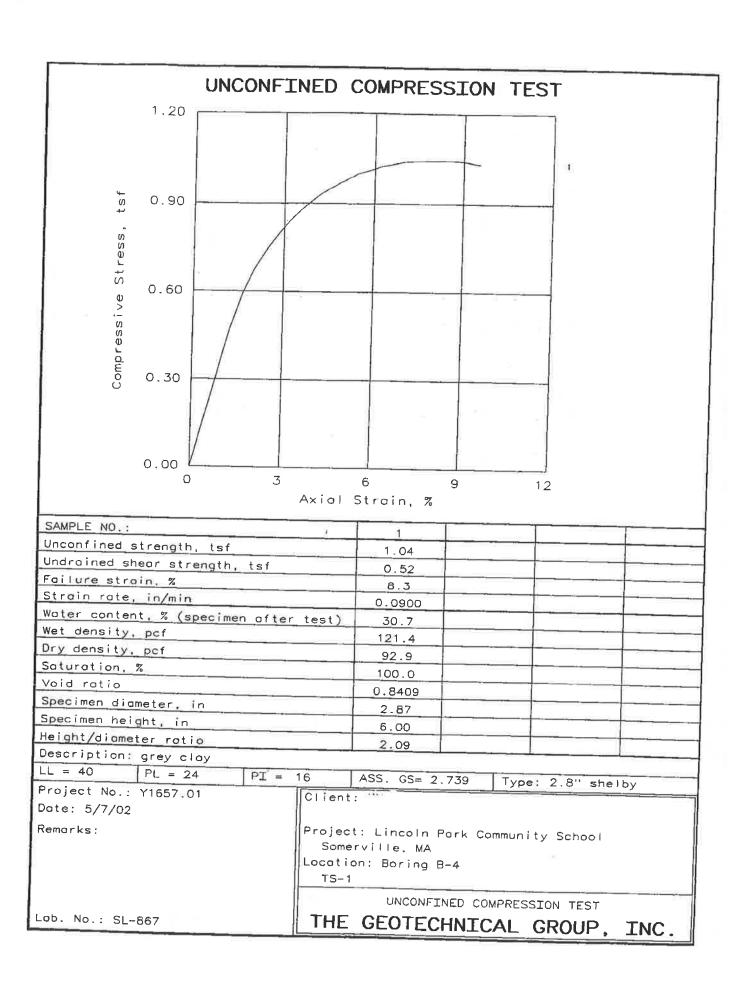
Lab No. SL-867

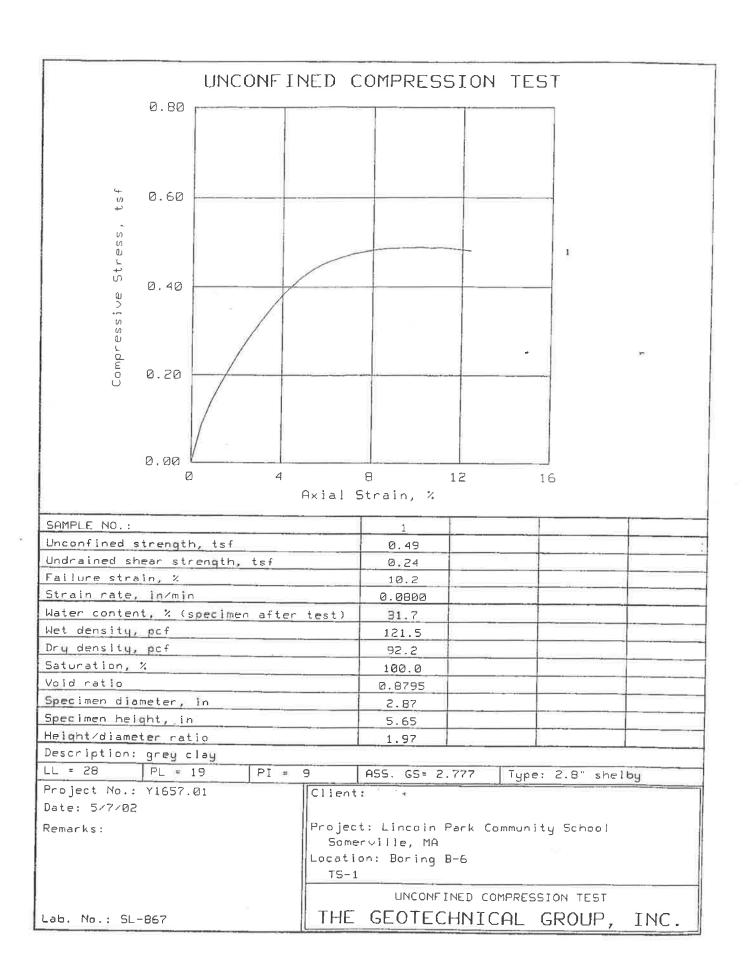


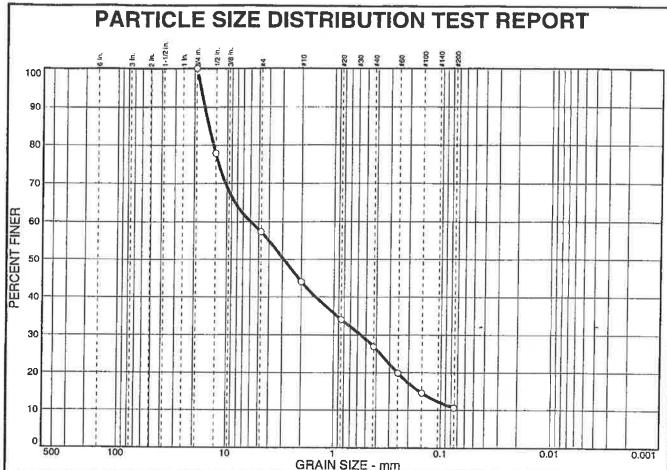












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	Soil Descriptio	<u>n</u>
Poorly graded san	d with silt and grav	/el
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D ₈₅ = 14.7 D ₃₀ = 0.559 C _u =	Coefficients D ₆₀ = 5.96 D ₁₅ = 0.159 C _c =	D ₅₀ = 2.92 D ₁₀ =
JSCS= SP-SM	Classification AASH	TO= A-1-a
natural soil	Remarks	
$\frac{14 \text{ total soft}}{18 \text{ rec'd w\%}} = 8.2$		

Sample No.: S-8 Location:

Source of Sample: Boring B-4

Date: 5/7/02

Elev/Depth: 24-26'

THE GEOTECHNICAL GROUP, INC.

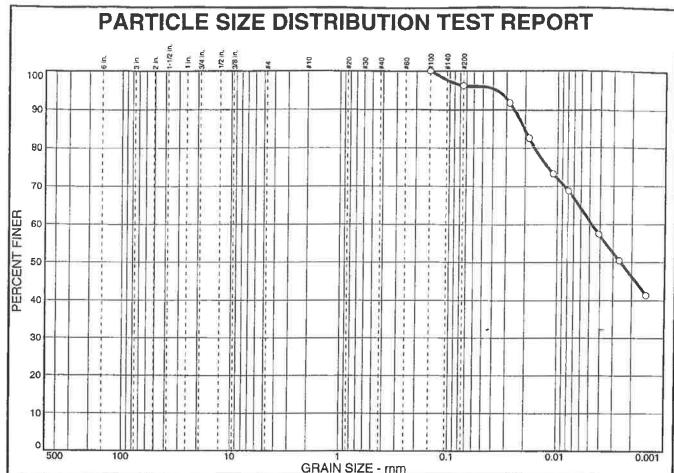
Client:

Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.01

Lab No.



% + 3"	% GRAVEL			% SAND		% FINES	
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.0	3.8	35.4	60.8

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#100 #200	100.0 96.2		

	Soil Description	!
Lean clay		
	Atterberg Limits	
PL≃ 23	LL= 41	Pi= 18
D ₈₅ = 0.0204 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.0048 D ₁₅ = C _C =	D ₅₀ = 0.0025 D ₁₀ =
USCS= CL	Classification AASH7	O= A-7-6(19)
	Remarks	
natural soil		
as rec'd $w\% = 3$	3.5	

Sample No.: TS-1 Location: Source of Sample: Boring B-5

- . - -

Date: 5/7/02

Elev/Depth: 15-17'

THE GEOTECHNICAL GROUP, INC.

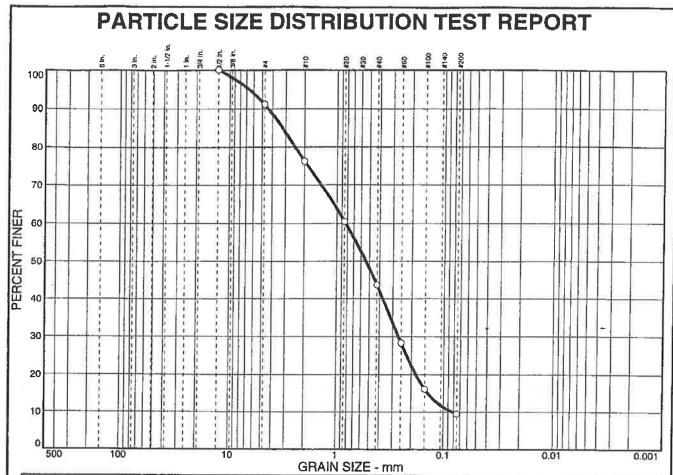
Client:

Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.01

Lab No.



% + 3"	% GR	% GRAVEL		% SAND		% FINE	S
70 T S	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	8.9	14.8	32.6	34.2	9.5	

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
.5 in. #4 #10 #20 #40 #60 #100 #200	100.0 91.1 76.3 60.5 43.7 28.3 16.1 9.5		
#60 #100	28.3 16.1		

	Soil Description	
Well-graded san	nd with silt	
(ES)Or	Atterberg Limits	
PL=	LL=	Pl=
D 200	Coefficients	D 0.500
D ₈₅ = 3.23	D ₆₀ = 0.830	D ₅₀ = 0.539 D ₁₀ = 0.0819
$D_{30} = 0.265$ $C_{u} = 10.13$	$C_{c}^{15} = 0.140$ $C_{c}^{1.04}$	D10- 0.0019
	Classification	
USCS= SW-S	M AASHT	O= A-1-b
	Remarks	
natural soil		
as rec'd $w\% = 1$	4.2	

Sample No.: S-2 Location:

Source of Sample: Boring B-6

Date: 5/7/02

Elev/Depth: 5-7'

THE GEOTECHNICAL GROUP, INC.

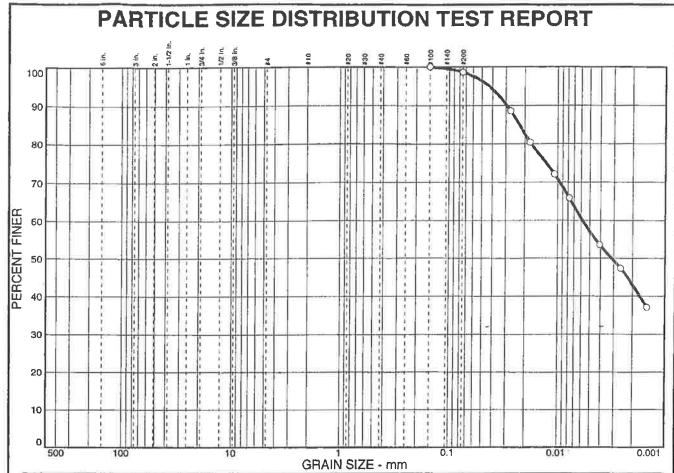
Client:

Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.01

Lab No.



e/ . on	% GR	AVEL		% SAND		% FINE	ES
% + 3"	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY
0.0	0.0	0.0	0.0	0.0	1.4	41.5	57.1

SIEVE	PERCENT	SPEC.*	PASS?
SIZE	FINER	PERCENT	(X=NO)
#100 #200	100.0 98.6		
	N II		

	Soil Description	
Lean clay		
PL= 19	Atterberg Limits LL= 28	PI= 9
D ₈₅ = 0.0226 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.0058 D ₁₅ = C _c =	D ₅₀ = 0.0031 D ₁₀ =
USCS= CL	Classification AASHT	O= A-4(8)
natural soil	Remarks	
as rec'd $w\% = 3$	1.7	

Sample No.: TS-1

Date: 5/7/02

Location:

Source of Sample: Boring B-6

Elev/Depth: 24-26'

THE GEOTECHNICAL GROUP, INC.

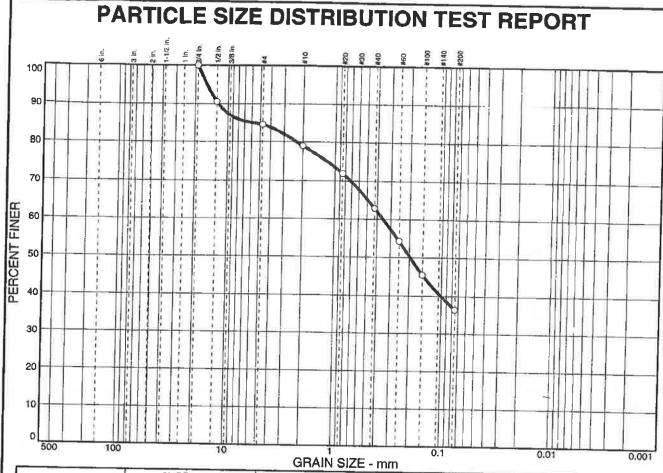
Client:

Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.01

Lab No.



% + 3"	% GF	RAVEL		% SAND		% FINES		
	CRS.	FINE	CRS.	MEDIUM	FINE	SILT	CLAY	
0.0	0.0	15.5	5.5	16.1	26.4	36.5	- OLAT	

	Soil Description	1
Silty sand with g	graveľ	
PL=	Atterberg Limits	
L	LL=	PI=
D ₈₅ = 5.80 D ₃₀ = C _u =	Coefficients D ₆₀ = 0.352 D ₁₅ = C _c =	D ₅₀ = 0.196 D ₁₀ =
JSCS= SM	Classification AASHT	O= A-4(0)
	<u>Remarks</u>	
existing fill		
is rec'd $w\% = 12$	2.5	

Sample No.: S-1 Location:

Source of Sample: Boring B-7

Date: 5/7/02 Elev./Depth: 0-2'

THE GEOTECHNICAL GROUP, INC.

Client:

Project: Lincoln Park Community School

Somerville, MA

Project No: Y1657.01

Lab No.

## APPENDIX B TEST BORING LOGS

				THE REAL PROPERTY.	1	-PROJECT	r_	-		Johng	TGC	3 - 1
			-		- Control	oln Park Ice	a marile law and all the			80.	Sheet 1	(1.7
	Test E	loring Log	1			Somerville, N				de No.		12.01
			ll l							leview	JF	PS .
ring Co.			II N.E.	Boring Cont	ractors		Foring Loc	ation		See Ex	ploration Locat	tion Plan
reman			II.	Norman			Fround Ele				14.0	
O Obser	yer		1	Jay Krame	r		Mile Start		en de en consta		30/2012 7:30	MAC
ife Si ilia	G 8/G		impling Protocol	7 12 12		J., 6	Dete	Time	d Water Re	o Bottom	Depth to	Rem.
iless oth	vered using a	2-inch I.D. split sp	mplished using a wast oon sampler, driven by	ned casing to blows of a	achnique. 140 lb. Ha	Samples	30-Jul	7:30	15	6'	Water 8	1
ling 30 l							30-301	7:30	-	.0	[; b	
			Sample Data	212	8	2000		ello .	1	Sample !	Description	
Đ.	No.	Depth	Blows per 6 in.	Pen.	Rec.	Remain		-	₩	ar and a Co		
14	S-1	0 -2	10-12-19-20	1 24	12"	#	0.	75	-	Top Soil	with Grass	
14	3-1	0-2	10-12-19-20	1 24	12	-	H		1			
			Ė	Ĭ.	11	II	l		1			
12.						I	N FI	LL	1			
10	S-2	4 - 6	53-31-10-8	24	10"	₩	H				e fine to coar with trace w	
			<b></b>	17	+	-	H		et al	si, iitio Oiit	Willia a acco	ood giaa
			11	i.			Ħ					
_						1	1	0				
5	5-3	9 -11	3-4-8-9	24	10"	-	H		Moist stiff	gray Clay		
			i	*	#	$\vdash$	H		;			
			1	(3)	1		Ĭ					
	S-4 I	14 - 16	4-4-3-4	17 24	20	-	Fil	LL	Maint man	liuma mäide mu	ou Clau	
	- 54	14-10	4-4-5-4	24	1	#	H		i i i i i i i i i i i i i i i i i i i	lium stiff gr	ay Clay	
3							H		i			
			ļ				1	9	ļ			
-5	S-6	19 - 21	21-19-16-5	24	3	11 2	H		1			
11 6		- William - T		#	#	<u> </u>	GLACIA	AL TILL			to medium s	
				1			0		i obarso	Bi di Adi inter	way. Glavio	21 (111
100			<b>#</b>	₩	-	3	H		i			
-10	S-6	24 - 26	15-25-20-24	24	15	-	2	6				
			it and the second				Bottom o	of Boring	1	7		
w g	-						Q		1			
, i			1	#	11	11	H					
14		Survey of the second	1	it		1	H					
			1			II.	0					
11.5				II.			H		į.			
			#	#	1		Н		į			
				-		THE RESERVE AND DESCRIPTION OF THE PERSON.						

		***************************************				PROJECT	-		oring to.	TGC	3-2
		_	-	-	1	Sheet 1	of 2				
	Test B	loring Log	i i			oln Park Ice iomerville, M			lile No.	S204	42.01
			1							JF	s
ring Co.			TI NE	Boring Cont	ractors		Joring Location		See E	eploration Locat	tion Plan
reman			1	Noman	101010		fround Elevation	THE PERSON NAMED IN	1	13,5	
Obser	ver	-	1	Jay Krame	r		Pate Start > End			0/2012 11:30	0AM
-	N. WHOM	S	empling Protocol				G	ound Water R	teadings (Se	Section Committee Committee	
less oth	erwise noted, I	borlings were accor	nplished using a washe	d casing tec	hnique. St	imples were	Date Tim	a Dopt	to Bottom	Depth to Weter_	Res
berevo	using a 2-inch	I.D. split spoon sa	mpler, driven by blows	of a 140 lb.	Hammer fal	ling 30	30-Jul 11:3	10	26'	411	1
hes.		30	0.30			17 707					F.
THE RESERVE			Sample Data			eller open	Strate	11	Sample	Description	
8.	No.	Реріп	blows per 6 in.	Pen.	Rec.	Rem.	Change 0.75	#-	Too Soil	with Grass	
13.5	S-1	0 -2	6-23-28-20	F 24	11 18	li .	0.73	Grown to	black dense	CONTRACTOR OF THE CONTRACTOR	rse San
,0.0			1	#	1	11	FILL	140	to coarse G		
						1	3.0	race wo	od glass, etc		
				I				TI.			
9.5	S-2	4 - 6	11-16-18-17	24	20		V. STIFF CLA	Y Very	Stiff gray mo	ttled rust bro	wn Cl
			1	1	₩	l l	8.0	î			
	$\rightarrow$		<del> </del>	-	H -	<del> </del>	H	1			
	-		1	-	#	1	h				
4.5	S-3	9 -11	8-10-11-9	24	24	II	n				
			T	1	1		1	1			
						1	Ŋ				
			1	-	<u> </u>	-	CLAY	Very stif	f to medium :	eliff moist ara	av Člav
-0.5	S-4	14 - 16	4-4-3-4	24	20	1	CLAI	1,07,011	i (o incomin	Distriction give	ay ola
		14 - 10	1	-	#	+	H				
5					1		ľ	l'e			
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	0.0		N AND	II or	11 04	-	H				
-5,5	S-5	19 - 21	6-9-5-6	24	24	#	H				
			+	-	₩	#	H	1			
				1 i			Ħ	li			
				I	II.		D	1			
-10.5	S-6	24 - 26	3-3-2-4	24	24		26				
		_	ļ		#	₩	Bottom of Bori	ng			
	-#			#	#	#	H				
			·	-	#	1	Ħ				
13.5							11	11			
				1	1		I	li			
				-	#	1	#	1			
				1	#	#	H				
			EL.	III.	11	10	11	- 11			

#### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-1 Sheet 1 of 2 **Test Boring Log** Lincoln Park Community School File No. Y1657 Somerville, MA Review by: John Gannon Boring Location: See Exploration Location Plan Boring Co. Soil Exploration Corporation Ground Elev. 13.5± Foreman Tim Flores 11/27/01 TGG Observer Date Start > End Mark Zambernardi Ground Water Readings (See Notes) Sampling Protocol Depth to Water Time Depth to Bottom Rem Date Unless otherwise noted, borings were accomplished using 4 inch inside diameter hollow stem augers. Samples were recovered using a 2-inch 11/27 Drilling 12± 2,3 O.D. split spoon sampler, driven by blows of a 140 Lb, hammer falling 30 Sample Data Strata Sample Description Change No. Depth Blows per 6in. Pen. Rec. Rem. Medium dense, brown to dark brown, fine to 5-1 0-2.0 5-14-12-12 24 18 medium SAND and SILT, trace fine to coarse Gravel, trace (-) Brick, Black CINDERS. 5-2 2.0-3.0 9-13 12 12 Olive, SILTY CLAY, trace brown fine to medium 5-2A 3.0-4.0 9-8 12 4 Sand, trace (-) Roots. 5-3 4.0-6.0 1-1/12"-1 24 8 5 Wet, very loose, gray, CINDERS. 5-4 6.0-8.0 1-1/12"-1 24 12 Wet, Very loose, black, CINDERS and DEBRIS. Wet, very loose, gray, CINDERS. 5-5 8.0-10.0 1-1/12"-2 24 14 10 10.0-12.0 5-6 1/12"-1/12" 24 12 Wet, very loose, gray to beige, CINDERS. 5-7 12.0-14.0 1/12"-1/12" 24 12 Wet, very loose, gray to black, CINDERS. Wet, very loose, gray, CINDERS. 14.0-16.0 1-1/12"-1 5-8 24 Wet, loose, black to gray to brown, CINDERS 14 15 Fill with a 1± inch thick layer of brown, fine to medium SAND, some (+) Silt. 16.0-18.0 5.9 1-2-3-2 24 12 Wet, loose, beige to gray, CINDERS, some fine to medium Sand, some Silt. 9-10 18.0-20.0 3-1-6-6 24 15 Wet, very loose, brown, CINDERS. Wet, very loose to loose, brown to black, 20 5-11 20.0-22.0 3-2-1-2 24 10 CINDERS, trace fine Gravel. Wet, black, CINDERS. Wet, very loose, dark gray to olive, ORGANIC 22.0-24.0 3-2-2-2 9-12 24 12 SILT and SILTY CLAY, little fine Sand, trace (-) Roots. 24.0-24.5 5-13 6 6 Wet, dark gray to brown to olive, ORGANIC SILT 25 5-13A 24.5-26.0 18 1-1-2 18 26.5 and SILTY CLAY, little fine Sand. 26.0-26.5 5-14 3 6 6 Wet, medium stiff to stiff, olive, CLAY and SILT, S-14A 26.5-28.0 4-4-4 18 18 trace fine Sand. Clay Remarks:

	j.	THE	GEC	TEC	HNIC	CAL (	GROU	P, INC.		
			Gard M			JECT -		Boring No.	B-1	
									Sheet 2 of	2
	est Boring	gLog		Lincoln			/ School	File No.	Y1657	
					Somer	ville, MA		Review by:	John Ganno	n
Boring Co.		Soil Explora	tion Co	rporatio	n	Boring	Locatio	n: See Expl	oration Location Pla	an
Foreman		Tin	n Flores				d Elev.	exemply	13.5±	
TGG Obse	rver	Mark 2	.amberr	ardi		Date S	start > E	00000000	11/27/01	
	Sai	mpling Protocol					UD-CONTRACTOR	ound Water Reading		
dlameter holid	w stem augers. S	s were accomplished Samples were recover n by blows of a 140 LI	ed using	a 2-inch	**************************************	Date 11/27	Time. Drilling	Depth to Bottom 12±'	Depth to Water 4±'	Rem. 2,3
		Sample Data				Sti	rata	Samol	e Description	
No.	Depth	Blows per 6in.	Pen.	Rec.	Rem.	Cha	ange	oairipi	e Description	
5-15	30.0-32.0	1-2-1-2	24	24		1	lay	Wet, soft, olive, SILTY	CLAY with a seam	of olive,
					1	3:	2.0	fine SAND. Bottom of Boring at	80 A +	
46										

Remarks:

^{1.} The boring was terminated at 32± feet. 2. The depth to groundwater was interpreted from the moisture content of sample no. 9-3. 3. A groundwater monitoring well was installed upon completion of the borehole. The well contained screen from 2± to 12± feet.

#### THE GEOTECHNICAL GROUP, INC. Boring No. - PROJECT -Sheet 1 of 1 **Test Boring Log** Lincoln Park Community School File No. Y1657 Somerville, MA Review by: John Gannon See Exploration Location Plan Boring Location: Boring Co. Soil Exploration Corporation Ground Elev. 14.5± Foreman Tim Flores Date Start > End 11/27/01 TGG Observer Mark Zambernardi Ground Water Readings (See Notes) Sampling Protocol Depth to Bottom Depth to Water Rem Unless otherwise noted, borings were accomplished using 4 inch inside: diameter hollow stem augers. Samples were recovered using a 2-inch 22± 10±' 3 11/27 Drilling O.D. split spoon sampler, driven by blows of a 140 Lb. hammer falling 30 Sample Data Strata Sample Description Change Rem No. Depth Blows per 6in. Pen. Rec. Brown to dark brown, fine to medium SAND, 0-1.0 12 12 4-9 some Silt, trace fine Gravel, trace (-) Glass, 5-1A 1.0-2.0 9-8 12 12 Black to beige, CINDERS. Fill 5 5.0-7.0 9-2 20-23-15-14 24 20 Dense, brown, fine to coarse SAND, and fine to 1 7.0 coarse GRAVEL, trace (+) Silt. Wet, medium dense, brown, fine GRAVEL and 10.0-12.0 23-16-11-9 5-3 24 10 fine to coarse SAND, trace (+) Silt. Sand Gravel Wet, medium dense, gray fine SAND, trace Silt, overlying fine to coarse SAND, trace fine Gravel, 9-4 15.0-17.0 11-8-10-9 24 17 trace (-) Silt, overlying fine to coarse GRAVEL. 17.0 some fine to coarse Sand, little (+) Silt. Sand 20 20.0-22.0 9-12-28-90 9-5 24 24 Wet, dense, gray, fine SAND, trace Silt. 22.0 2,4 Bottom of Boring at 22.0± feet. 25

### Remarks:

Approximation location of strata change. The boring was terminated at  $22\pm$  feet. The depth to groundwater was interpreted from the moisture content of sample no. 5-3. The upper  $2\pm$  feet of the borehole was filled with concrete upon completion.

#### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-3 Sheet 1 of 1 **Test Boring Log** Lincoln Park Community School Y1657 File No. Somerville, MA Review by: John Gannon See Exploration Location Plan Boring Location: Boring Co. Soil Exploration Corporation Ground Elev. 14± Tim Flores Foreman Date Start > End 11/27/01 Mark Zambernardi TGG Observer Ground Water Readings (See Notes) Sampling Protocol Depth to Bottorn Depth to Water Rem. Time Date Unless otherwise noted, borings were accomplished using 4 inch inside diameter hollow stem augers. Samples were recovered using a 2-Inch O.D. split spoon sampler, driven by blows of a 140 Lb. hammer falling 30. 13.5± 8±1 3,4 11/27 Drilling Sample Data Strata Sample Description Change Blows per 6in. Pen. Rec. Rem. No. Depth Medium dense, dark brown to tan, fine to 5-11-9 16 18 0-5 5-1 medium SAND, some Silt, trace fine Gravel. 6 1.5-2.0 6 6 S-1A trace (-) Roots. 4-5-5-5 24 12 5-2 2.0-4.0 Fill Dark brown, fine to medium SAND and SILT. Stiff, ORGANIC SILT, little fine Sand, trace fine 4.0-6.0 7-4-5-5 24 2 5-3 5 Gravel. 6.0 5-4 6-7-8-8 24 20 6.0-8.0 1 Stiff, to very stiff, bluish-gray, SILTY CLAY, trace Roots with frequent seams of tan to gray, fine SAND. 24 22 3-4-5-6 5-5 8.0-10.0 Wet, etiff, grayish-olive, SILTY CLAY with frequent seams of grayish-olive fine SAND. 10 10.0-12.0 5-6-8-8 24 24 5-6 Wet, stiff, grayish-olive, SILTY CLAY with frequent seams of grayish-olive fine Sand. 15 Wet, medium stiff, olive, SILTY CLAY with 3-2-3-4 24 24 5-7 15.0-17.0 Clay frequent seams of beige fine SAND. 20 1-1-2-3 24 24 Wet, soft, olive, SILTY CLAY with frequent 5-8 20.0-22.0 seams of beige fine Sand. Wet, dense, grayish-olive, fine to medium SANU, 25 Clayey 9-9 25.0-27.0 8-16-16-11 24 22 some Silty Clay, little (+) Silt, little fine to Sand 27.0 2 coarse Gravel. Bottom of Boring at 27.0± feet.

1. Rust-staining observed in sample. 2. The boring was terminated at 27± feet. 3. The depth to groundwater was interpreted from the moisture content of sample no. 5-3. 4. A groundwater monitoring well was installed upon completion of the borehole. The well contained screen from 3± to 13± feet.

#### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-4 Sheet 1 of 1 **Test Boring Log** Lincoln Park Community School File No. Y1657.01 Somerville, MA Review by: Wayne McArdle Boring Co. Soil Exploration Corporation **Boring Location:** See Exploration Location Plan Foreman Mike Camacho Ground Elev. 15± TGG Observer Date Start > End Jason Mammone 4/16/02 Sampling Protocol Ground Water Readings (See Notes) Unless otherwise noted, borings were accomplished using 4 inch inside Date Time Depth to Bottom Depth to Water Rem. diameter hollow stem augers. Samples were recovered using a 2-inch 4/16 Drilling 28± 3+ O.D. split spoon sampler, driven by blows of a 140 Lb. CME automatic trip 1 hammer falling 30 inches. Sample Data Strata Sample Description No. Depth Change Blows per 6 in. Pen. Rec. Rem 5-1 0-1 4-7 12 8 Dry, tan, fine to medium SAND and SILT. S-1A 1-2 8-11 8 Dry, dark brown, fine to coarse SAND, some fine to coarse Gravel, little Silt, trace cinders, trace (-) brick 5-2 8-10-8-11 2-4 24 15 Medium dense, dry, dark brown, fine to medium SAND, Granular some (+) Silt, little (+) fine to coarse Gravel, trace Fill cinders. 5 5-7 5-3 Very loose, wet, CINDERS, little fine to medium Sand. 1-1-1-1 12 1 little Silt, trace fine Gravel. 2 7.0 5-4 7-9 WOH-18"-1 24 15 Organic Silt Very loose, wet, gray to brown, Organic SILT, trace fine 3 9.0 Sand. 10 Medium stiff, wet, gray, Silty CLAY with occasional 5-5 10-12 2-3-2-4 24 seams of fine SAND. TS-1 12-14 Pushed 24 24 4 Silty 15 Clay 5-6 15-17 3-2-5-4 Medium stiff, wet, gray, Silty CLAY, little (+) fine Sand. 24 22 5 19-20 6-7 Wet, gray, Silty CLAY, little (+) fine Sand. 12 6.7 6 20.0 20 5-7A 20-21 9-12 12 8 Wet, gray, fine to coarse GRAVEL, little (+) Silt, little (+) fine to coarse Sand. Glacial Till 5-8 24-26 22-20-19-10 25 24 16 Dense, wet, gray, fine to coarse GRAVEL, some (-) fine to coarse Sand, little Silt. 5-9 26-28 18-21-19-16 24 16 Dense, wet, gray, fine to coarse GRAVEL, little fine to 28.0 coarse Sand, little Silt. Bottom of the boring at 28.0 feet.

Remarks:

1. Groundwater encountered at about 3± feet while drilling.

2. Strata change encountered at about 7± feet while drilling.

3. Change in drilling difficulty encountered at about 9± feet. Possible strata change.

4. Shelby tube 15-1 pushed from 12 to 14± feet.

5. Switched to 4-inch flush jointed casing at about 15± feet. Borehole was advanced using wash boring techniques.

6. Continued advancing borehole using "open hole" method and wash boring techniques at 20± feet.

7. Strata change encountered at about 20± feet while drilling.

#### THE GEOTECHNICAL GROUP, INC. - PROJECT -B-5 Boring No. Sheet 1 of 3 **Test Boring Log** Lincoln Park Community School File No. Y1657.01 Somerville, MA Review by: Wayne McArdle **Boring Location:** See Exploration Location Plan Boring Co. Soil Exploration Corporation Ground Elev. Foreman Mike Camacho Date Start > End 4/16/02 TGG Observer Jason Mammone Ground Water Readings (See Notes) Sampling Protocol Depth to Bottom Depth to Water Rem. Date Unless otherwise noted, borings were accomplished using 4 inch inside diameter hollow atem augers. Samples were recovered using a 2-inch 4/16 Drilling 68± 5+ 2 O.D. split speon sampler, driven by blows of a 140 Lb. CME autematic trip hammer falling 30 inches. Sample Data Strata Sample Description Change Rem Depth Blows per 6 in. Pen. Rec. No. Dry, tan, fine to medium SAND and SILT, trace 0-0.5 6 4 5-1 fine Gravel. 7-7-12 9-1A 0.5-2 18 10 Medium dense, dark brown, fine to coarse Sand, Granular some (+) Silt, little fine to coarse Gravel, trace Fill (-) Brick. 5.0 1 5 Very loose to loose, wet, gray to brown, Organic 5-2 5-7 WOH/12"-4-4 24 18 Organic SILT, little (+) fine Sand. Silt 7.0 5-3 7-9 4-6-7-10 24 18 Stiff, wet, gray, Silty CLAY, little (-) fine Sand. 10 10-12 9-4 4-8-11-7 24 18 Very stiff, wet, gray, Silty CLAY with a 4-inch seam of fine Sand and Silt. 15 Silty TS-1 15-17 PUSHED 24 24 2 Clay Stiff, wet, gray, Silty CLAY with occasional 5-5 17-19 8-5-6-5 24 22 seams of fine Sand. 20 Soft, wet, gray, Silty CLAY with occasional 5-6 20-22 3-1-2-3 24 22 seams of fine Sand. 25 Medium stiff, wet, gray, Silty CLAY with 5-7 25-27 WOH/6"-3-4-6 24 22 occasional seams of fine Sand.

Groundwater was encountered at about 5± feet while drilling. Shelby tube sample TS-1 pushed from 15 to 17± feet.

### THE GEOTECHNICAL GROUP, INC. B-5 - PROJECT -Boring No. Sheet 2 of 3 **Test Boring Log** Lincoln Park Community School File No. Y1657.01 Somerville, MA Review by: Wayne McArdle **Boring Location:** See Exploration Location Plan Boring Co. Soil Exploration Corporation Ground Elev. 15± Foreman Mike Camacho 4/16/02 Date Start > End TGG Observer Jason Mammone Ground Water Readings (See Notes) Sampling Protocol Depth to Bottom Depth to Water Unless otherwise noted, borings were accomplished using 4 inch inside Date Time Rem. diameter hollow stem augers. Samples were recovered using a 2-inch 68± 5± 4/16 Drilling O.D. split spoon sampler, driven by blows of a 140 Lb. CME automatic trip hammer falling 30 inches. Sample Data Strata Sample Description Change Pen. Rec. Rem Blows per 6 in. No. Depth Medium stiff, wet, gray, Silty CLAY with 5-8 30-32 3-3-3-4 24 22 occasional seams of Sand. 35 5-9 35-37 6-8-8-11 24 15 Very stiff, wet, gray, Silty CLAY, little Gravel, trace (+) fine to coarse Sand. 40 Soft to medium stiff, wet, gray, Silty CLAY with 5-10 40-42 WOH/12"-4-5 24 22 occasional seams of Sand. Silty 45 Clay Medium stiff to stiff, wet, gray, Silty CLAY with 45-47 5-11 3-4-4-5 24 20 occasional seams of fine Sand. 48-50 TS-2 PUSHED 24 24 3 50 5-12 50-52 7-5-5-6 24 22 Stiff, wet, gray, Silty CLAY. 55 Stiff, wet, gray, Silty CLAY <del>9</del>-13 55-57 WOH/6"-5-5-4 24 22 Remarks: 3. Shelby tube TS-2 pushed from 48 to 50± feet.

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	T	est Bori	ng Log		Lincoln	Park Co	ommunity	School	File No.	Y1657,01	
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	ing Co. eman			amacho	_	_	Ground		. 000 ш.,	15±	-
_	G Obse	nver	Jason N					tart > En	d	4/16/02	
	G 0000	100000000000000000000000000000000000000	Sampling Protocol					Gro	und Water Reading	s (See Notes)	
Inle	ss other	vise noted, br	orings were accomplish	ed using	4 inch in	side	Date	Time	Depth to Bottom	Depth to Water	Rem
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						- PR	OJECT -		Boring No.	B-6	
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			3 3		LIIICOII		rville, MA		File No.	Y1657.01	40.0
-									Review by:	Wayne McAr	
-	oring C		Soil Explora	-		n	Boring	Locatio	n: See Exp	loration Location Pl	
-	oreman			Camach			Ground		1	15±	
-	G Ob	server		Mammo	one		Date S	tart > E		4/17/02	
			Sampling Protocol					Gr	ound Water Reading	s (See Notes)	1
die	arrester 140	now stem au	porings were accomplis gers. Samples were rec	horadi t	productions a 2 inch			Time	Depth to Bottom	Depth to Water	Ren
V.1	J. Spiil S	poon sampler ling 30 Inches	driven by blows of a 1/	IO Lb. CN	ME autom	natic trip	4/17	Drilling	39±	5±	2
_			Sample Data				Str	ata	7 - 7		
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Cha		Sampl	e Description	
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1. Groundwater encountered at about 5± feet while drilling.
2. Switched to 4-inch flush jointed casing at about 20± feet and advanced the borehole using "open hole" method and wash
3. Shelby tube 15-1 pushed from 24 to 26± feet.

			THE	GE	OTE	CHN	CAL (	GROL	JP, INC.		
						- PRC	OJECT -		Boring No.	В-6	
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		Test Bori	ng Log		Lincoin		ommunity rville, MA		File No.	Y1657.01	
						DOME	7VIIIE, 1VI/3		Review by:	Wayne McAr	dle
Bo	ring Co.		Soil Exploration	on Corp	oration	î	Boring	Location	n: See Expl	loration Location Pla	an
For	reman		Mike Ci	amacho	ס		Ground	I Elev.		15±	
TG	G Obse	erver	Jason M	iammo	ne		Date S	tert > En	nd	4/17/02	
		ę	Sampling Protocol				5	Gro	ound Water Reading	s (See Notes)	
Unk	es other	wise noted, br	orings were accomplishe	ad using	4 inch ir	nside	Date	Time	Depth to Bottom	Depth to Water	Rem.
O.D	. split spo	llow stem auge oon sampler, o Ing 30 inches.	ers. Samples were recoveriven by blows of a 140	Lb. CM	ing a 2-i E autom	nch atic trip	4/16	Drilling	39±	5±	2
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#### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-7 Sheet 1 of 3 **Test Boring Log** Lincoln Park Community School File No. Y1657.01 Somerville, MA Review by: Wayne McArdle **Boring Location:** See Exploration Location Plan Boring Co. Soil Exploration Corporation Ground Elev. Foreman Mike Camacho 14± Date Start > End 4/16/02 TGG Observer Jason Mammone Ground Water Readings (See Notes) Sampling Protocol Depth to Bottom Date Time Depth to Water Rem. Unless otherwise noted, borings were accomplished using 4 inch inside diameter hollow stem augers. Samples were recovered using a 2-inch 77± 4/18 6± Drillina O.D. split spoon sampler, driven by blows of a 140 Lb. CME automatic trip hammer falling 30 inches. Sample Data Strata Sample Description Change Blows per 6 in. Pen. Rec. Rem No. Depth Loose, dry, dark brown to tan, fine to medium 9-1 0-2 4-3-4-4 24 12 SAND and SILT, trace (+) fine to coarse Gravel. Granular Fill 5 5.0 Medium dense, wet, gray, fine to coarse SAND, Sand & 5-2 3-7-7 5-6.5 18 12 some (+) fine to coarse Gravel, trace Silt. Gravel 6.5 5-2A 6.5-7 5 6 6 2 Wet, gray, Silty CLAY with occasional seams of fine Sand. 10 5-3 Stiff, wet, gray, Silty CLAY with occasional 10-12 2-5-7-9 24 18 3 seam of fine Sand. 15 Silty Clay Medium stiff, wet, gray, Silty CLAY with 15-17 5-4 2-2-3-3 24 22 occasional seams of fine Sand. 20 5-5 20-22 WOH/12"-1-1 24 22 4 Very soft, wet, gray, Silty CLAY with occasional seam of fine Sand. 25 Soft, wet, gray, Silty CLAY with occasional 5-6 25-27 WOH/12"-3-3 24 22 seams of fine Sand. Remarks: 1. Groundwater encountered at about 6± feet while drilling. 2. Strata change encountered at about 6.5 feet while drilling. 3. G-inch seam of sand encountered within the split spoon sample. 4. Borehole advanced using "open hole" method and wash boring techniques.

	THE GEOTECHNICAL GROUP, INC.												
					- PROJECT -					Boring No. B-7			
Test Boring Log											Sheet 2 of 3		
				Lincoln Park Community School Somerville, MA						File No.	Y1657.01		
					JUITO	(VIIIG, 1917 )			Review by	Wayne McArdle			
Bor	Boring Co. Soil Exploration				oration		Boring Location:			See Exploration Location Plan			
Foreman Mike Ca				amacho			Ground Elev.			14±			
TGG Observer Jason M				lammor	1e		Date Start > End 4/18/02 Ground Water Readings (See Notes)						
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							DJECT -		Boring No.	Boring No. B-7		
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		OUL DUI	ing rog	1	LINCOIN		ommunity		File No.			
					Somerville, MA				Review by:	Wayne McAr	dle	
	Boring Co. Soil Exploration Corporation					Boring Location: See Exploration Location Plan						
Fo	reman		Mike (	Camach	0		Ground Elev. 14±					
TG	TGG Observer Jason Mammone					Date Start > End 4/16/02						
		4 8 4 4	Sampling Protocol					Gr	ound Water Reading			
Unless otherwise noted, borings were accomplished using 4 inch inside								Depth to Bottom				
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### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-8 Sheet 1 of 2 **Test Boring Log** Lincoln Park Community School Y1657.01 File No. Somerville, MA Review by: Wayne McArdle See Exploration Location Plan **Boring Location:** Boring Co. Soil Exploration Corporation Ground Elev. 14± Foreman Mike Camacho Date Start > End 4/16/02 TGG Observer Jason Mammone Ground Water Readings (See Notes) Sampling Protocol Depth to Water Depth to Bottom Rem. Date Time Unless otherwise noted, borings were accomplished using 4 inch inside diameter hollow stem augers. Samples were recovered using a 2-inch 4/18 Drillina 32± $5 \pm$ O.D. split spoon sampler, driven by blows of a 140 Lb. CME automatic trip hammer falling 30 inches. Sample Data Strata Sample Description Change Pen. Rem Blows per 6 in. Rec. No. Depth 18 Loose, dry, dark brown, fine to coarse SAND, 5-1 0-2 6-5-4-4 24 some (-) Silt, little fine to coarse Gravel, trace Cinders. Granular Fill 5 5.0 Very loose, wet, gray to dark brown, Organic Organic Silt 5-2 5-6.5 WOH/12"-1 18 12 65 5-2A 6.5-7 2 6 6 2 Wet, gray, Silty CLAY with occasional seams of fine to Sand. Silty 10 Clay 5-3 10-12 2-3-5-5 24 12 Medium stiff to stiff, wet, gray, Silty CLAY with occasional seams of fine Sand, trace fine 13.0 Gravel, trace fine to coarse Sand. 3 15 Boney 4-7-17-17 5-4 15-17 24 10 Medium dense, wet, gray, fine to coarse Sand & GRAVEL, little (-) fine to coarse Sand, trace Gravel 19.0 4 20 5-5 20-22 3-4-6-5 24 18 Loose to medium dense, wet, gray, fine to coarse SAND, trace (-) Silt. Sand 25 5-6 25-27 11-18-18-17 18 Dense, wet, gray, fine to coarse SAND, trace (+) fine to coarse Gravel, trace (-) Silt.

Remarks:

iarks: Groundwater encountered at about 5± feet while drilling. Strata change encountered at about 6.5± feet . Strata change encountered at about 13± feet while drilling. Strata change encountered at about 19± feet while drilling.

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T		100	Sampling Protocol					Gro	und Water Reading	s (See Notes)	
nle	ss other	wise noted, b	orings were accomplishe	ed using	4 inch ir	nside	Date	Time	Depth to Bottom	Depth to Water	Ren
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am	mer falli	ng 30 inches.	unven by blows of a 140	LII. CIVII	E AUTOM	auc np					
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T.C.II.	7		Sample Data			6-7	Str	ata	Samo	e Description	
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5 10-	5-1 5-2	10-12	3-2-2-2	24	24	1			Wet, medium stiff, gra frequent layers of tar Wet, soft, gray, SILTI layers of gray Clayey (PP=1.0 tsf)		×
20	9-3	24-26	2-2-3-2	24	16				Wet, medium stiff, gr (PP=0.5 tsf)	ay, SILTY CLAY.	

Remarks: PP=Pocket Penetrometer
1. Strata change based on drilling difficulty
2. Augers removed from borehole and 4 inch diameter flush joint casing advanced to 15± feet utilizing wash boring techniques.
3. Advanced borehole to 70± feet utilizing open hole drilling techniques.

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3	- 17 KM		Sampling Protocol			41		Gr	ound Water Reading	s (See Notes)	-100
Uni	ess othe	rwise noted,	borings were accomp	lished u	sing 4-in	ch I.D.	Date	Time	Depth to Bottom	Depth to Water	Rem
spo	ow stem on samp ies.	augers. San ler, driven by	ples were recovered to blows of a 140 lb. sa	afety har	nmer fa	D. split lling 30	2/25	1000	70'±	9'±	7
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Bor	ng Co.		Soil Explorati	on Corp	oration			Location	n: See Exp	loration Location Pla	ari
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### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-107 Lincoln Park Community School Sheet 1 of 3 **Test Boring Log** 290 Washington Street File No. Y1657.03 Somerville, MA Review by: Wayne McArdle Boring Co. Soil Exploration Corporation Boring Location: See Exploration Location Plan Foreman Rich Ground Elev. 30± TGG Observer Jeremy Haugh Date Start > End 4/20/05 Sampling Protocol Ground Water Readings (See Notes) Unless otherwise noted, borings were accomplished using 2.5 inch I.D. Date Depth to Bottom Time Depth to Water Rem. flush joint casing driven by hydraulic percussion method. Semples were 4/20 Compl. 60'± 22'± 2 receivered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH86 auto trip hammer falling 30 inches. Sample Data Strata Sample Description No. Depth Blows per 6 in. Pen. Change Rec. Rem 5 5-1 5-7 13-10-12-11 24 Medium dense, brown, fine to coarse GRAVEL and 8 fine to coarse SAND, trace (+) Silt. Fill 10 5-2 10-12 4-4-2-2 Loose, light brown, fine to coarse SAND, little 24 6 Silt, trace fine Gravel. 15 5-3 15-17 Medium dense, brown, fine to coarse SAND, some 57-10-7-4 24 14 fine to coarse Gravel, little (-) Silt, trace Concrete, trace (-) Cinders, Glass. 20.0 20 5-4 20-22 Dry to moist, medium dense, tan to gray, fine to medium SAND, trace Silt, trace (-) Roots. 10-11-12-13 24 22 Sand 5-5 25-27 16-12-12-12 24 Wet, medium dense, orangish-tan, fine SAND, 8 little Silt. 29.0 Silty Sand Remarks:

### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-107 Sheet 2 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 File No. 290 Washington Street Somerville, MA Review by: Wayne McArdle Boring Location: See Exploration Location Plan Boring Co. Soil Exploration Corporation Foreman Ground Elev. 30± Rich 4/20/05 Date Start > End TGG Observer Jeremy Haugh Ground Water Readings (See Notes) Sampling Protocol Unless otherwise noted, borings were accomplished using 2.5 inch I.D. flush joint easing driven by hydraulic percussion method. Samples were recovered using a 2-inch O.D. split speen sampler, driven by blows of a 140. Depth to Bottom Depth to Water Rem Date Time 61'± 22'± 2 4/20 Compl. lb. DH66 auto trip hammer falling 30 inches. Sample Data Strata Sample Description Blows per 6 in. Pen. Rec. Rem Change Depth No. Wet, medium dense, tan, SILT and fine SAND. 5-6 30-32 14-12-13-13 24 18 Wet, medium dense, gray, fine SAND, little Silt, trace Clay with frequent seams of Silty Clay. 35 18 5-7 35-37 12-9-10-9 24 Silty Sand Wet, medium dense, gray, fine SAND, little Silt. 40 24 5-8 40-42 9-8-13-14 14 45.0 Wet, stiff, gray, CLAYEY SILT, some fine Sand, trace (-) fine Gravel. 45 5-9 45-47 3-1-7-3 24 18 Wet, stiff, gray, CLAYEY SILT, some fine Sand. 5-10 47-49 4-5-6-6 24 24 Silty Clay Wet, stiff, gray, CLAYEY SILT, some fine Sand With 5-11 50-52 5-4-5-7 24 20 50 Frequent Layers of Silt & Fine Sand Wet, medium stiff, gray, SILTY CLAY, little fine 5-12 55-57 4-3-3-3 24 24 55 Sand. Wet, medium stiff, gray, fine SAND and SILTY 9-13 59-61 2-2-5-3 24 Remarks:

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### THE GEOTECHNICAL GROUP, INC. B-108 - PROJECT -Boring No. Sheet 1 of 3 Lincoln Park Community School **Test Boring Log** File No. Y1657.03 290 Washington Street Somerville, MA Wayne McArdle Review by: Boring Co. See Exploration Location Plan Soil Exploration Corporation Boring Location: Ground Elev. Foreman 28± Rich TGG Observer Jason Mammone Date Start > End 4/21/05 Ground Water Readings (See Notes) Sampling Protocol Unless otherwise noted, borings were accomplished using 2.5 inch Depth to Bottom Depth to Water Date. Time Rem. inside diameter flush joint casing driven by hydraulic percussion method. Samples were recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 automatic drep hammer 4/21 70.8± 22± 2 a.m. falling 30 inches. Sample Data Strata Sample Description Change Rem Depth Blows per 6 in. Pen. Rec. No. 5 5-7 **S-1** 4-2-2-1 24 8 Very loose to loose, dry, brown, fine to coarse SAND, little (+) fine to coarse Gravel, trace (+) Silt. Fill 10 5-2 10-12 5-4-7-4 24 8 Medium dense, dry, brown, fine to coarse GRAVEL and fine to coarse SAND, trace (+) Silt. 1, 2 Very loose, wet, dark brown to brown, fine to 15 5-3 15-17 1-1-1-2 24 15 medium SAND and SILT, little (-) fine to coarse Gravel. 19.0 3 20 24 5-4 20-22 5-5-5-9 18 Loose to medium dense, tan to orange-tan, fine to medium SAND, little Silt. Sand 25 5-5 25-27 4-7-10-10 24 15 Medium dense, wet, gray to orange-tan, fine SAND, trace Silt.

## Remarks

- 1. Pushed casing through possible obstruction from about 12 to 14± feet.
- 2. Groundwater was encountered at about 24± at the time of the boring.
- 3. Change in driving difficulty encountered at about 19± feet. Possible strata change.

### THE GEOTECHNICAL GROUP, INC. - PROJECT -B-108 Boring No. Sheet 2 of 3 Lincoln Park Community School **Test Boring Log** 290 Washington Street Y1657.03 File No. Somerville, MA Review by: Wayne McArdle Soring Co. Soil Exploration Corporation See Exploration Location Plan Boring Location: Foreman Rich Ground Elev. 28± Jason Mammone TGG Observer Date Start > End 4/21/05 Sampling Protocol Ground Water Readings (See Notes) Unless otherwise noted, borings were accomplished using 2.5 inch inside clameter flush joint casing driven by hydraulic persussion method. Samples were recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 automatic drep harmon falling 30 inches. Date Time Depth to Bottom Depth to Water Rem. 4/21 70.8± 22± 2 Sample Data Strata Sample Description Change Depth Blows per 6 in. Pen. Rec. Rem 5-6 30-32 9-8-7-11 15 Medium dense, wet, gray, fine SAND, little (-) Silt. Sand 35.0 35 5-7 35-37 6-5-3-1 24 20 Loose, wet, gray, SILT, some fine Sand. Sandy 5ilt 40.0 5-8 40-42 WOH / 18"-2 24 18 Very soft, wet, gray, SILTY CLAY, little fine SAND with frequent seams of fine Sand. PP< 0.25 TSF 45 TS-1 45-47 PUSHED 24 4 Silty Clay Very soft, wet, gray, SILTY CLAY, little fine Sand 5-9 48-50 WOH / 18"-3 24 24 With with frequent seams of fine Sand. 50 PP= 0.25 T5F Frequent Layers of Silt & Fine Sand Very soft, wet, gray, SILTY CLAY, trace fine Sand 55 5-10 55-57 WOH / 12"-1-2 24 24 with frequent seams of fine Sand.

^{4.} Geoprobe advanced using the "open hole" method and wash boring techniques at about 45± feet.

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	A 10-510					Somer	ville, M/	4		Review by:	Wayne McAr	dle
80	ing Co.	<b>以最多世界</b>	Soll Explora	ation Co	orporat	ion	Boring	g Locati	on:	See Explo	oration Location Pla	n
For	eman.		v	Rich			Groun	id Elev.			28±	
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falli	ng 30 inc	hes.										
(5.7)		THE TA	Sample Data	Market .		1/01	A LOCAL TO STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY O	rate		Sample	Description	TAIL I
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Remarks: 5. Change in drilling difficulty encountered at about 70± feet. 6. Refusal of the split spoon encountered at about 70.8± feet. Possible boulder/bedrock.

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3					Lincoln	-	ommunity			Sheet 1 of	3
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			Sampling Protocol		. 7	14.1	- D. H. L.		ound Water Reading	s (See Notes)	The same
ni	ess othe	rwise noted, I	oorings were accompl	ished usi	ng 2.5 i	nch I.D.	Date	Time	Depth to Bottom	Depth to Water	Ren
18	h joint ca svered n	ising driven b slog a 2-inch	y hydraulic percussion O.D. split spoon same	method.	Sample	es were	4/22	Drilling	75'±	17°±	4
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			Sample Date	forest.		Nat St	Str	ata	at in the training of		1000
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### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-109 Sheet 2 of 3 Lincoln Park Community School **Test Boring Log** File No. Y1657.03 290 Washington Street Somerville, MA Review by: Wayne McArdle See Exploration Location Plan Soil Exploration Corporation Boring Location: Boring Co. 23± Rich Ground Elev. Foreman 4/22/05 Jeremy Haugh Date Start > End TGG Observer Sampling Protocol Ground Water Readings (See Notes) Unless otherwise noted, borings were accomplished using 2.5 inch I.D. Depth to Water Depth to Bottom Rem. Date Time flush joint casing driven by hydraulic percussion method. Samples were 4/22 Drillina 75'± 17°± 4 recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. DH66 auto trip hammer falling 30 inches. Sample Data Strata Sample Description Change Pen. Rec. Rem No. Depth Blows per 6 in. PUSHED 24 24 TS-1 30-32 Wet, very soft, gray, CLAY and SILT with frequent layers of SIIt. 5-6 32-34 1-1-1-2 24 24 35 5-7 40-42 1-1-1-1 24 24 Silty Wet, very soft, gray, SILTY CLAY. (TV=0.25 tsf) Clay With Frequent Layers of Silt & TS-2 45-47 PUSHED Fine 24 24 1 Sand Wet, medium stiff, gray, SILTY CLAY, trace fine Sand with occasional layers of Silty Sand. S-8 47-49 5-4-2-1 24 24 50 Wet, soft, gray, SILTY CLAY. (TV=0.35 tsf) 55 55-57 WOH/12"-3-3 9-9 24 24 Remarks: TV=Torvane WOH=Weight of Hammer 1. Pushed 2 inch diameter Shelby tubes from 30± to 32± feet, 45± to 47± feet and 60± to 62± feet.

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to.						Some	rville, MA		Review by:	Wayne McAr	dle
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For	eman		R	lich			Ground	Elev.	515-	23±	
TG	G Obse	rver	Jerem	y Haugh	)		Date S	tart > En	d	4/22/05	
LULIV.			Sampling Protocol				8 Ja 5 S	Gr	ound Water Reading	s (See Notes)	
Unk	ess other	wise noted, i	oorings were accomplis	hed usi	ng 2.5 i	nch I.D.	Date	_Time	Depth to Bottom	Depth to Water	Rem.
reco	overed us	ing a 2-inch	y hydraulic percussion O.D. split spoon sampl nmer falling 30 inches.	method. er, drive	n by bk	es were ws of a	4/22	Drilling	75'±	17'±	5
	4,700		Sample Data	epi ta		122	CN-	ata	Standarde (Venige	1827 1015 201 1117-1	L Yeu
300	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	- 00 POT 153	ata Inge	Sampl	e Description	) <u> </u>
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### THE GEOTECHNICAL GROUP, INC. Boring No. B-110 Sheet 1 of 3 Lincoln Park Community School **Test Boring Log** Y1657.03 290 Washington Street File No. Somerville, MA Review by: Wayne McArdle Soil Exploration Corporation Boring Location: See Exploration Location Plan Boring Co. 26± Foreman Mike Ground Elev. 4/25/05 Joromy Haugh TGG Observer Date Start > End Ground Water Readings (See Notes) Sampling Protocol Unless otherwise noted, borings were accomplished using 4-inch I.D. Depth to Bottom Depth to Water Rem Date Time hollow stem augers: Samples were recovered using a 2-inch O.D. split 4/25 61'± 17°± 5 Drilling spoon sampler, driven by blows of a 140 lb. CME auto trip hammer falling 30 inches. Sample Data Strata Sample Description Rem Change Depth Pen. Rec. No. Blows per 6 in. Medium dense, brown, fine to coarse SAND, little 5 (+) Silt, little (-) fine Gravel, trace (-) Cinders. 5-1 5-7 10-19-10-11 24 Fill Medium dense, brown, fine to coarse GRAVEL. 10 some (+) fine to coarse Sand, trace (+) Silt, trace (-) Cinders. 5-2 10-12 5-8-8-7 24 10 14.0 Medium dense, dark brown with orangish 15 Organics staining, fine to medium SAND, some (-) Organic 5-3 15-16.5 3-4-8 18 18 Silt, trace (-) plant fibers. 16.5 16.5-17 9-3A 12 6 6 Moist, gray, fine to coarse SAND, trace Silt. Sand 20 Wet, medium dense, tannish-orange to gray, fine 5-4 20-22 5-8-11-14 24 2 24 SAND, trace Silt. 23.0 Wet, medium dense, tan to gray, SILT and fine 5-5 24-26 24 9-11-13-14 14 SAND, trace (-) Clay with occasional seams of 25 dark gray Clay. Sandy Silt Wet, medium dense, gray, SILT, some fine Sand, trace Clay with frequent seams of Clayey Silt. 5-6 29-31 6-7-12-12 Remarke:

Augers grinding from 8± to 14± feet.
 Removed augers from borehole and advanced 3± inch l.D. flush joint casing to 61± feet utilizing wash boring techniques.

	4. 145 F. PM 分析器 6 25 W.		127	1 1 1	The I	DJECT -		UP, INC.	240	
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ilees othe	nwise noted,	borings were accomp	lished u	sing 4-ir	ich I.D.	Date	Time	Depth to Bottom	Depth to Water	Ren
llow stem	augers. Sal	nples were recovered	using a	2-inch O	D. solit	4/25	Drilling	61'±	17'±	5
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14 34		Sample Data	No.			Ci.	ate	CASTRONIA CHEST SA POSS	elicitation para transci	100000
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						38	.0			
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		0-1-2-1	24	24				seame of Silt.	The Grant Wall Walland	110
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							1	Wet, medium stiff, gray	SILTY CLAY, trace f	ine
5-11	59-61	2-4-5-8	24	24	88		[:	Band with occasional ia	yers of Silty Sand.	- 1

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				1145	2	- PRO	JECT -	All Ta	Boring No.	B-110	
64.0					Lincoln	Park Co	ommunity	School	DATE OF THE PARTY	Sheet 3 of 3	3
		lest Bori	ng Log		290		ngton St	reet	File No.	Y1657.03	
ij.						Some	ville, MA		Review by:	Wayne McArd	ile.
Bor	ing Co.	Sidala.	Soil Explorati	on Corp	oration		Boring	Location	: See Exp	Ioration Location Pla	n
Section 1	eman		N	like			Ground	Elev.	¥. U	26±	
TG	G Obse	erver	Jerem	y Haugh			Date St	art > En	d.	4/25/05	
	10.55		Sampling Protocol		Mestal I			Gro	ound Water Reading	and the second section is a second section of the second section of the second section is a second section of	,
Unk	es othe	rwise noted,	borings were accompl	ished us	ing 4-in	ch I.D.	Date	Time	Depth to Bottom	Depth to Water	Rem.
800	ow stem on samp nches.	augers. San ler, driven by	nples were recovered u blows of a 140 lb. CME	auto trip	hamme	r felling	4/25	Drilling	61'±	17°±	5
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	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Cha	nge	Samp	le Description	
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Remarks: *Silty Clay With Frequent Layers of Silt & Fine Sand 4. Boring terminated at 61± feet. 5. Groundwater observed during drilling.

### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-101 Lincoln Park Community School Sheet 1 of 3 Test Boring Log 290 Washington Street File No. Y1657.02 Somerville, MA Review by: Wayne McArdle Boring Co. Soil Exploration Corporation Boring Location: See Exploration Location Plan Mike Foreman: Ground Elev. 25± TGG Obsenver Jeremy Haugh Date Start > End 2/22/05 Sampling Protocol Ground Water Readings (See Notes) Unless otherwise noted, borings were accomplished using 4-inoh I.D. hollow stem augers. Samples were resovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. CME Auto Trip hemmer falling 30 Date Depth to Bottom Depth to Water Rem. 2/22 0930 73'± 15'± Sample Data Strata Sample Description Rec. Change No. Blows per 6 in. Pen. Depth Rem 5-1 0.5-2.5 5-5-4-4 24 24 Loose, brown, fine to coarse SAND, little (+) Silt, trace fine Gravel, trace (-) Asphalt. Medium dense, brownish-gray, fine to coarse SAND and fine to coarse GRAVEL, little (-) Silt. 5-2 5-7 4-15-11-15 24 15 Fill 10 Moist, very dense, brown, fine to coarse SAND, some Silt, fine to coarse Gravel. 5-3 10-12 1-28-43-13 24 4 1, 2 Wet, brownish-gray, fine to medium SAND, little 15 16.0 15-16 5-4 9-8 12 7 (+) Silt. 5-4A 16-17 6-4 12 9 Wet, orangish-tan or gray, fine to medium SAND, little Silt. Sand 20 5-5 20-21.5 Wet, medium dense, orange, fine SAND, trace 3-6-9 18 18 21.5 Silt. 5-5A 21.5-22 12 6 6 Wet, gray, SILT and fine SAND. Sandy 5-6 25-27 4-9-12-12 24 25 24 Silt Wet, medium dense, gray, SILT and fine SAND, trace (-) Clay with frequent seams of gray Clayey Silt. Remarks Possible concrete observed in split spoon sampler at $10.5\pm$ feet. Augers grinding from $10.5\pm$ to $13\pm$ feet.

### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-101 Lincoln Park Community School Sheet 2 of 3 **Test Boring Log** 290 Washington Street File No. Y1657.02 Somerville, MA Review by: Wayne McArdie Boring Co. Soil Exploration Corporation Boring Location: See Exploration Location Plan Foreman Mike Ground Elev. 25± TGG Observer Jeremy Haugh Date Start > End 2/22/05 Sampling Protocol Ground Water Readings (See Notes) Unless otherwise noted, borings were accomplished using 4-inch I.D. hollow stem augers. Samples were recovered using a 2-inch O.D. split spoon sampler, driven by blows of a 140 lb. CME Aute Trip hammer falling 30 Date Depth to Bottom Depth to Water Rem. 2/22 0930 73'± 15'+ 7 inches. Sample Data Strata Sample Description No. Depth Blows per 6 in. Pen. Rec. Rem Change 5-7 30-32 3-9-8-13 Wet, medium dense, gray, SILT, some fine Sand, 24 24 3 Sandy little Clay. Silt 33.0 35 5-8 35-37 3-5-7-6 Wet, stiff, gray, CLAYEY SILT, trace (-) fine Sand with occasional layers of gray Silty Sand. 24 24 Wet, medium stiff, gray, SILTY CLAY, trace (-) 40 5-9 40-42 4-4-3-3 24 24 fine Sand with frequent layers of gray Silty Silty Clay 45 9-10 45-47 Wet, medium stiff, gray, SILTY CLAY, trace (-) 2-3-3-3 24 24 fine Sand with occasional layers of gray Silty Sand. 5-11 48-50 2-3-3-4 24 24 4 Wet, medium stiff, gray, SILTY CLAY. 50 55 Remarks: Approximate $6\pm$ inch thick layer of gray SILTY CLAY observed at $30\pm$ feet in sample no. 5-7. Advanced boring to $73\pm$ feet utilizing open hole drilling techniques.

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	E.Jal.	The Late	ATTEN AND			- PRO	OJECT -		Boring No.	B-101	
		Fant Day			Lincolr	1 Park C	Community	v School		Sheet 3 of	3
		Test Bor	ing Loy			0 Washi	iington St	treet	File No.	Y1657.02	
40		7 V 7 - 365		1		Some	rville, MA	i	Review by:	Wayne McArd	
Во	ring Co	AN LANGUE	Soil Explorati	ion Corr	poration	n	Boring	Location	n: See Expl	loration Location Pla	
Foi	reman		N	Mike			Ground	d Elev.		25±	
TG	G Obs	110		ny Haugh	h		Date S	tart > En	nd	2/22/05	
	1000	12 S. 10 V	Sampling Protocol					72	ound Water Reading	s (See Notes)	
Unk	ass other	wise noted, br	orings were accomplishe	d using 4	I-inch I.D	). hollow		Time	Depth to Bottom	Depth to Water	Rem
sam	n augers ipler, driv ies.	. Samples w ven by blows	were recovered using a of a 140 ib. CME Auto	2-inch C	).D. spin mmer fa	t spoon illing 30	2/22	0930	73'±	15'±	7
A= G	10		Sample Data				Str	rata	1 27 27	T 2	
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	wS .	ange	Sample	e Description	
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70	5-12	71-73	18-23-13-12	24	12	6	San Gra 73.	avel	Wet, dense, gray, fine to coarse GRAVEL, so	to coarse SAND an ome (-) Silt.	d fine
									Bottom of Boring at a	about 73.0± feet.	
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em	arks:		about 70+ feet indic								

Augers grinding at about 70± feet indicating strata change. Boring terminated at 73± feet. Depth to groundwater measured during drilling.

### THE GEOTECHNICAL GROUP, INC. - PROJECT -Boring No. B-102 Lincoln Park Community School Sheet 1 of 3 Test Boring Log 290 Washington Street File No. Y1657.02 Somerville, MA Review by: Wayne McArdle Boring Co. Soil Exploration Corporation Boring Location: See Exploration Location Plan Foreman Mike Ground Elev. 15± TGG Observer Jeremy Haugh Date Start > End 2/22/05 > 2/23/05 Sampling Protocol Ground Water Readings (See Notes) Unless otherwise noted, borings were accomplished using 4-inch I.D. Date Time Depth to Bottom Depth to Water Rem. hollow stem augers. Samples were recovered using a 2-inch O.D. split 2/22 1400 63.5'± 9'± 7 spoon sampler, driven by blows of a 140 lb. CME Auto Trip hammer falling 30 inches. Sample Data Strata Sample Description No. Depth Blows per 6 in. Pen. Rec. Change Rem 1 Fill 5 Brown, fine to coarse SAND, some Silt, trace fine 5-1 5-6 2-3 12 Gravel. 4 6.0 5-1A 6-7 9-8 12 12 Moist, orangish-tan, fine to coarse SAND, trace Sand (+) fine Gravel, trace Silt. 90 10 5-2 10-12 4-4-4-4 24 24 2 Moist, medium stiff, gray, SILTY CLAY. TS-1 14-16 PUSHED 24 12 3 5-3 16-18 2-2-2-2 24 Silty 24 Wet, soft, gray, SILT, some Clay. Clay Wet, soft, gray, SILTY CLAY. 5-4 19-21 1-2-1-2 24 24 4 20 25 5-5 29-31 6-5-3-7 24 24 Wet, medium stiff, gray, CLAYEY SILT. Remarks:

narks: Augers grinding from 3± to 5± feet. Removed augers from borehole and advanced 4 inch diameter flush joint casing to 19± feet utilizing wash boring techniques. Pushed 3 inch diameter Shelby tube sampler from 14± to 16± feet. Advanced borehole to 63.5± feet utilizing open hole drilling techniques.

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-	eman			nike iy Haugh	- 11.11.		Ground	The second second		15±	
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lole	see othe	A	Sampling Protocol borings were accomp	liched 11	ina 4-ir	och ID	Date	Time	round Water Reading	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	
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SO I	nches.										
	1	3.01.11.27	Sample Data	To	To .	14	Str		Sample	Description	
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35 5	5-6	39-41	2-1-2-2	24	24		Silty Clay		Wet, soft, gray, SILTY CLAY.		
5	9-7	49-51	6-4-4-5	24	24				Wet, medium stiff, gray		

Test Boring Log  Lincoln Park Community School 280 Washington Street File No. Y1687.02  Review by: Wayne McArd Review by: See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Location Plan Foreign See Exploration Plan Foreign See Exploration Plan Foreign See Exploration Plan Foreign See Explorati		1117	7.	Divis			- PRO	OJECT -		Boring No.	B-102	_
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Somewille, Mark   Review by:   Wayne McArd   Review by:   Wayne McArd   Review by:   See Exploration Location Plan   See Notes)   Date   Time   Depth to Bottom   Depth to Water   2/22   4/20   6/3.5   Sex			i eat bul	ing Lvg						Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Comment of the Commen		
Boring Co. Soil Exploration Corporation  Mike Ground Elev.  Sampling Protocol  Unless otherwise notes, beings were accomplished using 4-inch I.D. below stem augee. Samples were accomplished using 4-inch I.D. below stem augee. Samples were recovered using a 2-inch O.D. spit spon sampler, driven by blows of a 140 lb. CME Auto Trip hammer felting  10 inches.  Sample Data  No. Depth Blows per 6 in. Pen. Rec. Rem  No. Depth Blows per 6 in. Pen. Rec. Rem  Sample Description  Strate  Change  Sample Description  Strate  Change  Sample Description  Determine Depth to Bottom Depth to Water 12/22 14/00 63.5½ 9½  2/22 14/00 63.5½  Sample Description  Strate  Change  Sample Description  Determine Depth of Boring at about 63.5½ feet.				The A						***		
Foreign Haugh  Ground Elev.  John Sampling Protocol  Sampling Protocol  Johes otherwise noted, borings were accomplished using 4-inch I.D. polity using a juncy and protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol of the protocol o	Bo	ring Co	PSS NO. 192	Soil Explorat	ion Corp	poration	1	Boring	Locatio			
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Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data   Sample Data	TG	G Obse	erver	Jeren	y Haugh	1		Date 3	tart > E	ind 2/		
Unless otherwise noted, borings were accomplished using 4-inch I.D. D. apit phonosus term augus. Samples were recovered using 4-inch I.D. D. apit phonosampler, driven by blows of a 140 lb. CME Auto Trip hammer fetting 30 inches.  Sample Data  No. Depth Blows per 6 in. Pen. Rec. Rem Sirate Change Silty Clay 62.5  5 5 3 3 and & Gravel 63.5  Bottom of Boring at about 63.5 a feet.			Marketters	Sampling Protocol					G			
propose sample, driven by blows of a 140 lb. CME Auto Trip hammer falling so inches.  Sample Data  No. Depth Blows per 6 in. Pen. Rec. Rem Sity Clay Clay Clay Clay Clay Clay Clay Cla	Uni	ess othe	rwise noted,	borings were accomp	lished u	sing 4-in	nch I.D.	Date			The Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the Party of the P	Rer
Sample Data  No. Depth Blows per 6 in. Pen. Rec. Rem Sitry Clay 62.5  5 5 5 5 5 5 5 5 5 5 6 6 6 6 7 5 5 5 5 6 6 7 5 7 5	100	ow stem on sampl	augers. San ler driven by h	olows of a 140 lb. CMF	using a 2 Auto Trio	inch O	.D. split	2/22	1400			7
No. Depth Blows per 6 in. Pen. Rec. Rem Change Sample Description    Sample Description   Sample Description	30 i	nches.	indicate and a second	ADIO OF G THO ID. CHILL!	wito trip	11001111111	he bankut (2)					
No. Depth Blows per 6 in. Pen. Rec. Rem Change Sample Description  Sitty Clay 62.5  Sand & Cravel 63.5  Bottom of Boring at about 63.5½ feet.		Sept.		Sample Data				Str	ata	4	4 1/1 1/2 1	
Sity Clay 62.5 5 Sand & Gravel 63.5  Bottom of Boring at about 63.5½ feet.	1	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem			Sampl	e Description	
5 Sand & Gravel 63.5  Bottom of Boring at about 63.5± feet.	ं											_
5 Sand & Gravel 63.5  Bottom of Boring at about 63.5± feet.			33.7									
6 Gravel 63.5  Bottom of Boring at about 63.5½ feet.							5					
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marks: Augers grinding from 62.5± to 63.5± feet indicating strata change. Boring terminated at 63.5± feet. Depth to groundwater measured during drilling.	ma	rks:					- 10			SOME UP TO THE STREET		T MILES

			THE	GE	OTE	CHNI	CAL	GRO	UP, INC.	-	
		46.37 931	Shell -	T		- PRO	DJECT -		Boring No.	B-103	
		Table 100			Lincoln	Park C	ommunit	v School		Sheet 1 of 3	3
51.		est Bor	ing Log	1			ington Si	•	File No.	Y1657.02	
Ä		Alle Come Come				Some	rville, MA		Review by:	Wayne McArd	die
Bo	ring Co.	2 13 15	Soil Explorat	ion Corp	oration		Boring	Locatio	<b>n</b> : Бее Ехр	loration Location Pla	n
-	eman		N	like			Ground	Elev.		15±	
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		per provider and the fall of the formation of the financian of	Sampling Protocol					G	round Water Reading	s (See Notes)	Tir
Unl	ess othe	rwise noted,	borings were accempl	ished un	sing 4-in	ch I.D.	Date	Time	Depth to Bottom	Depth to Water	Rem.
spo	ow stem on sampl nches.	augers. Sar ler, driven by l	riples were recovered to blows of a 140 lb. CME/	ute Trip	hamme	D. split rfalling	2/23	1300	67'±	9'±	5
8	an con-	्र कृष्ट गालुक्त । जन्म	Sample Data				Str	ata			
5 10	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Cha	nge	Sample	e Description	
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10	C 1	10.10	4707	1 04	10	*	ļ		Wet, medium dense ar	avish-brown fine to a	oarse.
	5-1	10-12	4-7-9-7	24	12				Wet, medium dense, gr SAND, little fine Grave	l, trace (-) Silt.	000150
	$\vdash$			-			Sa	1d			
				-		-					
		1									
15	5-2	15-15.5	1	6	3	2	15,	5	Wet, orangish-tan to g		
	5-2A	15.5-17	2-2-2	18	18				Wet, soft, gray, CLAY a seams of Clayey Silt. (PP=0.75 tsf)	and SILT with frequen	it
					$\vdash$				(PP=0.75 tsf)		
					- 4	3					
20											
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25	5-3	24-26	2-2-1-2	24	24				Wet, soft, gray, SILTY ( with occasional layers	CLAY, trace (-) fine S	and
~									THE OCCASIONAL LAYERS	or Januy Jill.	
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			215								
- 1		2. Posket Pa							T		

marks: PP⊨Pocket Penetrometer
Augers grinding from 2± to 8± feet.
Augers removed from borchole and advanced 4 inch diameter flush joint casing to 19± feet utilizing wash boring techniques.
Advanced borchole to 67± feet utilizing open hole drilling techniques.

8						- PRO	OJECT -		Boring No.	B-103	
	10 S. Jan	Tool D			Lincol		ommunit			Sheet 2 of	3
		rest Bor	ing Log				ington S		File No.	Y1657.02	
		5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1			rville, MA		Review by:	Wayne McAi	
30	ring Co	V STATE	Soil Explorat	ion Corr	poration		-	Location		ploration Location Pl	
_	eman	AND DESCRIPTION OF THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.		vlike			Ground	THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY NAMED IN COLUMN TWO IS NOT THE PARTY N	1. 366 EX	15±	an
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	1.00	-	Sampling Protocol				Date		ound Water Reading		
nle	ess othe		borings were accomp	lished u	sina 4-ir	nch I.D.	Date	Time	Depth to Bottom		Ton
ılk	ow stem	augers, San	riples were recovered i	using a 2	2-inch O	D. split	2/23	1300	67'±	Depth to Water	Ren
0	on sampl nches.	er, driven by l	plews of a 140 lb. CME	Auto Trip	hamme	er falling	225	1300	0/±	9'±	5
	iuies.	*/ E. SH SH. E.	Comple Date	-	-			$\sqcup$			
7		Devil	Sample Data	In-	In.		Stra		Samol	e Description	
1	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Cha	nge	30)		
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		Fest Bor	ing Log	1			ington S		File No.	Y1657.02	
		A The					rville, MA		Review by:		
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_	eman.	A TAMBET.		like			Ground		m. See Lx	15±	an
_	G Obse	enver	Jerem	y Haugh	1	-		tart > E	nd	2/23/05	
		-	Sampling Protocol	0	-		Daie		round Water Reading		
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lor	ow stem	augers. San	nples were recovered o	using a 2	2-inch O	D. split	2/23	1300	67'±	Depth to Water	Rem
PO IO	on samp nches.	ler, driven by t	plows of a 140 lb. CME	Auto Trip	hamme	r falling	2/20	טטטו	0/±	15'±	5
	101103.		Sample Data						<u> </u>		
	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Str. Cha		Sample	e Description	
ğ	110.	Dopar	Mone per o m.	1 611.	TVCC.	VOIII	One	nge			
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5						4			4		
				<b>-</b>			67.	0			
ı				<b>—</b>	-			_			
Î							Refu	sal	Bottom of Boring at al	bout 67.0± feet.	
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. Refusal to roller bit at 67± feet. Boring terminated. Depth to groundwater measured during drilling.

			111	_	O I L				UP, INC.		
	* 1 bi			_			OJECT -		Boring No.	B-104	
1		Test Bor	ing Log	1			ommunit			Sheet 1 of	
*	1				28		ington 5 rville, MA		File No.	Y1657.02	
-	1.A. 1.2	ALIKA PERM	W						Review by:	Wayne McAr	
-	ring Co	The second liverage and the second			poration	1		Locatio	on: See Exp	ploration Location Pla	n
	reman	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s		Eric	-		Ground		2 1	15±	
16	G Obs	erver		iy Haug	h		Date S	tart > E		2/24/05	
led		the second of the second of the second	Sampling Protocol				-		round Water Reading	s (See Notes)	, IV.8.
noi	ow sten	augers. San	borings were accomp nples were recovered	using a	2-inch O	D. split	2/24	Time	Depth to Bottom	Depth to Water	Rem
ncl	on sam les.	pler, driven by	/ blows of a 140 lb. s	afety ha	mmer fa	lling 30	2124	0900	64.5'±	9'±	6
	Kenner.	Same Same	Sample Data		M		Str	ata			
1	No.	Depth	Blows per 6 in.	Pen.	Rec.	Rem	Cha	nge	Sample	e Description	
108					,	1	Aspha	t 0.3	Asphalt.	***	
0	5-1 5-1A 5-2	10-10.5 10.5-12 15-17	5 6-7-9 4-3-3-4	6 18	4 18 24	1	10.		Wet, grayish-brown, fin fine Gravel, trace (-) S Moist, stiff, gray, SILT (PP=2.25 tsf)  Wet, medium stiff, gray Sand with frequent sea (PP=0.5 tsf)	Y CLAY.	
1		20-22			24	2	Silt Clay	y			
,	TS-1	20-22	PUSHED	24	2.		,	1			
	TS-1 5-3	22-24	PUSHED 3-4-2-4	24	24				Wet, medium stiff, gray occasional seams of gra	, SILT CLAY with ay Silt.	

Removed augers from borehole and advanced 4 inch diameter flush joint casing to 19± feet utilizing wash boring techniques.

Advanced borehole to 64.5± feet utilizing open hole drilling techniques.

Pushed Shelby tube sampler from 20± to 22± feet.

F. V.				T		- PRO	OJECT -		Boring No.	B-104	
					Lincolr	Park C	ommunit	v School		Sheet 2 of 3	3
	51,450	est Bor	ing Log	1			ington S		File No.	Y1657.02	
1				1			rville, MA		Review by:	Wayne McAra	
Bo	ing Co.		Soil Explorat	ion Corp	oration		Boring	Locatio		oration Location Pla	_
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marks: Strata change based on auger flight spoils. Wood observed at top of split spoon sampler at 10± feet. Augers removed from borehole and 4 inch diameter flush joint casing advanced to 14± feet utilizing wash boring techniques. Advanced borehole to 49± feet utilizing open hole drilling techniques.

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engineering, energy, planning, permitting, design, construction, operation, maintenance



# MEMORANDUM

TO: Cheri Ruane, Brandon Kunkel

**FROM:** Kevin MacKinnon, PG, PH-GW

**DATE:** 11/19/15

**SUBJECT:** Lincoln Park Irrigation Well Yield & Water Quality

On November 3rd, 2015, Tom Hydro of Weston & Sampson conducted a step-rate pumping test on a 6-inch bedrock well located in Lincoln Park in Somerville, MA. The objective of the test was two-fold, to identify the safe yield of the well and to determine if the water quality was suitable for irrigating natural turf fields and/or cooling artificial turf.

## **Background**

In 2007, the City of Somerville undertook a project to convert a previously drilled geothermal test borehole into a bedrock irrigation well for the purpose of watering the soccer field and surrounding ground cover behind the Dr. Albert F. Argenziano School at Lincoln Park. The project included removal and disposal of the geoloop and grout, flush out, development and testing of the bedrock well and the installation of a submersible well pumping system. The finished well was originally drilled to a depth of 300-feet, but an apparent partial collapse of the bedrock structure resulted in an obstruction at a reported depth of 187-feet. Upon completion of the testing procedures the permanent well pump was installed to an approximate depth of 150-feet +/- and the wellhead completed with the installation of a vault that houses the well, discharge piping and electrical controls.

Historical operation of the well has been sporadic primarily due to repeated failures and faulting of the electrical controls. Over time it was determined that the damp environment of the vault enclosure was the main contributing factor to the performance issues with the controls. A local service firm has been used to inspect and remedy the controls issues and since the last service call in the early spring the system has been performing well throughout the summer of 2015. During this time the well yield has reportedly been sufficient to satisfy the system demands with no excessive dewatering of the well observed.

While the well water was originally also used to water the bedded plantings next to the school, this practice was discontinued due to a stubborn residue that was being deposited on the building exterior and classroom windows.

## **Work Completed**

As part of the proposed upgrades to the soccer field at the Lincoln Park facility, Weston & Sampson has been asked to assist the City in evaluating the current condition of the irrigation to determine its suitability for long term use for continued irrigation and field temperature control. While there were preliminary reports of the well being dewatered by the pumping activities and the presence of a white colored residue on surfaces following irrigation, observations made by City DPW personnel deny both assertions.

In order to confirm the short term production capacity of the existing irrigation well, a step-rate pumping test was conducted on the well using the existing submersible well pumping equipment. For this testing the well

discharge was directed from wellhead piping through a hose and discharged to waste on site into a storm drain. Flow measurements were made by timing the flow into a 5-gallon pail and water level measurements throughout the testing period would be taken using an electric tape. The test was conducted for a period of up to 4-hours by a W&S Technician. Immediately prior to shutdown of the testing, a water sample was collected for analysis to obtain a current water chemistry profile. This information was compared to the water chemistry report from the initial testing procedures from May of 2007.

## **Step-Rate Pumping Test**

A step rate pumping test was conducted on November 3, 2015 in an effort to evaluate well efficiencies of the irrigation well at various pumping rates. The step-rate pumping test was conducted at one 120 minute step and two 60 minute steps at rates of 60, 73, and 85gallons per minute (gpm). The final rate of 85 gpm was the highest rate possible for the existing pump installed in the well. The following table summarizes the results of the step-rate pumping test in terms of pumping rate (Q), drawdown (s), and specific capacity (Q/s).

**Table 1: Step Rate Pumping Test Results** 

Step	Q (gpm)	s (ft)	Q/s (gpm/ft)
1	60	49.30	1.22
2	73	64.03	1.14
3	85	80.78	1.05

As is shown by the table and graphics (Figure A-1) provided herein of this memo, minimal efficiency losses were realized at the higher pumping rates. Additionally, extrapolation of this data was conducted to evaluate whether stabilization criteria may be met at the higher pumping rates. This chart is also provided in Attachment A, as Figure A-2.

Finally, a summary of the well specifications, pumping test data, and results is provided below in Table 2.

Table 2: Pumping Test Data Summary and Safe Yield Calculation

	Well Sp	oecifications,	Pumping Test Data, and Results		
		Lincoln	Park Irrigation Well		
Specifications			Calculation Variables		
Well Diameter	6	inches	Specific Capacity (Pumping Test)	1.05	gpm/ft
Well Depth	300	feet	Specific Capacity (180-Day Drawdown)	0.94	gpm/ft
			Safety Factor	10	feet
Pump Intake Depth	120.0	feet btc	Available Drawdown (Pumping Test)	103.65	feet
Pumping Test Data			Results		
Static Water Level	6.35	feet	Safe Yield (Calculated Specific Capacity)	109	gpm
Final Pumping Rate	85	gpm	Safe Yield (180-day Specific Capacity)	98	gpm
Pumping Water Level	87.13	feet			
Maximum Drawdown	80.78	feet			
180-Day Drawdown	90.06	feet			

As shown in Table 2, the safe yield of the well is conservatively estimated to be approximately 98 gallons per minute.

## **Water Quality**

Water quality sampling was conducted at the beginning and end of the pumping test described above. The intent was to a) verify the water quality was acceptable for irrigating natural turf and nearby gardens within the park and b) for cooling of an artificial turf field. The sample results are attached as Attachment B of this memo.

Since there are no regulated standards for irrigation water in Massachusetts, the results were compared to the drinking water standards. The analysis revealed the following parameters above drinking water maximum contaminant levels (Table 3).

Parameter	Result (mg/L)	MCL (mg/L)
Iron	0.47	0.3
Manganese	0.057	0.05
Sodium	197	20/250 *
Chloride	257	250
Total Dissolved Solids	664	500

^{*} Massachusetts Guideline = 20, EPA = 250

The only concern with respect to irrigation water was the elevated concentrations of sodium and chloride. Plant roots absorb sodium and transport it to leaves where it can accumulate and cause injury to the plant. Additionally, a more common deleterious effect of sodium results from its effect on soil structure as it can cause deflocculation (breakdown) of soil clay particles, ultimately reducing the soil's permeability. The best indicator of sodium's effect is a water's Sodium Adsorption Ratio (SAR). As a general rule, water with an SAR value below 3 is considered safe for turf and other ornamental plants. The SAR is calculated using the following formula:

$$SAR = \frac{Na}{\sqrt{(Ca + Mg)/2}}$$

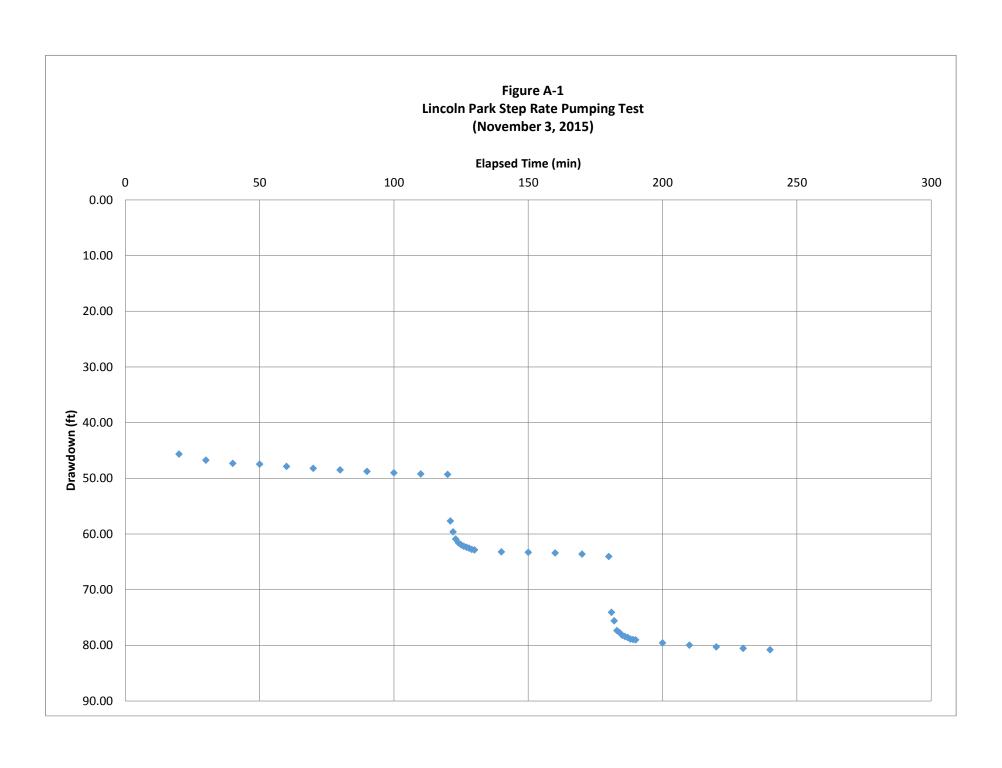
The results for the Lincoln Park well is 6.98, slightly elevated.

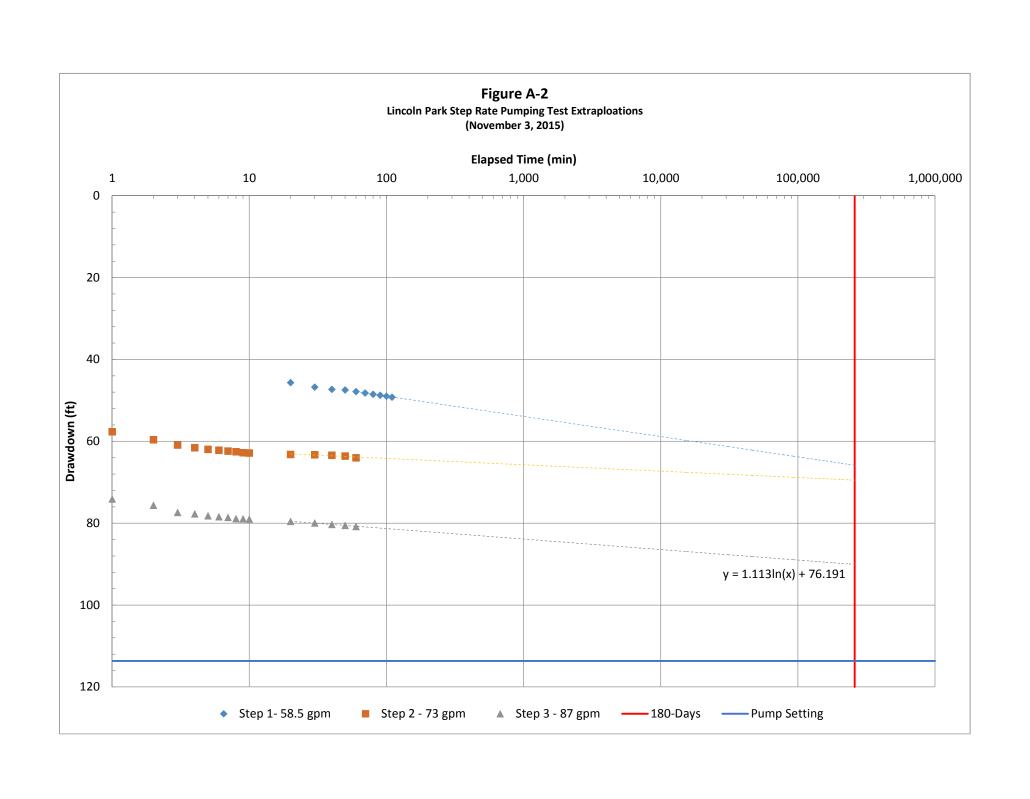
Another parameters used to evaluate water quality data for the purpose of irrigating turf is the electrical conductivity (ECw), which is directly related to the salt content of the water. This value can be derived from the Total Dissolved Solids (TDS) result with the following relationship?

$$ECw\left(\frac{mmhos}{cm}\right)x\ 640 = TDS\left(\frac{mg}{L}\right)$$

The results for the Lincoln Park well is 1.04 mmhos/cm, again slightly elevated.

The results reveal slightly elevated levels of anions and cations that produce salts, which is not uncommon from a bedrock well in New England. The water quality is favorable for use as irrigation water for turf fields, the nearby gardens and for use to cool artificial turf.





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ReportDate:

11/30/2015

## **Certificate of Analysis**

## Lincoln Park Well, 290 Washington St., Somerville MA

Parameter	Method		Result	MCL	MRL	Date of Analysis	Analyst	
- Start-up Sample								
Sampled: 11/3/2015 9:30:00 AM	l by Tom Hydro							
Total Coliform Bacteria, /100ML	MF-SM9222B		0	0/Absent	0	11/3/2015 3:50:00 PM	M-MA1118	
Aluminum, MG/L	EPA 200.7		ND	0.2	0.02	11/5/2015	M-MA1118	
Antimony, MG/L	EPA 200.8		ND	0.006	0.001	11/13/2015	M-CT008	
Arsenic, Total, MG/L	SM 3113B		ND	0.01	0.001	11/4/2015	M-MA1118	
Barium, MG/L	EPA 200.7		0.048	2	0.001	11/5/2015	M-MA1118	
Beryllium, MG/L	EPA 200.7		ND	0.004	0.001	11/5/2015	M-MA1118	
Cadmium, MG/L	EPA 200.8		ND	0.005	0.001	11/13/2015	M-CT008	
Calcium, MG/L	EPA 200.7		26.2	Not Spec	0.2	11/5/2015	M-MA1118	
Chromium, MG/L	EPA 200.8		ND	0.1	0.001	11/13/2015	M-CT008	
Copper, MG/L	EPA 200.7		ND	1.3	0.003	11/5/2015	M-MA1118	
Iron, MG/L	EPA 200.7	#	0.77	0.3	0.003	11/5/2015	M-MA1118	
Lead, MG/L	SM 3113B		ND	0.015	0.001	11/4/2015	M-MA1118	
Magnesium, MG/L	EPA 200.7		18.3	Not Spec	0.1	11/5/2015	M-MA1118	
Manganese, MG/L	EPA 200.7	#	0.062	0.05	0.002	11/5/2015	M-MA1118	
Mercury, MG/L	EPA 245.2		ND	0.002	0.0002	11/11/2015	M-CT008	
Molybdenum, MG/L	EPA 200.7		ND	Not Spec	0.002	11/6/2015	M-MA1118	
Nickel, MG/L	EPA 200.7		ND	0.1	0.001	11/5/2015	M-MA1118	
Potassium, MG/L	EPA 200.7		12.7	Not Spec	0.1	11/5/2015	M-MA1118	
Selenium, MG/L	EPA 200.8		ND	0.05	0.005	11/13/2015	M-CT008	
Silica as SiO2, MG/L	EPA 200.7		18.5	Not Spec	0.25	11/5/2015	M-MA1118	
Silver, MG/L	EPA 200.7		ND	0.1	0.003	11/5/2015	M-MA1118	
Sodium, MG/L	EPA 200.7		183	See Note	0.2	11/5/2015	M-MA1118	
Zinc, MG/L	EPA 200.7		0.098	5	0.002	11/5/2015	M-MA1118	
Alkalinity, MG/L	SM 2320B		162	Not Spec	1	11/3/2015	M-MA1118	
Bromide, MG/L	EPA 300.0		0.3	Not Spec	0.1	11/16/2015	M-MA1118	
Carbon Dioxide, MG/L	SM 4500-CO2-C		10	Not Spec	1	11/3/2015	M-MA1118	
Chloride, MG/L	EPA 300.0	#	260	250	1	11/3/2015	M-MA1118	
Color Apparent, CU	SM 2120B		10	15	0	11/3/2015	M-MA1118	
Conductivity, UMHOS/CM	SM 2510B		1318	Not Spec	1	11/3/2015	M-MA1118	

MCL=Maximum Contaminant Level (EPA Limit), MRL = Minimum Reporting Level Sodium Guidelines- Mass 20, EPA 250, # = Result Exceeds Limit or Guideline ND = None Detected (<MRL), * = Background Bacteria Noted

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Client:

Weston and Sampson

Five Centennial Drive

Peabody, MA 01960-7985

ReportDate:

11/30/2015

## **Certificate of Analysis**

# Lincoln Park Well, 290 Washington St., Somerville MA

Parameter	Method		Result	MCL	MRL	Date of Analysis	Analyst
Cyanide, MG/L	SM 4500-CN-C,E		ND	0.2	0.01	11/12/2015	M-CT008
Fluoride, MG/L	EPA 300.0		ND	4	0.1	11/3/2015	M-MA1118
Hardness, Total, MG/L	SM 2340B		141	Not Spec	1	11/5/2015	M-MA1118
Nitrate as N, MG/L	EPA 300.0		ND	10	0.05	11/3/2015	M-MA1118
Nitrite as N, MG/L	EPA 300.0		ND	1	0.02	11/3/2015	M-MA1118
pH, PH AT 25C	SM 4500-H-B		7.4	6.5 - 8.5	NA	11/3/2015	M-MA1118
Sulfate, MG/L	EPA 300.0		110	250	1	11/3/2015	M-MA1118
Total Dissolved Solids, MG/L	SM 2540C	#	672	500	1	11/3/2015	M-MA1118
Turbidity, NTU	EPA 180.1		4.8	Not Spec	0.1	11/3/2015	M-MA1118
Gross Alpha, PCI/L	EPA 900.0		6.1 +/- 0.7	15	3.0	11/23/2015	KNL
Gross Beta, PCI/L	EPA 900.0		16.0 +/- 1.6		2.4	11/23/2015	KNL
Radon, PCI/L	EPA 913.0		1510	10000	100	11/4/2015	M-MA072

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Five Centennial Drive Peabody, MA 01960-7985 ReportDate: 11/30/2015

# **Certificate of Analysis**

## Lincoln Park Well, 290 Washington St., Somerville MA

Parameter	Method		Result	MCL	MRL	Date of Analysis	Analyst	
- Shut-down Sample								
Sampled: 11/3/2015 1:20:00 PM	by Tom Hydro							
Total Coliform Bacteria, /100ML	MF-SM9222B		0	0/Absent	0	11/3/2015 3:50:00 PM	M-MA1118	
Aluminum, MG/L	EPA 200.7		ND	0.2	0.02	11/5/2015	M-MA1118	
Antimony, MG/L	EPA 200.8		ND	0.006	0.001	11/13/2015	M-CT008	
Arsenic, Total, MG/L	SM 3113B		ND	0.01	0.001	11/4/2015	M-MA1118	
Barium, MG/L	EPA 200.7		0.047	2	0.001	11/5/2015	M-MA1118	
Beryllium, MG/L	EPA 200.7		ND	0.004	0.001	11/5/2015	M-MA1118	
Cadmium, MG/L	EPA 200.8		ND	0.005	0.001	11/13/2015	M-CT008	
Calcium, MG/L	EPA 200.7		26.3	Not Spec	0.2	11/5/2015	M-MA1118	
Chromium, MG/L	EPA 200.8		ND	0.1	0.001	11/13/2015	M-CT008	
Copper, MG/L	EPA 200.7		ND	1.3	0.003	11/5/2015	M-MA1118	
Iron, MG/L	EPA 200.7	#	0.47	0.3	0.003	11/5/2015	M-MA1118	
Lead, MG/L	SM 3113B		ND	0.015	0.001	11/4/2015	M-MA1118	
Magnesium, MG/L	EPA 200.7		19.6	Not Spec	0.1	11/5/2015	M-MA1118	
Manganese, MG/L	EPA 200.7	#	0.057	0.05	0.002	11/5/2015	M-MA1118	
Mercury, MG/L	EPA 245.2		ND	0.002	0.0002	11/11/2015	M-CT008	
Molybdenum, MG/L	EPA 200.7		ND	Not Spec	0.002	11/6/2015	M-MA1118	
Nickel, MG/L	EPA 200.7		ND	0.1	0.001	11/5/2015	M-MA1118	
Potassium, MG/L	EPA 200.7		12.9	Not Spec	0.1	11/5/2015	M-MA1118	
Selenium, MG/L	EPA 200.8		ND	0.05	0.005	11/13/2015	M-CT008	
Silica as SiO2, MG/L	EPA 200.7		19.4	Not Spec	0.25	11/5/2015	M-MA1118	
Silver, MG/L	EPA 200.7		ND	0.1	0.003	11/5/2015	M-MA1118	
Sodium, MG/L	EPA 200.7		197	See Note	0.2	11/5/2015	M-MA1118	
Zinc, MG/L	EPA 200.7		0.046	5	0.002	11/5/2015	M-MA1118	
Alkalinity, MG/L	SM 2320B		162	Not Spec	1	11/3/2015	M-MA1118	
Bromide, MG/L	EPA 300.0		0.3	Not Spec	0.1	11/16/2015	M-MA1118	
Carbon Dioxide, MG/L	SM 4500-CO2-C		7.5	Not Spec	1	11/3/2015	M-MA1118	
Chloride, MG/L	EPA 300.0	#	257	250	1	11/3/2015	M-MA1118	
Color Apparent, CU	SM 2120B		5	15	0	11/3/2015	M-MA1118	
Conductivity, UMHOS/CM	SM 2510B		1335	Not Spec	1	11/3/2015	M-MA1118	

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Certificate of Analysis

Lincoln Park Well, 290 Washington St., Somerville MA

Parameter	Method		Result	MCL	MRL	Date of Analysis	Analyst
Cyanide, MG/L	SM 4500-CN-C,E		ND	0.2	0.01	11/12/2015	M-CT008
Fluoride, MG/L	EPA 300.0		ND	4	0.1	11/3/2015	M-MA1118
Hardness, Total, MG/L	SM 2340B		146	Not Spec	1	11/5/2015	M-MA1118
Nitrate as N, MG/L	EPA 300.0		ND	10	0.05	11/3/2015	M-MA1118
Nitrite as N, MG/L	EPA 300.0		ND	1	0.02	11/3/2015	M-MA1118
pH, PH AT 25C	SM 4500-H-B		7.4	6.5 - 8.5	NA	11/3/2015	M-MA1118
Sulfate, MG/L	EPA 300.0		111	250	1	11/3/2015	M-MA1118
Total Dissolved Solids, MG/L	SM 2540C	#	664	500	1	11/3/2015	M-MA1118
Turbidity, NTU	EPA 180.1		1.2	Not Spec	0.1	11/3/2015	M-MA1118
Gross Alpha, PCI/L	EPA 900.0		6.3 +/- 0.7	15	2.7	11/23/2015	KNL
Gross Beta, PCI/L	EPA 900.0		14.5 +/- 1.6		2.3	11/23/2015	KNL
Radon, PCI/L	EPA 913.0		1840	10000	100	11/4/2015	M-MA072