

APPENDIX A

SUPPLEMENTAL DATA COLLECTION REPORT

SUPPLEMENTAL DATA COLLECTION REPORT

KENILWORTH PARK LANDFILL NATIONAL CAPITAL PARKS - EAST N.E. WASHINGTON, DC

FEBRUARY 2010

Prepared by:
The Johnson Company, Inc.



EXECUTIVE SUMMARY

The Johnson Company collected supplemental soil vapor, indoor air, and surface soil samples and assessed existing topographic data to supplement previous Remedial Investigations (RIs) in support of a Feasibility Study (FS) for the Kenilworth Park Landfill (Site) in Northeast Washington, District of Columbia. The work was performed following the procedures set forth in the October 2008 Supplemental Data Collection Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), and Health and Safety Plan (HASP) written for the Site. The purpose of the supplemental data collection was to address data gaps remaining after the completion of separate RIs for the two areas which comprise the Site, Kenilworth Park Landfill North (KPN) and Kenilworth Park Landfill South (KPS). The data gaps addressed were: an assessment of the potential for explosive risks from landfill gas during implementation of the remedial action as well as to current and future on-Site and adjacent off-Site structures, an evaluation of the bioavailability of contaminants previously detected in surface soils, and an assessment of the usability of available topographic data.

Data collection included installation of soil vapor probes, indoor air sampling, surface soil sampling, and an assessment of topographic data. Nine deep and 18 shallow soil vapor probes were installed. The probes were then developed; field screened for volatile organic compounds (VOCs), methane, carbon dioxide, and oxygen; and sampled using Summa canisters. One indoor air sample was collected in a Summa canister from inside the Kenilworth-Parkside Community Center at the location most likely to have been impacted by methane soil vapor intrusion. The soil vapor and indoor air samples were analyzed for methane to assess explosive risk. In addition to the soil vapor and indoor air samples, 24 surface soil samples were collected and analyzed for pH and total organic carbon (TOC) to assess bioavailability of Compounds of Potential Ecological Concern (COPECs) identified in the RI Baseline Ecological Risk Assessment (BERA).

At KPN, methane was detected in soil vapor samples from three of fifteen probes, two deep and one shallow. However, no methane was detected inside the Kenilworth-Parkside Community Center. Two of the four deep probes, which were located along the Site boundary, contained methane, but at concentrations at least two orders of magnitude below the lower explosive limit (LEL). No methane was detected in the other two deep probes. In one shallow probe, methane was detected at 81% of the LEL in the laboratory sample, and over the LEL during field screening from one shallow probe located northwest of Kenilworth-Parkside Community Center. No methane was detected in samples from any of the other ten shallow soil vapor samples collected at KPN.

At KPS, methane was detected in soil vapor samples collected from five of 12 probes. Methane was detected below the LEL in laboratory samples and above the LEL in field screening in two shallow probes, and not detected at all in a third shallow probe, in the interior of KPS east of Deane Avenue. One shallow and one deep probe located northeast of the fence separating KPS from the Thomas Elementary School yard contained methane at 180% and 280% of the LEL, respectively. However, no methane was detected in subsequent samples collected from four

Title: Supplemental Data Collection Report
Site Name: Kenilworth Park Landfill
Site Location: Washington, DC

Revision Number: 0
Revision Date: 02/08/10
Page ii

additional probes installed on the school yard (but on NPS property). Two other additional sample probes were installed along the KPS southern boundary with the DC Transfer Station: one had no detected methane and the other had methane at 4.6% of the LEL.

TOC was detected between 3,370 and 50,100 mg/kg at KPN, and between 2,050 and 175,000 mg/kg at KPS. The pH of surface soil samples at KPN and KPS ranged from 6.4 to 7.6. These ranges of TOC and pH have the effect of reducing bioavailability and toxicity of metals and organic contaminants to ecological receptors. The currently available topographic data was determined to be usable for the purposes of the FS.

Field and laboratory quality control measures were assessed in a data usability assessment to determine if the data were suitable to address the objectives of the data collection effort. It was determined that all data generated during field screening and by the laboratory were usable for the purposes of the investigation. Based on the completeness of the data collected, the dataset is usable to evaluate the objectives of the investigation.

TABLE OF CONTENTS

1.0 INTRODUCTION.....	1
1.1 PROJECT OVERVIEW AND BACKGROUND.....	1
1.2 PURPOSE OF SUPPLEMENTAL DATA COLLECTION.....	2
1.2.1 Landfill Gas Survey.....	2
1.2.2 Surface Soil pH and TOC Assessment	3
1.2.3 Topographic Survey Assessment.....	3
1.3 SCOPE OF REPORT.....	4
2.0 METHODS.....	5
2.1 FIELD SAMPLING OVERVIEW AND TIMELINE	5
2.2 FIELD METHODS.....	5
2.2.1 Soil Vapor Sampling	5
2.2.2 Indoor Air Sampling	8
2.2.3 Surface Soil Sampling	9
2.2.4 GPS Identification of Field Locations	10
2.2.5 Topographic Survey Assessment.....	10
2.2.6 Decontamination Methods.....	10
2.2.7 Investigation-Derived Waste.....	10
3.0 RESULTS.....	12
3.1 SOIL VAPOR SAMPLING RESULTS.....	12
3.1.1 Field Screening Results.....	12
3.1.2 Analytical Results.....	12
3.2 INDOOR AIR SAMPLING RESULTS.....	14
3.3 SURFACE SOIL SAMPLING RESULTS	14
3.3.1 TOC.....	14
3.3.2 pH.....	14
3.4 TOPOGRAPHIC SURVEY ASSESSMENT RESULTS.....	15
3.5 IDW SOIL RESULTS	15
4.0 DATA USABILITY ASSESSMENT.....	17
4.1 FIELD QUALITY CONTROL.....	17
4.1.1 Calibration of Field Instruments	17
4.1.2 Summa Canister Vacuum Pressures	17
4.1.3 Adherence to Field Sampling SOPs.....	18
4.1.4 Field Duplicate Collection and Analysis	18
4.1.5 Field Sampling Completeness.....	18
4.2 LABORATORY QUALITY CONTROL.....	19
4.2.1 Soil Vapor and Indoor Air Methane	19
4.2.2 Soil TOC.....	20
4.2.3 Soil pH	22
4.2.4 Soil IDW TCLP Metals and Mercury.....	24
4.2.5 Data Usability Conclusions	25
5.0 REFERENCES.....	26

LIST OF TABLES

Table 2-1	Field Sampling Timeline
Table 2-2	Summary of Soil Vapor Probe Construction and Samples
Table 2-3	Surface Soil Samples
Table 3-1	Soil Vapor Screening Results
Table 3-2	Soil Vapor Methane Analytical Results
Table 3-3	Summary of Surface Soil Analyses
Table 3-4	Investigation-Derived Waste Analytical Results
Table 4-1	Summa Canister Vacuum Pressures
Table 4-2	Soil Vapor Field Duplicate Analyses
Table 4-3	Surface Soil Field Duplicate Analyses

LIST OF FIGURES

Figure 1-1	Site Location Map – Kenilworth Park Landfill North and Kenilworth Park Landfill South
Figure 1-2	Overall Site Plan
Figure 2-1(a)	Soil Vapor Sampling Locations – Kenilworth Park Landfill North
Figure 2-1(b)	Soil Vapor Sampling Locations – Kenilworth Park Landfill South
Figure 2-2(a)	Surface Soil Sampling Locations – Kenilworth Park Landfill North
Figure 2-2(b)	Surface Soil Sampling Locations – Kenilworth Park Landfill South
Figure 3-1(a)	Soil Vapor Methane Results – Kenilworth Park Landfill North
Figure 3-1(b)	Soil Vapor Laboratory Results – Methane – Kenilworth Park Landfill South
Figure 3-2(a)	Surface Soil pH and TOC Results – Kenilworth Park Landfill North
Figure 3-2(b)	Surface Soil pH and TOC Results – Kenilworth Park Landfill South
Figure 3-3(a)	Topographic Map – Kenilworth Park Landfill North
Figure 3-3(b)	Topographic Map – Kenilworth Park Landfill South

LIST OF APPENDICES

Appendix 1	Daily Logs and Field Notes (October 2008 and March 2009)
Appendix 2	Soil Vapor Probe Construction and Sampling Logs (October 2008 and March 2009)
Appendix 3	Indoor Air Pre-Sampling Survey
Appendix 4	Surface Soil Sampling Logs
Appendix 5	Soil Vapor (October 2008 and March 2009), Indoor Air, and Investigation-Derived Waste Laboratory Reports
Appendix 6	Surface Soil Laboratory Reports
Appendix 7	Laboratory TOC and pH SOPs
Appendix 8	Deviation Forms

Title: Supplemental Data Collection Report
Site Name: Kenilworth Park Landfill
Site Location: Washington, DC

Revision Number: 0
Revision Date: 02/08/10
Page v

ABBREVIATIONS AND ACRONYMS

" Hg	Inches of Mercury
bgs	Below Ground Surface
BERA	Baseline Ecological Risk Assessment
COPEC	Compound of Potential Ecological Concern
District	District of Columbia
°C	Degrees Celsius
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FSP	Field Sampling Plan
GPS	Global Positioning System
IDW	Investigation-Derived Waste
JCO	The Johnson Company, Inc.
KPN	Kenilworth Park Landfill North
KPS	Kenilworth Park Landfill South
L	Liter
LEL	Lower Explosive Limit
LFG	Landfill Gas
LGS	Landfill Gas Survey
Mitkem	Mitkem Laboratories
MSW	Municipal Solid Waste
NPS	National Park Service
PPE	Personal Protective Equipment
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Remedial Action
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
Spectrum	Spectrum Analytical, Inc.
SVOC	Semi-Volatile Organic Compound
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
VOC	Volatile Organic Compound

1.0 INTRODUCTION

1.1 PROJECT OVERVIEW AND BACKGROUND

This report presents the results of additional data collected by The Johnson Company on behalf of the National Park Service (NPS) at the Kenilworth Park Landfill Site (Site) in Northeast Washington, District of Columbia (the District) during October 2008 (Figures 1-1 and 1-2). The data were collected to supplement the results of previous Remedial Investigations (RIs) in support of a Site Feasibility Study (FS). The work was performed following the procedures set forth in the October 2008 Supplemental Data Collection Field Sampling Plan (FSP) (JCO, 2008a), Quality Assurance Project Plan (QAPP) (JCO, 2008b), and Health and Safety Plan (HASP) (JCO, 2008c).

The Site was the subject of two RIs completed in 2007 and 2008. The Site was divided into two sections for these investigations: Kenilworth Park Landfill North (KPN) and Kenilworth Park Landfill South (KPS) (Figures 1-1 and 1-2). KPN was defined as the area bounded to the south by Watts Branch, to the west by the Anacostia River, to the north by the Kenilworth Aquatic Gardens, and to east by Anacostia Avenue. KPS was defined as the area south of Watts Branch, west of Hayes Street, and north of the Thomas Elementary School and the District of Columbia Transfer Station. This report presents data from both areas of the Site, and continues to refer to them as KPN and KPS. The RIs included a review of the area geology and laboratory analyses of sediment, surface soil, subsurface soil, and groundwater samples, as well as aquifer testing, electromagnetic landfill delineation, and human health and ecological risk assessments. However, the RIs identified remaining data gaps which are the subject of this report (see Section 1.2).

For a complete discussion of Site background and results of previous investigations, refer to the RI for KPS (E&E, 2008) and the RI for KPN (E&E, 2007).

1.2 PURPOSE OF SUPPLEMENTAL DATA COLLECTION

Collection of supplemental data was undertaken to provide supplemental site information after the completion of the RIs for KPN and KPS. The data gaps identified in the RI and addressed in this report fall into the following categories:

- Landfill gas survey (LGS)
- Surface soil pH and total organic carbon (TOC) assessment
- Topographic survey assessment

The landfill gas survey was completed to assess the potential for explosive environments or human health impacts related to on-Site buildings or utility construction or off-Site properties. The surface soil pH and TOC assessment was performed to evaluate the bio-availability of contaminants to ecological receptors. The topographic survey assessment was completed to determine if and where the ground surface may have been altered since the previous topographic survey was completed (the ground surface topography is relevant for evaluating remedial alternatives during the FS). A more detailed description of the purpose of the data collection is provided in the following sections.

1.2.1 Landfill Gas Survey

The purpose of the LGS was to determine if methane generation in the landfill had created concentrations in the vadose zone and/or indoor air (in existing structures) which could pose unacceptable risks during implementation of a remedial action or to occupants of current and future on-Site and adjacent off-Site structures. Methane concentrations at or above the lower explosive limit (LEL) were reported during the KPN and KPS RIs beneath the soil cover over the municipal solid waste (MSW) historically disposed in the two areas (E&E, 2007; E&E, 2008). Although a uniformly low permeability landfill cap (e.g., clay cap) would restrict upward migration of landfill gases into the overlying soils, the soil cover at KPN and KPS is made of heterogeneous mixed material, and methane concentrations in the shallow soils overlying the landfills and in the existing Kenilworth-Parkside Community Center were not investigated as part of the RIs. Since it was assumed that significant concentrations of methane still existed

beneath the landfill caps but the extent of its migration into shallow soil, indoor air, and/or off-Site was unknown, it was necessary to further investigate the following:

- methane concentrations in the shallow soils overlying the landfills;
- potential for migration of methane from the landfill towards adjacent existing and possible future structures; and
- methane concentrations in the indoor air in the Kenilworth-Parkside Community Center.

U.S. Environmental Protection Agency (EPA) guidance for evaluating landfill gas sets forth further evaluative steps if methane exists above the LEL (approximately 5% methane by volume) in soil vapor at a landfill property boundary or above 25% of the LEL within structures (EPA, 2005).

1.2.2 Surface Soil pH and TOC Assessment

The KPN Baseline Ecological Risk Assessment (BERA) identified 11 metals, five pesticides, and 13 PAHs as compounds of potential ecological concern (COPECs) in surface soil at KPN (E&E, 2007). The KPS BERA identified 11 metals and 13 PAHs as COPECs in surface soil at KPS (E&E, 2008). However, as stated in both BERAs, all contaminants were assumed to be 100% bioavailable (E&E, 2007; E&E, 2008), the validity of which depends on ambient soil chemistry. The purpose of the surface soil pH and TOC assessment was to refine the conclusions of the respective BERAs based on the bioavailability of COPECs detected in soil during the RIs.

1.2.3 Topographic Survey Assessment

An accurate topographic survey depicting current Site conditions is necessary to support the development of remedial alternatives during the FS, which may include, among the remedial alternatives assessed, erosion and sedimentation control, stormwater management, and surface restoration for recreational use. Topographic contours from the year 2000 are available at one-foot intervals covering the western and central portions of KPN and all of KPS. Topographic contours are not available for areas of KPN from approximately the running track east to Anacostia Avenue, including the vicinity of Kenilworth-Parkside Community Center. The purpose of the topographic survey assessment was to evaluate if the currently available

Title: Supplemental Data Collection Report
Site Name: Kenilworth Park Landfill
Site Location: Washington, DC

Revision Number: 0
Revision Date: 02/08/10
Page 4

topographic data were usable for the purposes of the FS and if a supplemental topographic survey needed to be performed.

1.3 SCOPE OF REPORT

The scope of this report is to document the following aspects of the LGS, soil pH and TOC assessment, and topographic survey assessment which constitute the supplemental data collection effort:

- methods of data collection;
- field and analytical results; and
- data usability assessment.

2.0 METHODS

2.1 FIELD SAMPLING OVERVIEW AND TIMELINE

Field sampling took place from October 14 through 17, 2008 and on March 20 and 21, 2009. Sampling and associated field activities consisted of the following: collection of surface soil samples, installation and development of soil vapor probes, landfill gas (LFG) field screening, LFG sampling, indoor air sampling, Global Positioning System (GPS) location of sampling points, investigation-derived waste (IDW) sampling, and the topographic survey assessment. The Johnson Company performed all field activities except the soil borings for the installation of deep soil vapor probes, which were completed by Vironex of Bowie, Maryland under The Johnson Company supervision. Table 2-1 summarizes sampling activities by date. Daily logs and field notes are included as Appendix 1.

2.2 FIELD METHODS

2.2.1 *Soil Vapor Sampling*

Twenty-seven soil vapor probes were installed for the collection of LFG samples (see Table 2-2 for summary and Appendix 2 for details). Soil probes at twenty-one of these locations were constructed in October 2008 and the final six were constructed in March 2009. Eleven shallow and four deep probes were installed in KPN (Figure 2-1(a)). Seven shallow and five deep probes were installed in KPS (Figure 2-1(b)).

Soil borings were advanced at each sampling location prior to installing the soil vapor probe to determine if waste is present at the proposed sampling depth. Borings for all shallow probes except KPN-JCO-SV-11S and KPN-JCO-12S were advanced by hand-auger to approximately two feet below ground surface (bgs) in the landfill cap material which lies above landfill waste material. The bottoms of the 0.5 ft shallow probe screens were placed at the bottom of the holes at approximately two feet bgs. If waste material was encountered in a shallow sampling location borehole, the original borehole was closed and another borehole augured a minimum of 10 ft from the original hole and the screen installed at a depth of approximately the mid-depth between the ground surface and the previously encountered top of

waste. Waste material was encountered in the original boreholes for KPN-JCO-SV-02S and KPN-JCO-SV-08S which were therefore subsequently installed in different boreholes at depths shallower than two feet bgs.

All deep soil vapor probe borings and shallow probes KPN-JCO-SV-10S and KPN-JCO-11S were advanced using direct-push methods with a Geoprobe® by Vironex of Bowie, Maryland under The Johnson Company supervision. All other borings were advanced with a hand auger. All deep probe locations were cleared by the Miss Utility, a utility locating service before beginning the investigation during both the October 2008 and the March 2009 site work. The deep borings were advanced to target depths specified in the FSP that were selected based on a review of stratigraphy data from previous investigations. Material recovery during coring activities was monitored for the presence of landfill waste material. If waste was present within the target depth of the boring, the deep probe was installed within the top two feet of the waste material. If the deep soil vapor probe did not encounter waste material, the screen was installed at a depth equivalent to two feet into waste material based on measured waste depths in the nearest soil boring (from this or historical investigations) that did encounter waste material.

Soil vapor probes were constructed of a six-inch long stainless steel screen of half-inch diameter. The screens were connected to a Teflon®-lined sampling tube extending from the top of the screen to above the ground surface. After the screen was placed at the bottom of the borehole at the desired sampling depth, the annular space was filled with filter sand to above the top of the screen. At least 0.16 feet of hydrated bentonite was placed above the sand to provide a seal. The remainder of the borehole was filled to ground surface with native soil from the boring. After sampling, the shallow probes were removed and a metal road box lid was placed on top of the deep probes to facilitate finding the deep probes in the future for re-use if desired.

Of the 28 originally planned soil vapor probes identified in the FSP, 21 were completed as planned. Two originally planned probe locations (KPS-JCO-SV-04, and -05) along the boundary between KPS and the DC Transfer Station could not be installed because the

Geoprobe® could not access the area as a result of the steep grade and dense vegetation. The previously planned locations KPS-JCO-SV-04S and KPS-JCO-SV-05S were installed during a second mobilization in March 2009 and were renamed KPS-JCO-SV-101S and KPS-JCO-SV-102S, respectively. Two of the proposed shallow probes (KPN-JCO-SV-12S and KPN-JCO-SV-13S) were not installed for several reasons. These two proposed locations were outside the landfill boundary and no cap soils were evident during the deep soil vapor probe installations at these locations (as was observed elsewhere). The shallow soil observed was very permeable sand and gravel which would allow any methane to vent readily to the atmosphere, therefore it was decided not to install the shallow probes at the KPN-JCO-SV-12S and KPN-JCO-SV-13S locations. The most likely potential receptors to migration of methane in this direction would be the utility trenches in Anacostia Avenue and/or basements of residential buildings beyond Anacostia Avenue. At these locations (KPN-JCO-SV-12 and KPN-JCO-SV-13) the deeper probes were judged to be adequate to assess the potential for off-site migration of methane towards these receptors. The proposed shallow vapor probe KPS-JCO-SV-06S was not installed adjacent to the deep probe at that location because landfill waste material was encountered at the relatively shallow depth of four (4) feet bgs. The deep probe was therefore installed at a relatively shallow depth itself, which would have made data from a shallow vapor probe redundant. Deep vapor probe KPS-JCO-SV-07D was not installed because soil density precluded hand-auguring beyond the depth of shallow probe installation and the location could not be accessed with the Geoprobe®. One soil vapor probe (KPS-JCO-SV-08S) was added to the originally planned installations and sampled to provide additional data on the boundary between KPS and the Thomas Elementary School during the October 2008 sample event. Also during the March 2009 event four additional deep soil vapor probes were installed behind the Thomas Elementary School on NPS property. Also in March, the two shallow points were installed along the boundary between KPS and the DC Transfer Station.

After installation, the probes were developed and field screened for the presence of volatile organic compounds (VOCs) and LFG. The probe sample tubing was attached to the intake of a Landtec GEM 2000 landfill gas meter and the probe purged of at least three times the

calculated total volume of the tubing, riser, screen, and filter sand void space. At the same time, the Landtec GEM 2000 and a MiniRAE 3000 10.6 electron volt (eV) photo-ionization detector (PID) were used to field screen the extracted gas for methane, carbon dioxide, oxygen, %LEL, and VOCs. After field screening, the probes were left a minimum of 12 hours to equilibrate with subsurface conditions prior to sampling the following day.

Twenty-one soil vapor samples were collected on October 17 in 3.2 liter Summa canisters attached to the soil vapor probe sampling tube and six soil vapor samples were collected during the March 2009 sample event from the six additional soil vapor probes installed during the second mobilization (see Appendix 2 sampling logs). The samples were collected over a period of approximately 30 minutes through a flow controlling regulator. Four field duplicates (two from KPN and two from KPS) were also collected simultaneously with their associated samples by installing a “Y” connector to the sample tubing such that both Summa canisters were attached to the same soil vapor probe.

The Johnson Company transported the samples under chain of custody from the Site to Spectrum Analytical, Inc. of Agawam, MA, from which they were sent to Mitkem Laboratories of Warwick, RI (a division of Spectrum Analytical) where they were analyzed for methane by EPA Method 3C.

2.2.2 *Indoor Air Sampling*

One indoor air sample and field duplicate (KPN-JCO-IA-01 and KPN-JCO-IA-01-DUP) were also collected inside the Kenilworth-Parkside Community Center during the October 2008 mobilization. An indoor air pre-sampling survey was completed prior to the initiation of sampling to identify building conditions such as the ventilation system, windows, heating system, underground utilities, and ambient conditions that could potentially affect the results of indoor air sampling (Appendix 3). The canisters were placed above the floor in the boiler room, which was identified as the location in the building most likely to be impacted by methane from subsurface soil vapor because of numerous utility conduits penetrating the floor slab, the

presence of cracks in the slab, and a floor drain, all of which could provide a preferential pathway for soil vapor intrusion. The sample and duplicate were collected simultaneously in six-liter Summa canisters over an 11.5 hour overnight period from October 16 to 17, 2008. The Johnson Company transported the samples under chain of custody with the soil vapor sample canisters from the Site to Spectrum Analytical, from which they were sent to Mitkem Laboratories where they were analyzed for methane by EPA Method 3C.

2.2.3 Surface Soil Sampling

Twenty-four surface soil samples and two field duplicates were collected for the analysis of pH and TOC during the October 2008 mobilization (Table 2-3; Appendix 4). Thirteen samples and one duplicate were collected from KPN (Figure 2-2(a)) and 11 samples and one duplicate were collected from KPS (Figure 2-2(b)).

Surface soil samples were collected following removal of vegetation by cutting or scraping it away at each sample location. The vegetation was set aside for later return to the top of the sample hole. A decontaminated hand auger was used to remove soil to a depth of approximately six inches. Using disposable nitrile gloves, sufficient soil for the analyses from the 0 to 0.5 foot interval was placed into a laboratory supplied pre-cleaned 4 oz amber glass jar with teflon lined cap. Following sample collection, the sample hole was backfilled with the remaining soils and where possible the surface vegetation replaced.

The soil samples were shipped on ice under chain of custody to Spectrum Analytical for analysis for TOC by EPA Method 9060 and pH by EPA Method 9045C.

The analysis of surface soil samples at Spectrum Analytical and the analysis of TOC by EPA Method 9060 were deviations from the QAPP. The QAPP specified that the samples be analyzed at Mitkem Laboratories, and that TOC be analyzed by the Lloyd Kahn Method. However, the TOC analyses performed by Spectrum using EPA Method 9060 are considered

valid resulting in data suitable for the purposes of this investigation. A complete discussion of this deviation is included in Section 4.2.1. A Deviation Form is included in Appendix 8.

2.2.4 GPS Identification of Field Locations

The geographic locations of the soil vapor probe and surface soil sampling locations were identified with a Trimble GPS to 0.1 meter accuracy. In addition, the locations of Site features potentially pertinent to the FS such as catch basins, sewer manholes, sewer line markers, and the extent of fill observed around the recent construction of a track and playing field at KPN were also identified with the Trimble GPS. All measured sampling locations and select site physical features are plotted on Figures 2-1(a,b) and 2-2 (a,b).

2.2.5 Topographic Survey Assessment

Currently available topographic data was assessed to evaluate its usability for the purposes of the FS by comparing topographic maps with actual site conditions. Specifically, the current topographic maps were scrutinized while walking the Site to determine if they reasonably depicted the current land surface, areas of potential ponding, surface water runoff pathways, and any other Site features potentially pertinent to an evaluation of remedial alternatives for the FS and their associated cost estimates.

2.2.6 Decontamination Methods

Surface soil sampling equipment and hand augers were decontaminated with Alconox, distilled water, and paper towels between samples and probe installations. The Geoprobe® unit used pre-cleaned outer barrels and dedicated soil core liners at each location. Decontamination was performed such that liquid investigation derived waste (IDW) was absorbed by the paper towels without generating free liquid.

2.2.7 Investigation-Derived Waste

IDW included soils and landfill waste material from soil vapor probe borings, decontamination paper towels, and personal protective equipment (PPE). Plastic, paper, and PPE

Title: Supplemental Data Collection Report
Site Name: Kenilworth Park Landfill
Site Location: Washington, DC

Revision Number: 0
Revision Date: 02/08/10
Page 11

IDW were put into plastic trash bags and placed into a dumpster for disposal at a solid waste landfill.

Approximately 2 cubic feet of IDW soils and landfill waste material were generated during soil vapor probe installation. The IDW soils were contained in a five-gallon DOT rated pail. One composite soil sample (COMPOSITEKPN-1 – mislabeled “COMPOSITEMPN-1” by the laboratory) was collected from the pail on October 16, 2008 after completing the soil vapor probe installations. The Johnson Company transported the sample on ice under chain of custody to Spectrum Analytical from which it was sent to Mitkem Laboratories for Toxicity Characteristic Leaching Procedure (TCLP) analysis of metals and mercury by EPA Methods 1311/6010 and 1311/7470, respectively. The pail was stored in a secure location at NPS headquarters while the sample was being analyzed and the required disposal method was being determined. Based on the results of the TCLP analyses, the soil IDW was determined to be non-hazardous and disposed of in a dumpster as solid waste (see Section 3.5).

3.0 RESULTS

3.1 SOIL VAPOR SAMPLING RESULTS

3.1.1 Field Screening Results

Soil vapor field screening results for VOCs, methane, carbon dioxide, oxygen, and %LEL are presented in Table 3-1. At KPN, explosive gas was not detected by the field screening gas meter at any measured locations except in shallow probe KPN-JCO-SV-09S where it was detected at over 100% of the LEL. KPN-JCO-SV-09S is located approximately 350 feet northwest of the Kenilworth-Parkside Community Center at 1.5-2 feet bgs (Figure 3-1(a)). At KPS, explosive gas was detected over 100% of the LEL in three of six shallow probes (KPS-JCO-SV-01S, KPS-JCO-SV-03s, and KPS-JCO-SV-07S) and one of the two deep probes (KPS-JCO-SV-06D). At KPS, explosive gas was detected above the LEL at two of the six shallow locations (KPS-JCO-SV-01S and -03S). The four deep soil gas probes (KPS-JCO-SV-103D through -106D) installed behind Thomas Elementary School had no measureable detections of explosive gases during the March 2009 sampling event.

3.1.2 Analytical Results

Laboratory soil vapor methane concentrations are presented in Table 3-2, and are shown on Figures 3-1(a) and 3-1(b). Complete laboratory reports for the October 2008 and March 2009 sample events are included in Appendix 5.

Methane was detected by the laboratory in Summa canister samples from three of fifteen probes at KPN (KPN-JCO-SV-09S, KPN-JCO-SV-10D, and KPN-JCO-SV-12D). Methane concentrations in deep probes KPN-JCO-SV-10D and KPN-JCO-SV-12D located along the landfill boundary with Anacostia Avenue were 87 parts per million by volume (ppmv) (0.2 %LEL) and 870 ppmv (1.7 %LEL), respectively. These concentrations are at least two orders of magnitude lower than the EPA guidance value of 100% of the LEL (approximately 50,000 ppmv) measured at a landfill property boundary. The maximum laboratory reported concentration detected at KPN was 40,390 ppmv (81% of the LEL) at KPN-JCO-SV-09S laboratory duplicate (37,000 ppmv and 39,000 ppmv in the parent sample and field duplicate,

respectively). While the laboratory-reported values at KPN-JCO-SV-09S were lower than the field screening result at that location (435,000 ppmv and >100%LEL), both sets of results identify KPN-JCO-SV-09S as the only location at KPN that approaches or exceeds the LEL. Methane was not detected in shallow soil vapor in the western portion of KPN or in the other four probes located on the landfill boundary along Anacostia Avenue.

Methane was detected by the laboratory in Summa canisters from five of twelve probes at KPS (KPS-JCO-SV-01S, KPS-JCO-SV-03S, KPS-JCO-SV-06D, KPS-JCO-SV-07S, and KPS-JCO-SV-102S). Methane was reported by the laboratory in shallow soil vapor in the interior portions of KPS at concentrations of 23,000 ppmv (46% of the LEL) at KPS-JCO-SV-01S and 1,400 ppmv (2.8% of the LEL) at KPS-JCO-SV-03S, although none was reported in shallow soil vapor adjacent to the former public restroom (KPS-JCO-SV-02S). These reported analytical results were lower than the respective field screening results from the same locations, which both exceeded the LEL. Methane was reported by the laboratory above the LEL in two probes located northwest of the fence separating the Thomas Elementary School yard and KPS at concentrations of 140,000 ppmv (280% of the LEL) at KPS-JCO-SV-06D and 89,000 ppmv (178% of the LEL) at KPS-JCO-SV-07S (90,840 ppmv in the field duplicate), although it was not detected in shallow soil vapor near the northeast corner of the Thomas Elementary School property (KPS-JCO-SV-08S). In response to the detections at KPS-JCO-SV-06D and 07S, four additional vapor probes were installed in the play fields behind Thomas Elementary School during the March 2009 sampling event. None of these locations (KPS-JCO-SV-103D through 106D), which are all located on NPS property, had reportable detections of methane by the laboratory. Additional soil vapor samples were also collected during the March 2009 sampling event from two shallow locations along the KPS southern boundary with the DC Transfer Station. No methane was detected at one location (KPS-JCO-SV-101S) and 2,300 ppmV (4.6% of the LEL) was reported at the other location (KPS-JCO-SV-102S).

Field screening and analytical results generally agreed in identifying probes at which methane was present in soil vapor at significant concentrations, or where methane was not

detected or detected at very low concentrations (e.g., <2% LEL). The only exception to this correlation was at KPS-JCO-SV-03S, in which methane was measured with field screening at 80,000 ppmv whereas the laboratory only reported 1,400 ppmv. This difference may have been influenced by the following factors: inclusion of hydrocarbons other than methane in the measurement of %LEL in the Landtec GEM 2000 field instrument (Landtec, 2007); different ambient conditions on the day of field screening and the day of Summa canister sample collection, such as soil temperature, air temperature, and barometric pressure; and a decrease in methane concentration influenced by extraction of soil vapor during probe development which may not have returned to pre-development equilibrium concentrations before collecting Summa canister samples the following day.

3.2 INDOOR AIR SAMPLING RESULTS

Methane was not detected in the indoor air sample collected from the Kenilworth-Parkside Community Center (KPN-JCO-IA-01) or its field duplicate (KPN-JCO-IA-01-DUP). Indoor air laboratory reports are included in Appendix 5.

3.3 SURFACE SOIL SAMPLING RESULTS

Results of surface soil pH and TOC analyses are presented in Table 3-3 and shown on Figures 3-2(a) and 3-2(b). Complete laboratory reports are included in Appendix 6.

3.3.1 TOC

TOC was detected between 3,370 mg/kg (0.3%) and 50,100 mg/kg (5.0%) at KPN. TOC was detected between 2,050 mg/kg (0.2%) and 175,000 mg/kg (17.5%) at KPS. Where TOC exceeds 1%, bioavailability and toxicity of metals and organic contaminants will be reduced. The implications of this on the conclusions from the ecological risk assessment are discussed in more detail in the FS.

3.3.2 pH

The pH of surface soil samples ranged from 6.44 to 7.44 at KPN and from 6.77 to 7.56 at KPS, indicating that the soils are well buffered, which has the effect of reducing bioavailability

and toxicity of metals to ecological receptors. The implications of this on the conclusions from the ecological risk assessment are discussed in more detail in the FS.

3.4 TOPOGRAPHIC SURVEY ASSESSMENT RESULTS

Currently available topographic data was determined to be usable for the purposes of the FS. Topographic contours for the Site from the year 2000 are available at one-foot intervals covering the western and central portions of KPN (Figure 3-3(a)) and all of KPS (Figure 3-3(b)). During the PDI field work, the majority of KPN and KPS were traversed and distinct topographic features were noted to be reflected by the topographic mapping in their current state. In addition, the location of several mapped landmarks was determined with a GPS during the field work. The coordinates determined in the field matched up well with the mapping assuring the overall accuracy of the scale and orientation in the reflection of current conditions. The area surrounding the Community Center is not depicted on the 2000 topographic mapping. This area is highly developed with walkways, a football field and track, tennis courts, swimming pool, and buildings. It is likely that any FS alternative considered for this area will preserve these surface features making topographic information less important for the purposes of the FS. If, during the development of the FS, a remedial alternative is developed that would significantly alter the ground surface, a topographic survey would be required during the remedial design. Topographic data with one-meter resolution are available for the entirety of KPN and KPS from the District's Geographic Information System (DC GIS) (Figures 1-2 through 3-2).

3.5 IDW SOIL RESULTS

The results from IDW soil sample COMPOSITEKPN-1 are shown in Table 3-4. The soil IDW laboratory report is included in Appendix 5.

All metals and mercury results were below their respective toxicity thresholds for definition of a hazardous waste per 40 Code of Federal Regulations (CFR) 261.24. Results of all historic soil analyses for non-metal contaminants documented in the RIs (TCLP pesticides, herbicides, VOCs, and semi-volatile organic compounds (SVOCs); polychlorinated biphenyls (PCBs); and total pesticides, VOCs, and SVOCs) were previously determined to be below

Title: Supplemental Data Collection Report
Site Name: Kenilworth Park Landfill
Site Location: Washington, DC

Revision Number: 0
Revision Date: 02/08/10
Page 16

concentrations which could cause soil IDW to be considered hazardous waste (JCO, 2008(a)).

The 5-gallon bucket of soil IDW was disposed of in a dumpster as solid waste upon receipt of the results which documented that it was not hazardous waste.

4.0 DATA USABILITY ASSESSMENT

4.1 FIELD QUALITY CONTROL

Field quality control (QC) measures used during the investigation consisted of the following: daily calibration of the PID and landfill gas meter used in field screening, adherence to field instrument and sampling SOPs, recording pre- and post-sampling Summa canister vacuum pressures, and collection of field duplicates for submission to the analytical laboratory. The number and locations of samples collected during field activities were also compared to the sampling described in the FSP to evaluate field sampling completeness.

4.1.1 Calibration of Field Instruments

PID

The MiniRAE 3000 10.6 e+V lamp PID was calibrated prior to each day's use with zero air (0 parts per million (ppm)) and 100 ppm isobutylene gas (Appendix 1). All calibrations provided accurate readings. The MiniRAE 3000 was used instead of the Thermal Environmental Instruments, Inc., Model 580B 10.6 eV lamp PID specified in the QAPP. This change does not affect the investigation because the two instruments measure VOC using the same technology and report concentrations in the same manner.

Landfill Gas Meter

The Landtec GEM 2000 landfill gas meter was calibrated prior to use each day's use with atmospheric levels of oxygen and manufacturer-provided calibration gas consisting of 50% methane, 35% carbon dioxide, and 15% nitrogen (Appendix 1). All calibrations provided accurate readings for methane, carbon dioxide, and oxygen.

4.1.2 Summa Canister Vacuum Pressures

Vacuum pressure in the Summa canisters used for subsurface soil vapor and indoor air sampling was recorded before and after sampling (Table 4-1 and Appendix 1). The vacuum check before sampling ensures that the canister as received from the laboratory has adequate vacuum to obtain sufficient sample volume. The check after sampling confirms that the canister received adequate volume during sampling.

All Summa canisters had adequate (approximately 30" Hg) vacuum before sampling. All canisters recorded adequate vacuum decreases (between 27 and 29" Hg) to obtain the desired sample volume.

4.1.3 Adherence to Field Sampling SOPs

All field sampling SOPs specified in the QAPP were followed with the exception of SOP-JCO-41 for the operation of the Thermal Environmental Instruments, Inc., Model 580B PID. Since the MiniRAE 3000 was used for field activities (Appendix 8), the manufacturer operating manual for that instrument was used instead of SOP-JCO-41.

4.1.4 Field Duplicate Collection and Analysis

Four soil vapor and one indoor air field duplicates were collected (KPN-JCO-SV-07-DUP, KPN-JCO-SV-09-DUP, KPS-JCO-SV-07-DUP, KPS-JCO-SV-103DUP, and KPN-JCO-IA-01-DUP) and analyzed by the laboratory for methane. Relative percent difference (RPD) calculations between the results from the parent and duplicate samples are shown in Table 4-2. All four methane field duplicates were within the acceptance range of 25%.

Two surface soil field duplicates were collected (KPN-JCO-SS-07-DUP and KPS-JCO-SS-10-DUP) and analyzed by the laboratory for TOC and pH. Relative percent difference (RPD) calculations are shown in Table 4-3. Both field duplicate RPDs for TOC and pH were within the acceptance range of 30%.

4.1.5 Field Sampling Completeness

All 24 soil samples and both field duplicates for the analysis of TOC and pH specified in the QAPP were collected.

The indoor air sample and its field duplicate specified in the QAPP were collected and analyzed by the laboratory.

Twenty of the twenty-eight soil vapor samples identified in the QAPP were collected as planned (see Section 2.2.1 for the reasons). Four samples originally planned for KPS (KPS-JCO-04S & D, KPS-JCO-SV-05S & D, KPS-JCO-SV-06S, and KPS-JCO-SV-07D) were not collected. Two samples originally planned for KPN (KPN-JCO-SV-12S and KPN-JCO-SV-13S) were not collected. Five soil vapor samples in KPS not originally planned (KPS-JCO-SV-08S, and KPS-JCO-SV-101S through KPS-JCO-SV-106D) were added to the field program during the field activities.

4.2 LABORATORY QUALITY CONTROL

Laboratory quality control results for the four analysis types used in this investigation (soil vapor and indoor air methane; soil TOC; soil pH; and soil IDW TCLP metals) are summarized below. The quality control parameters reviewed for the data usability assessment include: proper chain-of-custody documentation, sample completeness, hold time requirements, temperature receipt requirements, laboratory calibration blank, laboratory continuing calibration verification (CCV) recovery, laboratory control sample (LCS) recovery, attainment of detection limits, method blank detections, and laboratory duplicate RPD accuracy.

4.2.1 Soil Vapor and Indoor Air Methane

Chain-of-Custody Documentation

The soil vapor and methane samples were submitted to the laboratory with three chain-of-custody sheets as documentation. All chain-of-custody forms were completed properly.

Sample Completeness

Both indoor air and all 31 soil vapor samples (27 parent samples and four duplicates) submitted to the laboratory were analyzed.

Hold Time

All soil vapor and indoor air samples were analyzed within the 14-day hold time.

LCS Recovery

The laboratory ran one LCS for each of 4 sample batches. All LCS recoveries were within the $\pm 30\%$ acceptance range.

Attainment of Detection Limits

The required reportable quantitation limit of 0.001% (10 ppmv) was attained for all methane analyses.

Method Blank Detections

Methane was not detected in any method blanks.

Laboratory Duplicate Analyses

Three laboratory duplicates were analyzed for methane. The RPD for all laboratory duplicates were within the 30% acceptance range.

4.2.2 Soil TOC

TOC in surface soil samples was analyzed at Spectrum Analytical of Agawam, Massachusetts (Spectrum) by EPA Method 9060 instead of at Mitkem Laboratories of Warwick, Rhode Island (Mitkem) by the Lloyd Kahn method as specified in the QAPP (Appendix 8). This deviation occurred because the samples were shipped via commercial carrier to Spectrum, the parent company of Mitkem, instead of the intended subsidiary laboratory. Spectrum processed the samples by its standard method of TOC analysis (EPA 9060) because the chain-of-custody did not indicate that the samples were intended for Mitkem. EPA 9060 as performed by Spectrum is a valid method for the evaluation of TOC in soil. The method is comparable to the Lloyd Kahn method in sample preparation and measurement, differing substantially only in the analysis of QC parameters. As such, the TOC analytical technique used by Spectrum is considered valid for this investigation. The QC parameters for EPA 9060 are noted in the QC review below where they differ from those presented in the QAPP for the planned Lloyd Kahn method. Additionally, the Spectrum SOP for the analysis of TOC in soil by EPA 9060 is included in Appendix 7 since it was not included in the QAPP.

Chain-of-Custody Documentation

The soil samples were submitted to the laboratory with three chain-of-custody sheets as documentation. With the exception of specifying Spectrum instead of Mitkem, the chain-of-custody forms were completed properly.

Sample Completeness

All 26 soil samples submitted to the laboratory were analyzed.

Hold Time

All soil samples were analyzed within the 14 day hold time.

Temperature Requirements

Soil samples were sent to the laboratory in two shipping coolers. The temperatures in the coolers were 4.4 and 5.3°C, within the acceptance range of $4\pm 2^\circ\text{C}$.

Laboratory Calibration Blank

The laboratory ran 10 calibration blanks, two for each of 5 sample batches. All calibration blanks results were less than the reportable quantitation limit of 100 mg/kg.

Laboratory CCV

The laboratory ran 20 CCV samples, four for each of 5 sample batches. All CCV recoveries were within the $\pm 15\%$ acceptance range used by Spectrum and the $\pm 10\%$ acceptance range specified in the QAPP.

LCS Recovery

The laboratory ran one LCS (identified as "Reference" in Spectrum lab reports) for each of 5 sample batches. All five LCS recoveries were within the 67.35-180.7% acceptance range used by Spectrum. Additionally, four out of five LCS recoveries were within the 80-120% acceptance range specified in the QAPP. Reference 8101788-SRM1, corresponding to sample KPS-JCO-SS-08, had a recovery of 177%. However, all four CCV recoveries in the batch were within the acceptance range, so the accuracy of KPS-JCO-SS-08 is considered acceptable.

Attainment of Detection Limits

The required reportable quantitation limit of 100 mg/kg TOC was attained for all analyses.

Method Blank Detections

TOC was not detected in any method blanks.

Laboratory Duplicate Analyses

Six laboratory duplicates were analyzed for TOC. The laboratory duplicate RPDs for four of five batches were within the 20% acceptance range. The RPD for the first laboratory duplicate in the remaining batch (Duplicate 8101604-DUP1) was 34%, exceeding the acceptance range by 4%. A second laboratory duplicate (Duplicate 8101604-DUP2) resulted in an RPD of 4%. The batch is considered acceptably precise based on the combined results of the two laboratory duplicates.

This RPD method of laboratory duplicate QC control differs from that specified in the QAPP for the Lloyd Kahn method, which evaluates laboratory precision by analyzing one sample per batch in quadruplicate and comparing the standard deviation to an acceptable range. Both methods are accepted as valid means of evaluating precision.

4.2.3 Soil pH

As with the soil TOC analyses, pH was analyzed at Spectrum instead of Mitkem, as specified in the QAPP (Appendix 8). However, Spectrum used the same method (EPA 9045C) specified in the QAPP. Spectrum also used comparable QC parameters as those specified in the QAPP with the addition of an LCS sample, which is included in the QC review below. The Spectrum SOP for the analysis of pH in soil by EPA 9045C is included in Appendix 7 since it was not included in the QAPP.

Chain-of-Custody Documentation

The soil samples were submitted to the laboratory with three chain-of-custody sheets as documentation. With the exception of specifying Spectrum instead of Mitkem, the chain-of-custody forms were completed properly.

Title: Supplemental Data Collection Report
Site Name: Kenilworth Park Landfill
Site Location: Washington, DC

Revision Number: 0
Revision Date: 02/08/10
Page 23

Sample Completeness

All 26 soil samples submitted to the laboratory were analyzed for pH.

Hold Time

Soil samples were analyzed for pH as soon as possible after receipt at the laboratory per the specification in the QAPP. In the lab reports, however, Spectrum labeled all pH analyses with the qualifier “HT”. “HT” indicates that the sample was analyzed over 24 hours after it was collected, even though the Spectrum lab reports state that “the hold time for pH is not specified within the method other than to state that the samples should be analyzed as soon as possible.” Therefore, the qualifier is merely an indication of the hold time and does not restrict the usability of the data. Additionally, eight pH analyses (KPN-JCO-SS-06, KPN-JCO-SS-07, KPN-JCO-SS-07-DUP, KPN-JCO-SS-09, KPN-JCO-SS-10, KPN-JCO-SS-11, KPN-JCO-SS-12, and KPN-JCO-SS-13) were incorrectly labeled with “HT” as they were analyzed within 24 hours of sampling.

Temperature Requirements

Soil samples were sent to the laboratory in two shipping coolers. The temperatures in the coolers were 4.4 and 5.3°C, within the acceptance range of $4 \pm 2^\circ\text{C}$.

LCS Recovery

The laboratory ran two LCS (identified as “Reference” in Spectrum lab reports) for each of 2 sample batches for pH. All four LCS recoveries were within the 97.5-102.5% acceptance range used by Spectrum. This LCS QC parameter had not been included in the QAPP for pH analysis at Mitkem.

Attainment of Detection Limits

The required project quantitation limit of 0.1 pH units was attained for all analyses.

Laboratory Duplicate Analyses

Three laboratory duplicates were analyzed for pH. The RPD for all laboratory duplicates was within the acceptance range of 5% used by Spectrum and the acceptance range of 30% specified in the QAPP.

4.2.4 Soil IDW TCLP Metals and Mercury

The QAPP did not specify soil IDW TCLP metals or TCLP mercury QC parameters. QC results compared to acceptance parameters provided by Mitkem and for the analysis method are summarized below.

Chain-of-Custody Documentation

The chain-of-custody form for the soil IDW TCLP metals analysis was completed properly.

Sample Completeness

The laboratory analyzed and generated results for the one soil IDW TCLP metals sample.

Hold Time

The sample was analyzed within the 180-day and 28-day holding times for TCLP metals mercury, respectively.

Temperature Requirements

The soil sample was delivered to the laboratory in a cooler. The temperature in the cooler upon receipt was 3.6°C, within the acceptance range of 4±2°C.

LCS Recovery

The laboratory ran one LCS for TCLP metals and one for TCLP mercury. All recoveries were within the ±20% acceptance range.

Attainment of Detection Limits

All reporting limits were below the toxicity characteristic concentrations.

Title: Supplemental Data Collection Report
Site Name: Kenilworth Park Landfill
Site Location: Washington, DC

Revision Number: 0
Revision Date: 02/08/10
Page 25

Method Blank Detections

No analytes were detected in method blanks.

4.2.5 Data Usability Conclusions

The objectives of collecting this dataset were to: 1) assess the potential for explosive risks from LFG during implementation of the remedial action as well as to current and future on-site and adjacent off-Site structures; and 2) evaluate the bioavailability of contaminants in surface soils.

All data generated during field screening and by the laboratory are considered usable for the purposes of this investigation based on the results of the field and laboratory quality control assessment of calibration, procedure adherence, analytical accuracy, and analytical precision.

Based on the completeness of the data collected, the dataset is usable to evaluate: 1) surface soil contaminant bioavailability; 2) soil IDW toxicity; 3) methane presence in shallow soils in KPN and KPS, along the boundary of KPN and the neighborhood to the east, and along the boundary of KPS and Thomas Elementary School; and 4) potential methane impact to indoor air in the Kenilworth-Parkside Community Center.

5.0 REFERENCES

DC GIS. DC GIS Data Clearinghouse/Catalog. District of Columbia Geographic Information System, <http://dcatlas.dcgis.dc.gov/catalog/>. Retrieved: 12/1/2008.

E&E, 2007. *Remedial Investigation of Kenilworth Park North, Northeast Washington, DC*. Ecology & Environment. November 2007.

E&E, 2008. *Remedial Investigation: Kenilworth Park Landfill South, Northeast Washington, DC*. Ecology & Environment. June 2008.

EPA, 2005. *Guidance for Evaluating Landfill Gas Emissions from Closed or Abandoned Facilities*. U.S. Environmental Protection Agency. EPA-600/R-05/123a. September, 2005.

JCO, 2008a. Field Sampling Plan - Supplemental Data Collection, Kenilworth Park Landfill, National Capital Parks-East, N.E. Washington, DC. The Johnson Company, October 2008.

JCO, 2008b. Quality Assurance Project Plan - Supplemental Data Collection, Kenilworth Park Landfill, National Capital Parks-East, N.E. Washington, DC. The Johnson Company, October 2008.

JCO, 2008c. Site-Specific Health and Safety Plan for Supplemental Data Collection, Kenilworth Park Landfill, National Capital Parks-East, N.E. Washington, DC. The Johnson Company, October 2008.

Landtec, 2007. GEM2000 GEM2000 Plus Gas Analyzer and Extraction Monitor Operation Manual for Serial Numbers 10000 and up. <http://www.ces-landtec.com/manuals/GEM2000%20Manual.pdf>. Retrieved 12/19/2008.

TABLES

Table 2-1 Field Sampling Timeline	
Date	Field Activities Performed
10/14/2008	<ul style="list-style-type: none"> • Installed soil vapor probes KPN-JCO-SV-01 through KPN-JCO-SV-09 • Developed soil vapor probe KPN-JCO-SV-02S and collected field screening data • Collected surface soil samples KPN-JCO-SS-01 through KPN-JCO-SS-13
10/15/2008	<ul style="list-style-type: none"> • Installed soil vapor probes KPN-JCO-SV-10 through KPN-JCO-SV-13 • Installed soil vapor probes KPS-JCO-SV-01 through KPS-JCO-SV-03, and KPS-JCO-SV-06 • Collected surface soil samples KPS-JCO-SS-01 through KPS-JCO-SS-11
10/16/2008	<ul style="list-style-type: none"> • Installed soil vapor probes KPS-JCO-SV-07 and KPS-JCO-SV-08 • Developed all remaining soil vapor probes and collected LFG field screening data • Began overnight collection of indoor air samples in Kenilworth-Parkside Community Center • Collected composite soil IDW sample
10/17/2008	<ul style="list-style-type: none"> • Completed indoor air sampling in Kenilworth-Parkside Community Center • Collected soil vapor samples from all probes listed above
3/20/09	<ul style="list-style-type: none"> • Installed soil vapor probes KPS-JCO-SV-101S, KPS-JCO-SV-102S and KPS-JCO-SV-103D through KPS-JCO-SV-106D. KPS-JCO-107D was a soil boring only • Developed all newly installed soil vapor probes
3/21/09	<ul style="list-style-type: none"> • Collected soil vapor samples from KPS-JCO-SV-101S, KPS-JCO-SV-102S and KPS-JCO-SV-103D through KPS-JCO-SV-106D.

Table 2-2
Summary of Soil Vapor Probe Construction and Samples
Kenilworth Park Landfill
October 2008

Soil Vapor Probe/Sample	Installation Date	Installation Method	Northing ¹	Easting ¹	Screened Interval (ft bgs)	Sandpack Interval (ft bgs)	Bentonite Seal (ft bgs)	Development Date	Sample Date
Kenilworth Park North									
KPN-JCO-SV-01S	10/14/2008	Hand-auger	137654.0	403882.7	1.3-1.9	1.2-1.9	0.8-1.2	10/16/2008	10/17/2008
KPN-JCO-SV-02S	10/14/2008	Hand-auger	137836.8	403894.5	1-1.5	0.8-1.5	0.6-0.8	10/14/2008	10/17/2008
KPN-JCO-SV-03S	10/14/2008	Hand-auger	137782.7	403997.2	1.4-1.9	1.25-1.9	1.1-1.25	10/16/2008	10/17/2008
KPN-JCO-SV-04S	10/14/2008	Hand-auger	137964.2	404020.2	1.4-1.9	1.2-1.9	1-1.2	10/16/2008	10/17/2008
KPN-JCO-SV-05S	10/14/2008	Hand-auger	137870.8	404140.3	1.5-2	1.25-2	1.1-1.25	10/16/2008	10/17/2008
KPN-JCO-SV-06S	10/14/2008	Hand-auger	137982.9	404342.9	1.5-2	1.25-2	1.1-1.25	10/16/2008	10/17/2008
KPN-JCO-SV-07S	10/14/2008	Hand-auger	137789.5	404454.8	1.5-2	1.3-2	1.2-1.3	10/16/2008	10/17/2008
KPN-JCO-SV-08S	10/14/2008	Hand-auger	137890.6	404669.7	0.6-1.1	0.5-1.1	0.3-0.5	10/16/2008	10/17/2008
KPN-JCO-SV-09S	10/14/2008	Hand-auger	137796.5	404791.5	1.5-2	1.25-2	1.1-1.25	10/16/2008	10/17/2008
KPN-JCO-SV-10S	10/15/2008	Geoprobe®	137655.2	404651.4	1.5-2	1-2	0.5-1	10/16/2008	10/17/2008
KPN-JCO-SV-10D	10/15/2008	Geoprobe®	137654.8	404652.5	6-6.5	5.5-6.5	4.6-5.5	10/16/2008	10/17/2008
KPN-JCO-SV-11S	10/15/2008	Geoprobe®	137656.8	404776.0	1.5-2	1.3-2.5	0.9-1.3	10/16/2008	10/17/2008
KPN-JCO-SV-11D	10/15/2008	Geoprobe®	137656.8	404776.9	5.5-6	5.3-6	3-5.3	10/16/2008	10/17/2008
KPN-JCO-SV-12D	10/15/2008	Geoprobe®	137671.2	404895.7	6-6.5	5.7-6.5	4.8-5.7	10/16/2008	10/17/2008
KPN-JCO-SV-13D	10/15/2008	Geoprobe®	137926.7	405016.6	5.5-6	5-6	4.3-5	10/16/2008	10/17/2008
Kenilworth Park South									
KPS-JCO-SV-01S	10/15/2008	Hand-auger	137451.9	403955.2	1.5-2	1.3-2	1.2-1.3	10/16/2008	10/17/2008
KPS-JCO-SV-02S	10/15/2008	Hand-auger	137312.4	403948.8	1.5-2	1.25-2	1.1-1.25	10/16/2008	10/17/2008
KPS-JCO-SV-03S	10/15/2008	Hand-auger	137173.2	403885.2	1.5-2	1.25-2	1.1-1.25	10/16/2008	10/17/2008
KPS-JCO-SV-06D	10/15/2008	Geoprobe®	137084.0	403928.4	3.5-4	3.3-4	1.7-3.3	10/16/2008	10/17/2008
KPS-JCO-SV-07S	10/16/2008	Hand-auger	137119.9	404012.6	1.2-1.7	1-1.7	0.8-1.7	10/16/2008	10/17/2008
KPS-JCO-SV-08D	10/16/2008	Hand-auger	137240.1	404103.1	2.3-2.8	2.1-2.8	1.6-2.1	10/16/2008	10/17/2008

Notes:

¹Coordinates in Maryland State Plane (meters)

ft bgs = feet below ground surface

Created by: DWS 12/8/08

Checked by:

Table 2-3
Surface Soil Samples
Kenilworth Park Landfill
October 2008

The Johnson Company

Sample	Sample Date	Northing ¹	Easting ¹	Sample Depth
Kenilworth Park North				
KPN-JCO-SS-01	10/14/2008	137654.0	403882.7	0-6"
KPN-JCO-SS-02	10/14/2008	137836.8	403894.5	0-6"
KPN-JCO-SS-03	10/14/2008	137782.7	403997.2	0-6"
KPN-JCO-SS-04	10/14/2008	137964.2	404020.2	0-6"
KPN-JCO-SS-05	10/14/2008	137870.8	404140.3	0-6"
KPN-JCO-SS-06	10/14/2008	138114.4	404259.9	0-6"
KPN-JCO-SS-07	10/14/2008	138029.1	404397.1	0-6"
KPN-JCO-SS-07 DUP	10/14/2008	138029.1	404397.1	0-6"
KPN-JCO-SS-08	10/14/2008	137982.9	404342.9	0-6"
KPN-JCO-SS-09	10/14/2008	137789.5	404454.8	0-6"
KPN-JCO-SS-10	10/14/2008	137875.3	404643.8	0-6"
KPN-JCO-SS-11	10/14/2008	137655.2	404651.4	0-6"
KPN-JCO-SS-12	10/14/2008	137713.1	404902.8	0-6"
KPN-JCO-SS-13	10/14/2008	137951.9	404821.6	0-6"
Kenilworth Park South				
KPS-JCO-SS-01	10/15/2008	137507.6	403752.7	0-6"
KPS-JCO-SS-02	10/15/2008	137368.5	403660.6	0-6"
KPS-JCO-SS-03	10/15/2008	137275.1	403608.6	0-6"
KPS-JCO-SS-04	10/15/2008	137396.5	403794.5	0-6"
KPS-JCO-SS-05	10/15/2008	137208.2	403775.2	0-6"
KPS-JCO-SS-06	10/15/2008	137413.7	403862.3	0-6"
KPS-JCO-SS-07	10/15/2008	137260.6	403841.9	0-6"
KPS-JCO-SS-08	10/15/2008	137481.1	403953.2	0-6"
KPS-JCO-SS-09	10/15/2008	137398.6	403972.7	0-6"
KPS-JCO-SS-10	10/15/2008	137178.3	403861.3	0-6"
KPS-JCO-SS-10 DUP	10/15/2008	137178.3	403861.3	0-6"
KPS-JCO-SS-11	10/15/2008	137132.4	403931.4	0-6"

Notes:

¹Coordinates in Maryland State Plane (meters)

Created by: DWS 12/8/08

Checked by:

Page 1 of 1

1/5/2009

**Table 3-1
Soil Vapor Screening Results
October 2008
Kenilworth Park Landfill**

The Johnson Company

Sample	Development Date	PID VOCs (ppm)	Methane (%)	Methane (ppmv)	CO2 (%)	O2 (%)	%LEL*
Kenilworth Park North							
KPN-JCO-SV-01S	10/16/2008	0.4	0%	0	3.6%	16.2%	0%
KPN-JCO-SV-02S	10/14/2008	0.7	0%	0	1.0%	19.4%	0%
KPN-JCO-SV-03S	10/16/2008	1.4	0%	0	0.4%	20.8%	0%
KPN-JCO-SV-04S	10/16/2008	6.3	0%	0	4.9%	15.7%	0%
KPN-JCO-SV-05S	10/16/2008	0.5	0%	0	0.7%	20.7%	0%
KPN-JCO-SV-06S	10/16/2008	0.4	0%	0	1.1%	20.3%	0%
KPN-JCO-SV-07S	10/16/2008	0.9	0%	0	0.9%	20.2%	0%
KPN-JCO-SV-08S	10/16/2008	0.6	0%	0	0.9%	19.8%	0%
KPN-JCO-SV-09S	10/16/2008	0.7	43.5%	435,000	2.4%	8.1%	>100%
KPN-JCO-SV-10S	10/16/2008	0.4	0%	0	0.0%	13.8%	0%
KPN-JCO-SV-10D	10/16/2008	4.2	0%	0	9.4%	0.3%	0%
KPN-JCO-SV-11S	10/16/2008	1	0%	0	1.4%	19.7%	0%
KPN-JCO-SV-11D	10/16/2008	0.2	0%	0	1.9%	17.8%	0%
KPN-JCO-SV-12D	10/16/2008	0.1	0%	0	7.0%	12.2%	0%
KPN-JCO-SV-13D	10/16/2008	0.1	0%	0	8.2%	12.0%	0%
Kenilworth Park South							
KPS-JCO-SV-01S	10/16/2008	5.3	7.3%	73,000	14.6%	0.5%	>100%
KPS-JCO-SV-02S	10/16/2008	0.4	0%	0	3.3%	17.7%	0%
KPS-JCO-SV-03S	10/16/2008	1.0	8.0%	80,000	17.4%	0.4%	>100%
KPS-JCO-SV-06D	10/16/2008	1.8	69.5%	695,000	30.0%	0.1%	>100%
KPS-JCO-SV-07S	10/16/2008	0.7	21.5%	215,000	13.6%	7.1%	>100%
KPS-JCO-SV-08D	10/16/2008	0.3	0%	0	2.9%	17.7%	0%

Notes:

*LEL≈5% in air, or 50,000 ppmv of methane

Table 3-2
Soil Vapor Methane Analytical Results
October 2008
Kenilworth Park Landfill

The Johnson Company

Sample	Date	Concentration (ppmv)	% Lower Explosive Limit*
Kenilworth Park North			
KPN-JCO-SV-01S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-02S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-03S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-04S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-05S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-06S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-07S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-07S-DUP	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-08S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-09S	10/17/2008	37,000	74%
KPN-JCO-SV-09S-DUP	10/17/2008	39,000	78%
KPN-JCO-SV-09S-DUP Lab Duplicate	10/17/2008	40,390	81%
KPN-JCO-SV-10S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-10D	10/17/2008	87	0.2%
KPN-JCO-SV-11S	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-11D	10/17/2008	ND < 10	< 0.02%
KPN-JCO-SV-12D	10/17/2008	870	1.7%
KPN-JCO-SV-13D	10/17/2008	ND < 10	< 0.02%
Kenilworth Park South			
KPS-JCO-SV-01S	10/17/2008	23,000	46%
KPS-JCO-SV-02S	10/17/2008	ND < 10	< 0.02%
KPS-JCO-SV-03S	10/17/2008	1,400	2.8%
KPS-JCO-SV-06D	10/17/2008	140,000	280%
KPS-JCO-SV-07S	10/17/2008	89,000	178%
KPS-JCO-SV-07S-DUP	10/17/2008	90,840	182%
KPS-JCO-SV-08D	10/17/2008	ND < 10	< 0.02%

Notes:

ND < ## = Compound not detected in sample above the laboratory reporting limit, limit provided.

*LEL≈5% in air, or 50,000 ppmv of methane

Results highlighted and in bold indicate results above 100% LEL

Table 3-3
Summary of Surface Soil Analyses
October 2008
Kenilworth Park Landfill

The Johnson Company

Sample	Date	pH	Total Organic Carbon (mg/kg)
Kenilworth Park North			
KPN-JCO-SS-01	10/14/2008	7.19	7,390
KPN-JCO-SS-02	10/14/2008	7.29	3,370
KPN-JCO-SS-03	10/14/2008	7.42	9,790
KPN-JCO-SS-04	10/14/2008	7.11	6,620
KPN-JCO-SS-05	10/14/2008	6.86	13,000
KPN-JCO-SS-06	10/14/2008	7.08	23,000
KPN-JCO-SS-07	10/14/2008	6.74	37,200
KPN-JCO-SS-07-DUP	10/14/2008	6.44	50,100
KPN-JCO-SS-08	10/14/2008	7.08	3,510
KPN-JCO-SS-09	10/14/2008	7.22	5,460
KPN-JCO-SS-10	10/14/2008	7.18	11,600
KPN-JCO-SS-11	10/14/2008	7.44	8,420
KPN-JCO-SS-12	10/14/2008	7.38	16,200
KPN-JCO-SS-13	10/14/2008	6.53	33,200
Kenilworth Park South			
KPS-JCO-SS-01	10/15/2008	7.56	7,660
KPS-JCO-SS-02	10/15/2008	6.90	13,000
KPS-JCO-SS-03	10/15/2008	6.99	18,500
KPS-JCO-SS-04	10/15/2008	7.29	2,640
KPS-JCO-SS-05	10/15/2008	7.27	5,820
KPS-JCO-SS-06	10/15/2008	7.22	2,920
KPS-JCO-SS-07	10/15/2008	7.04	11,600
KPS-JCO-SS-08	10/15/2008	6.87	60,500
KPS-JCO-SS-09	10/15/2008	6.77	175,000
KPS-JCO-SS-10	10/15/2008	7.29	3,940
KPS-JCO-SS-10-DUP	10/15/2008	7.27	3,700
KPS-JCO-SS-11	10/15/2008	7.37	2,050

Table 3-4
Investigation-Derived Waste Analytical Results
Kenilworth Park Landfill
October 2008

Analyte	Regulatory Level (mg/L)	COMPOSITEKPN1 TCLP Result (mg/L)
TCLP Arsenic	5.0	ND < 0.02
TCLP Barium	100.0	0.95
TCLP Cadmium	1.0	0.017
TCLP Chromium	5.0	ND < 0.02
TCLP Lead	5.0	0.26
TCLP Mercury	0.2	ND < 0.02
TCLP Selenium	1.0	ND < 0.03
TCLP Silver	5.0	ND < 0.03

Notes:

Regulatory Levels for the definition of a hazardous waste per 40 CFR 261.24

Created by: DWS 12/8/08

Checked by:

Page 1 of 1

1/8/2009

Table 4-1
Summa Canister Vacuum Pressures
Kenilworth Park Landfill
October 2008

Sample	Vacuum Before Sampling (" Hg)	Vacuum After Sampling (" Hg)
Indoor Air (6 liter, 12 hour sampling time)		
KPN-JCO-IA-01	29	<1
KPN-JCO-IA-01DUP	29.5	1
KPN Soil Vapor (3.2 liter, 30 minute sampling time)		
KPN-JCO-SV-01S	29	1
KPN-JCO-SV-02S	29	1
KPN-JCO-SV-03S	30	2
KPN-JCO-SV-04S	29	<2
KPN-JCO-SV-05S	30	2
KPN-JCO-SV-06S	30	1
KPN-JCO-SV-07S	30	>1
KPN-JCO-SV-07S-DUP	32	4
KPN-JCO-SV-08S	29	2
KPN-JCO-SV-09S	29	>1
KPN-JCO-SV-09S-DUP	30	2
KPN-JCO-SV-10S	29	1
KPN-JCO-SV-10D	29	1
KPN-JCO-SV-11S	31	3
KPN-JCO-SV-11D	30	3
KPN-JCO-SV-12D	29	1.25
KPN-JCO-SV-13D	30.5	2
KPS Soil Vapor (3.2 liter, 30 minute sampling time)		
KPS-JCO-SV-01S	29	1
KPS-JCO-SV-02S	30	3
KPS-JCO-SV-03S	29.5	1
KPS-JCO-SV-06D	29	<1
KPS-JCO-SV-07S	31	4
KPS-JCO-SV-07S-DUP	29	<1
KPS-JCO-SV-08D	31	2.5

Created by: DWS 12/8/08

Checked by:

Page 1 of 1

12/22/2008

Table 4-2
Soil Vapor Field Duplicate Analyses
October 2008
Kenilworth Park Landfill

Sample	Date	Sample Methane Concentration (ppmv)	Field Duplicate Methane Concentration (ppmv)	RPD
KPN-JCO-SV-07S	10/17/2008	ND < 10	ND < 10	0%
KPN-JCO-SV-09S	10/17/2008	37,000	39,000	5.3%
KPS-JCO-SV-07S	10/17/2008	89,000	90,840	2.0%

Notes:

ND < ## = Compound not detected in sample above the laboratory reporting limit, limit provided.

Definition of Terms:

RPD = Relative Percent Difference

X1 = sample concentration

X2 = duplicate concentration

Equation:

$$RPD = \left| \frac{X_1 - X_2}{(X_1 + X_2)/2} \right| 100\%$$

**Table 4-3
Surface Soil Field Duplicate Analyses
October 2008
Kenilworth Park Landfill**

Sample	Date	pH (standard units)			TOC (mg/kg)		
		Sample	Duplicate	RPD	Sample	Duplicate	RPD
KPN-JCO-SS-07	10/14/2008	6.74	6.44	4.6%	37,200	50,100	29.6%
KPS-JCO-SS-10	10/15/2008	7.29	7.27	0.27%	3,940	3,700	6.3%

Notes:

Definition of Terms:

RPD = Relative Percent Difference

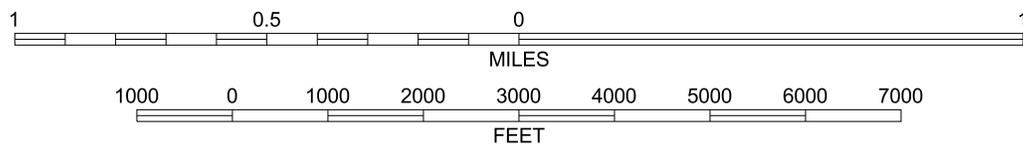
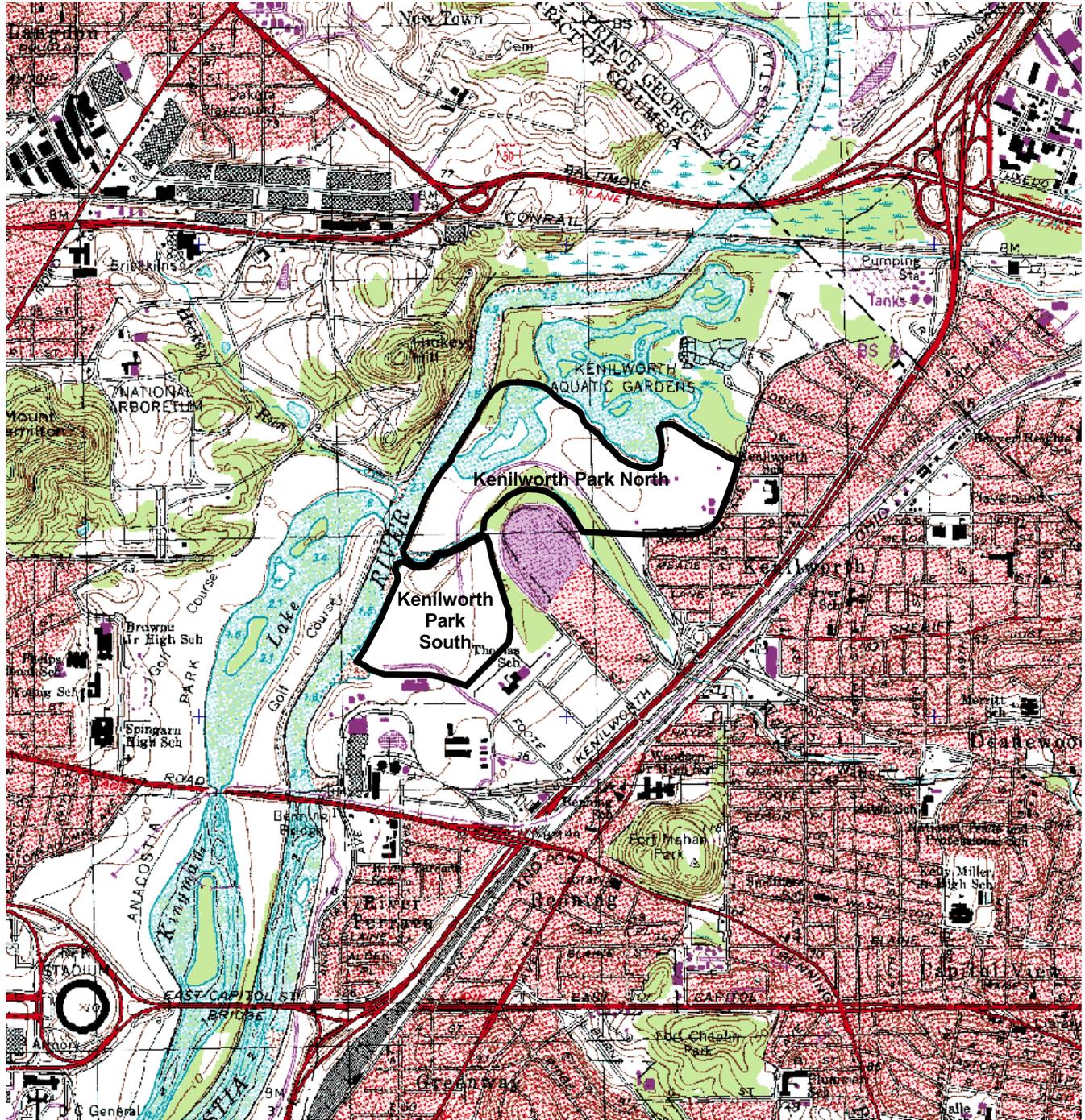
X1 = sample concentration

X2 = duplicate concentration

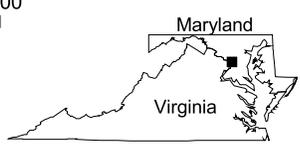
Equation:

$$RPD = \left| \frac{X_1 - X_2}{(X_1 + X_2)/2} \right| 100\%$$

FIGURES



CONTOUR INTERVAL 10 FEET



BASE MAP: USGS 7.5 Minute Topographic Quadrangle WASHINGTON EAST, D.C., MD, 1979.

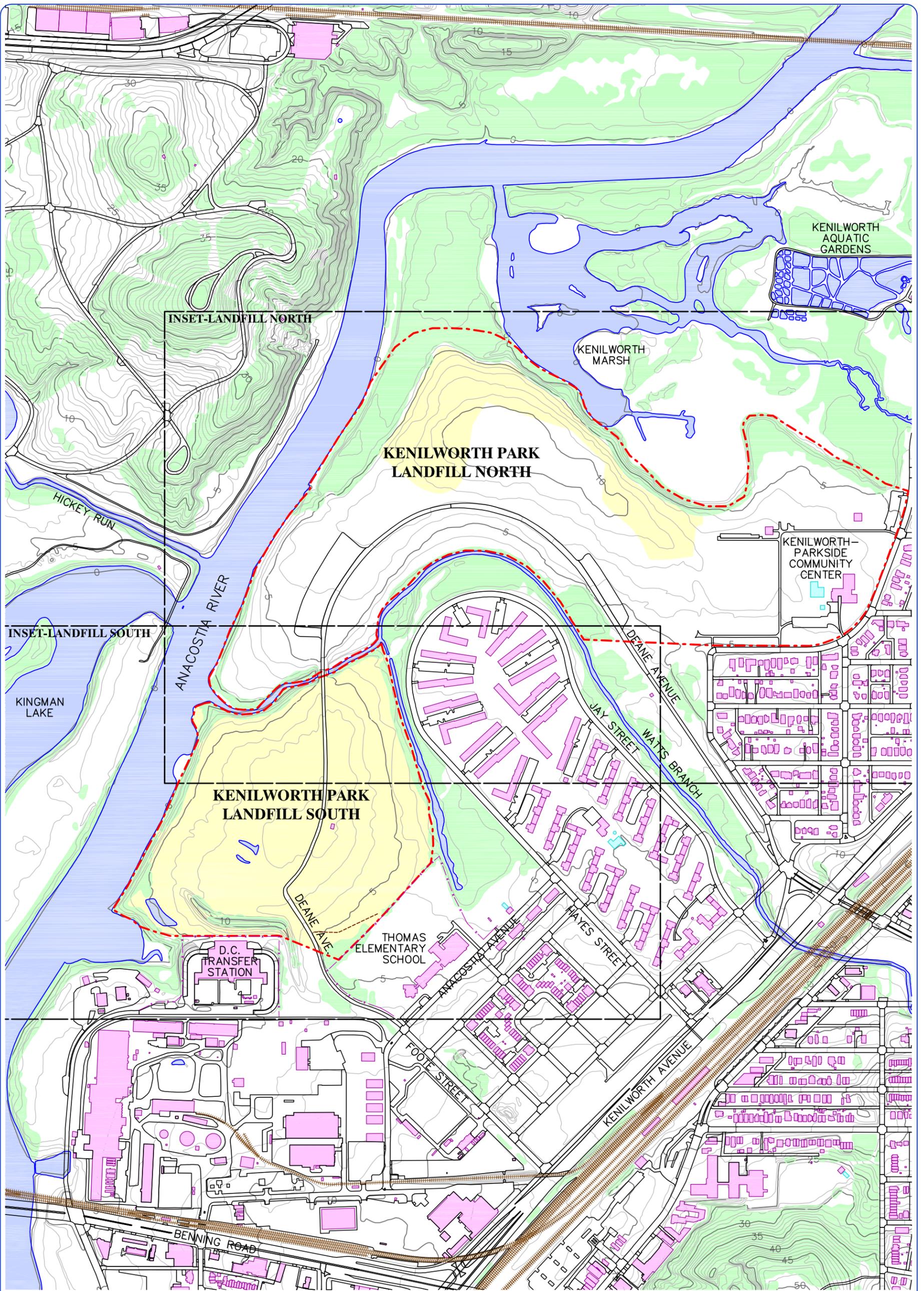
MAP LOCATION

**FIGURE 1-1: SITE LOCATION MAP
KENILWORTH PARK LANDFILL
WASHINGTON, DISTRICT OF COLUMBIA**

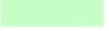


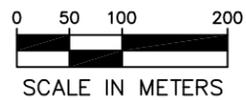
100 State Street, Suite 600
Montpelier, VT 05602

Drawn by: TJK	Date: 2/12/09
Chk'd by: MJM	Date: 2/12/09
Scale: As Shown	Project: 3-0700-11



LEGEND

- | | | | |
|---|-------------------|---|---------------------------|
|  | Existing Building |  | 1m Ground Surface Contour |
|  | Wooded Area |  | Railroad Tracks |
|  | Unmowed Area |  | Fenceline |
|  | Surface Water |  | Landfill Areas |
| | |  | Inset Area |



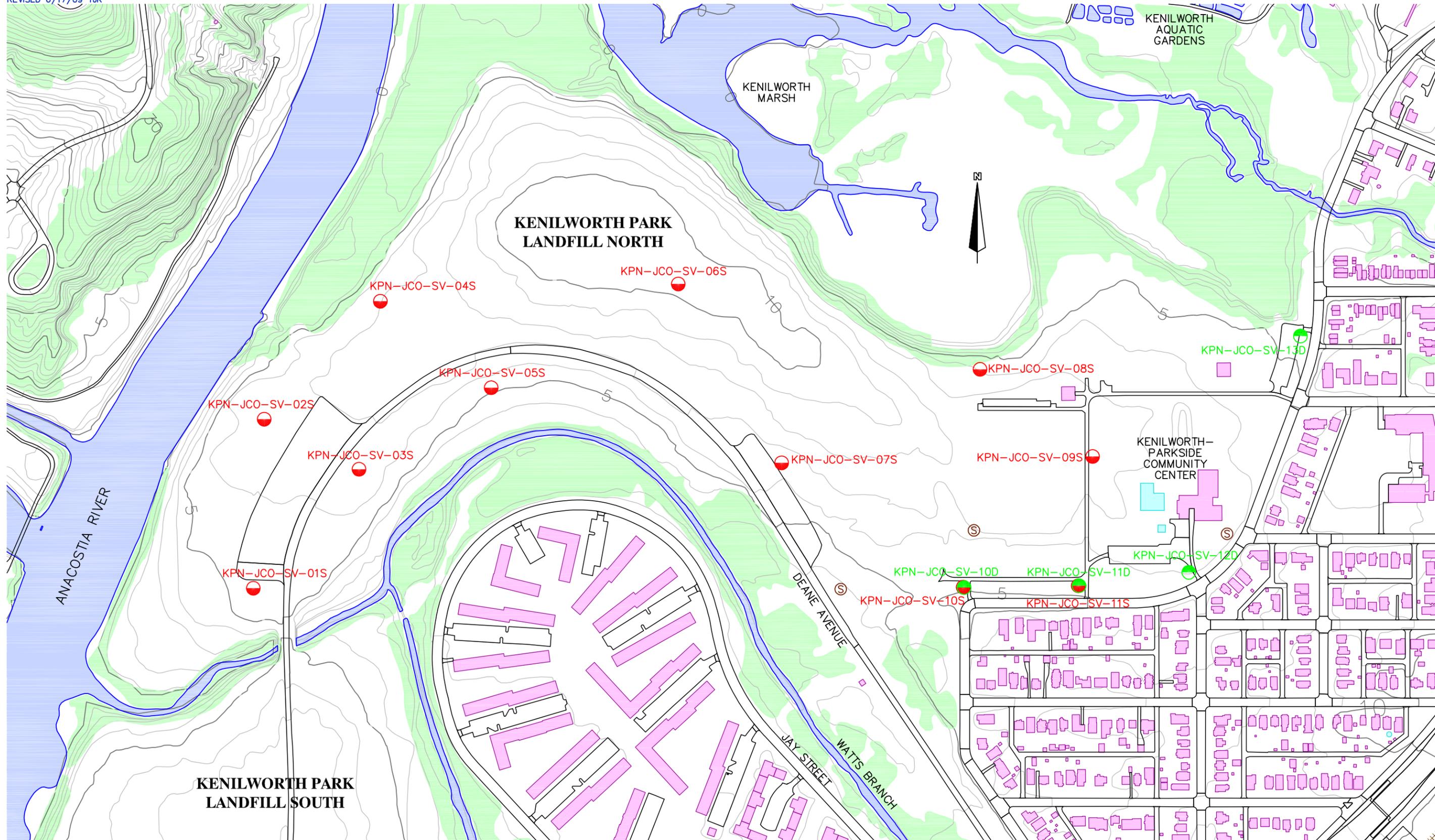
Base Map: District of Columbia Geographic Information System.

SITE.dwg

**FIGURE I-2
OVERALL SITE PLAN
KENILWORTH PARK LANDFILL
WASHINGTON, DISTRICT OF COLUMBIA**



100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600
Drawn by: TJK Date: 2/17/09
Chkd by: MJM Date: 2/17/09
Scale: As Shown Project: 3-0700-11



KENILWORTH PARK LANDFILL SOUTH

KENILWORTH PARK LANDFILL NORTH

KENILWORTH AQUATIC GARDENS

KENILWORTH MARSH

KENILWORTH-PARKSIDE COMMUNITY CENTER

ANACOSTIA RIVER

DEANE AVENUE

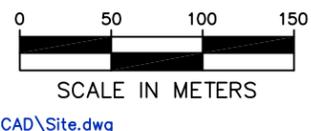
JAY STREET

WATTS BRANCH

- Existing Building
- Wooded Area
- Surface Water

- LEGEND**
- 1m Ground Surface Contour
 - S Sewer Manhole Location*
 - * Location Established by Trimble GPS

- Shallow Soil Vapor Sampling Location*
 - Deep Soil Vapor Sampling Location*
- Base Map: District of Columbia Geographic Information System.

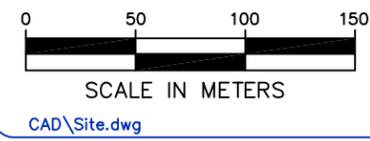
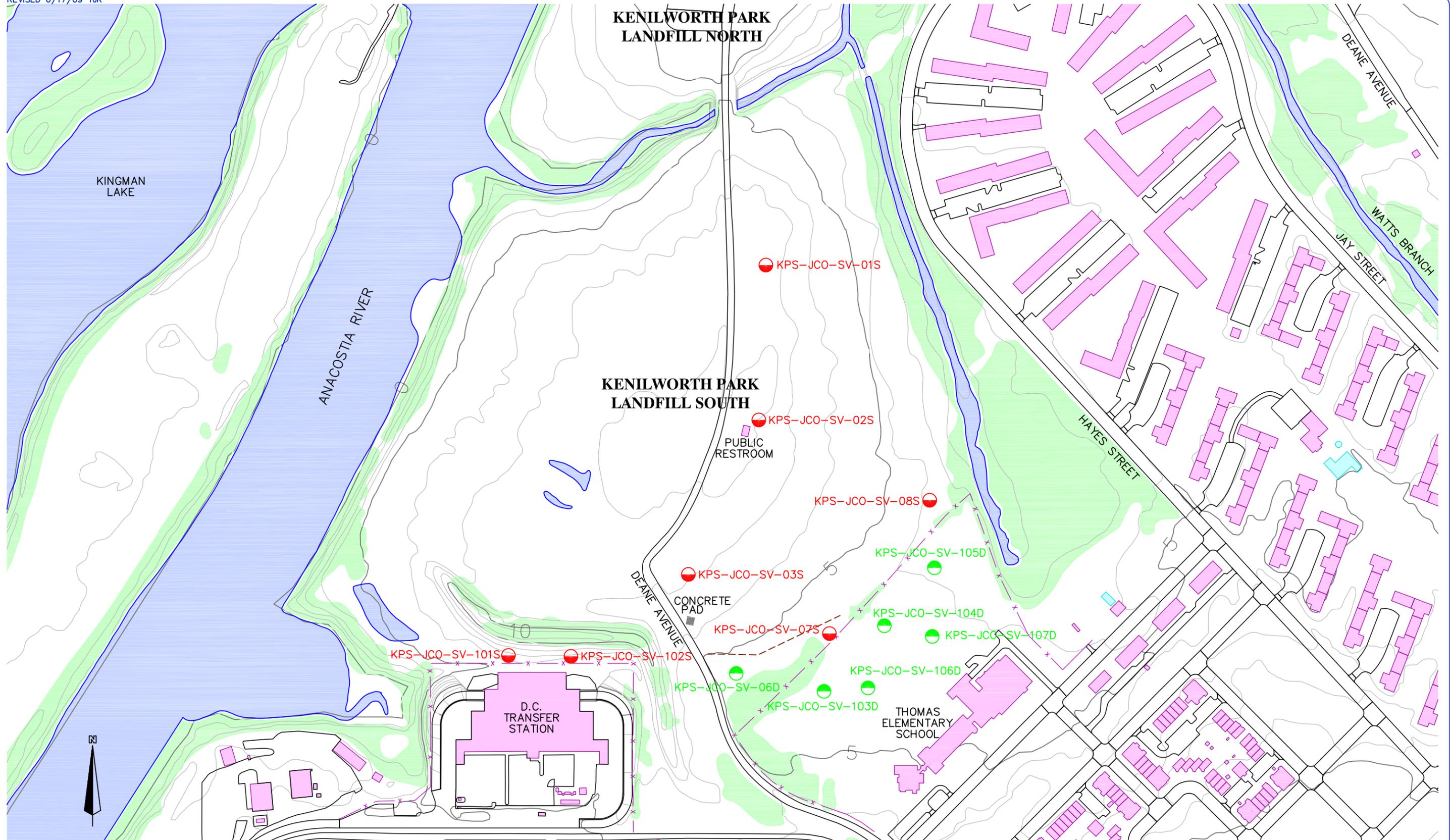


The Johnson Company

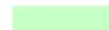
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK Date: 12/2/08
Chk'd by: DWS Date: 12/17/08
Scale: As Shown Project: 3-0700-11

FIGURE 2-1(a)
SOIL VAPOR SAMPLING LOCATIONS
KENILWORTH PARK LANDFILL NORTH
WASHINGTON, DISTRICT OF COLUMBIA



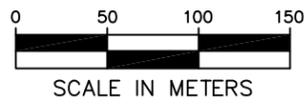
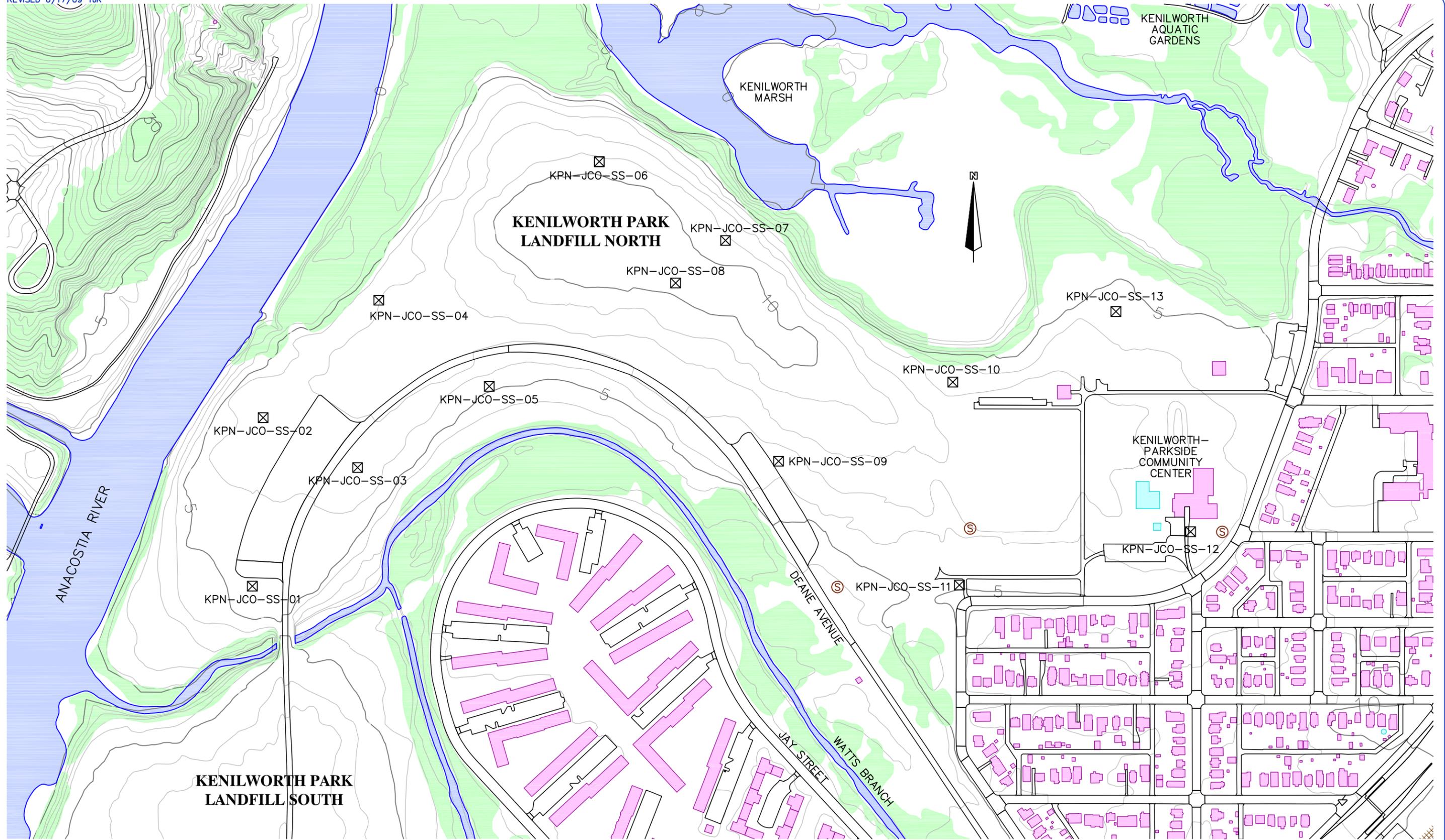
LEGEND

	Existing Building		1m Ground Surface Contour
	Wooded Area		Fenceline (Approximate)
	Surface Water		Sewer Line*

 Shallow Soil Vapor Sampling Location*
 Deep Soil Vapor Sampling Location*
 * Location Established by Trimble GPS
 Base Map: District of Columbia
 Geographic Information System.

	100 State Street, Suite 600 Montpelier, VT 05602 (802) 229-4600	
	Drawn by: TJK	Date: 12/2/08
	Chk'd by: DWS	Date: 12/3/08
Scale: As Shown Project: 3-0700-11		

FIGURE 2-1(b)
SOIL VAPOR SAMPLING LOCATIONS
KENILWORTH PARK LANDFILL SOUTH
WASHINGTON, DISTRICT OF COLUMBIA



CAD\Site.dwg

- Existing Building
- Wooded Area
- Surface Water

LEGEND

- 1m Ground Surface Contour
- S Sewer Manhole Location*
- * Location Established by Trimble GPS

- Surface Soil Sampling Location*

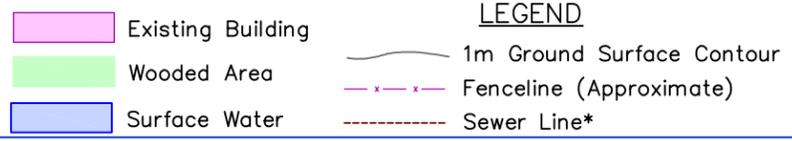
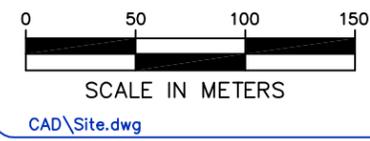
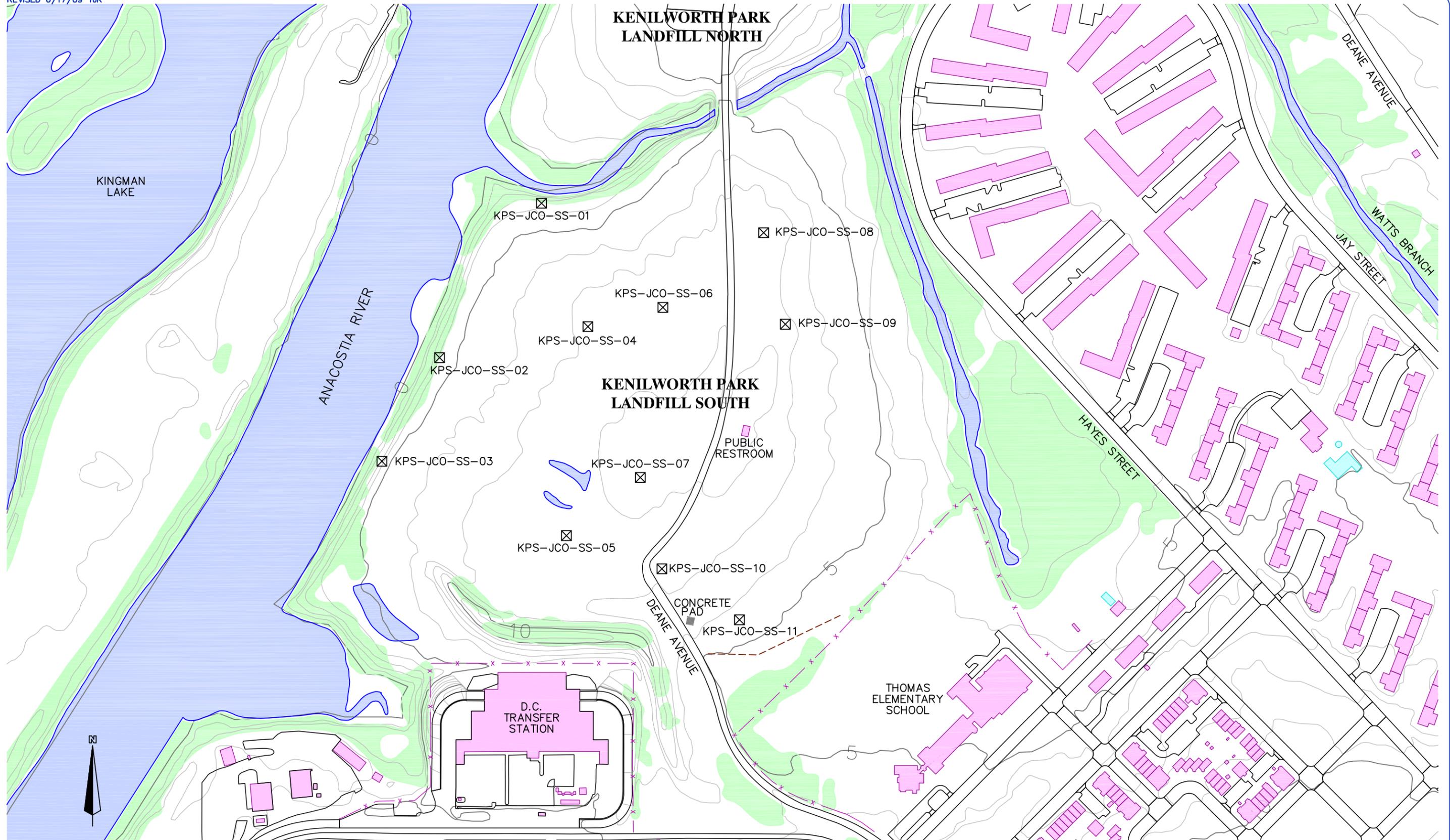
Base Map: District of Columbia Geographic Information System.



100 State Street, Suite 600
 Montpelier, VT 05602
 (802) 229-4600

Drawn by: TJK Date: 12/2/08
 Chk'd by: DWS Date: 12/17/08
 Scale: As Shown Project: 3-0700-11

FIGURE 2-2(a)
SURFACE SOIL SAMPLING LOCATIONS
KENILWORTH PARK LANDFILL NORTH
WASHINGTON, DISTRICT OF COLUMBIA

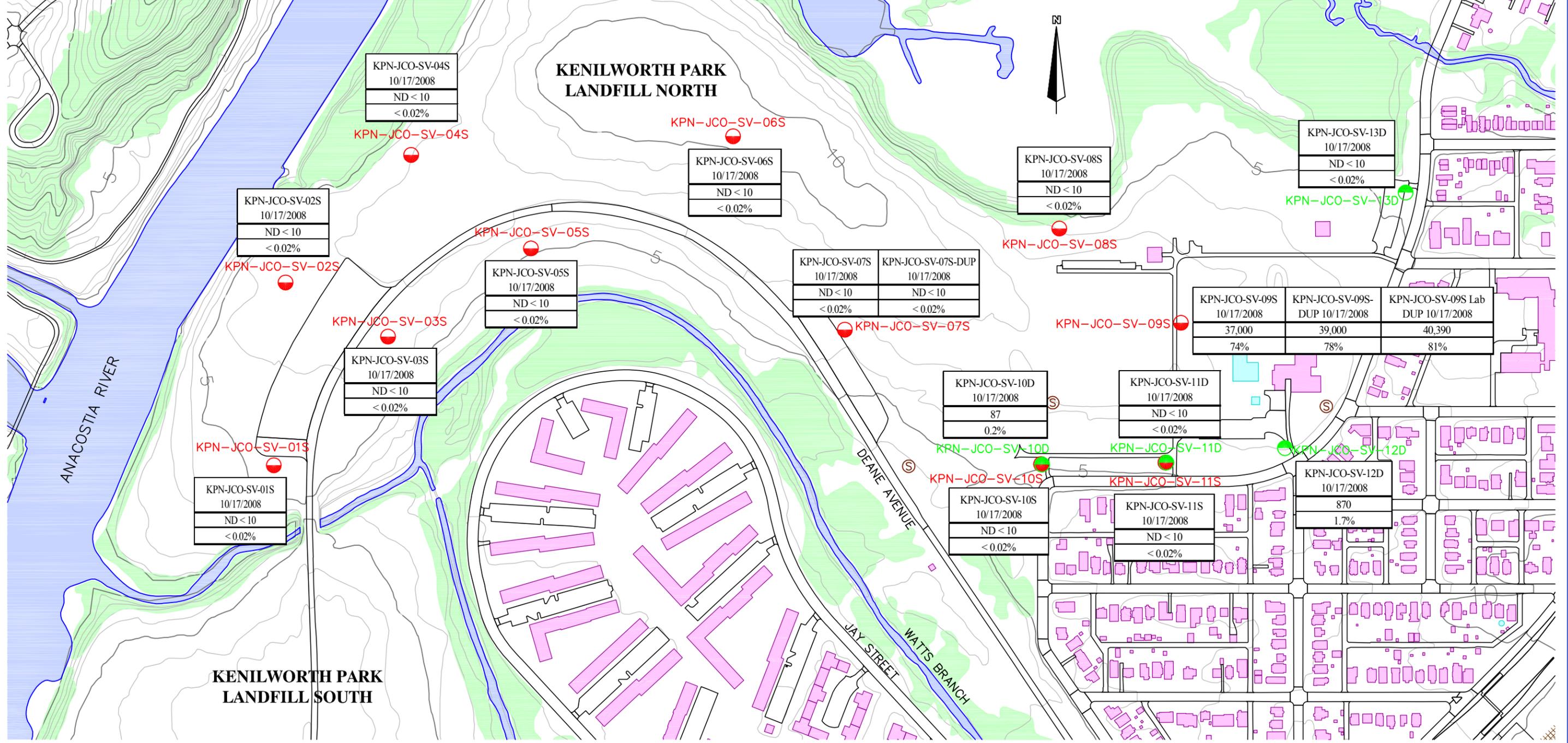


☒ Surface Soil Sampling Location*
* Location Established by Trimble GPS
Base Map: District of Columbia Geographic Information System.

The Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600
Drawn by: TJK Date: 12/2/08
Chk'd by: DWS Date: 12/17/08
Scale: As Shown Project: 3-0700-11

FIGURE 2-2(b)
SURFACE SOIL SAMPLING LOCATIONS
KENILWORTH PARK LANDFILL SOUTH
WASHINGTON, DISTRICT OF COLUMBIA

KEY	
Sample ID:	KPN-JCO-SV-01S
Sample Date:	10/17/2008
Methane Conc. (ppmv):	ND < 10
% Lower Explosive Limit*:	< 0.02%
Notes:	
*LEL ≈ 5% in air, or 50,000 ppmv of methane	
DUP = Duplicate	
ND = not detected	



KPN-JCO-SV-04S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-06S

KPN-JCO-SV-06S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-08S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-13D	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-02S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-05S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-07S	10/17/2008	KPN-JCO-SV-07S-DUP	10/17/2008
ND < 10	< 0.02%	ND < 10	< 0.02%

KPN-JCO-SV-09S	10/17/2008	KPN-JCO-SV-09S-DUP	10/17/2008	KPN-JCO-SV-09S Lab DUP	10/17/2008
37,000	74%	39,000	78%	40,390	81%

KPN-JCO-SV-03S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-10D	10/17/2008
87	0.2%

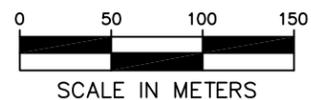
KPN-JCO-SV-11D	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-01S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-10S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-11S	10/17/2008
ND < 10	< 0.02%

KPN-JCO-SV-12D	10/17/2008
870	1.7%



- LEGEND**
- Existing Building
 - Wooded Area
 - Surface Water
 - 1m Ground Surface Contour
 - Sewer Manhole Location*
 - * Location Established by Trimble GPS
 - Shallow Soil Vapor Sampling Location*
 - Deep Soil Vapor Sampling Location*

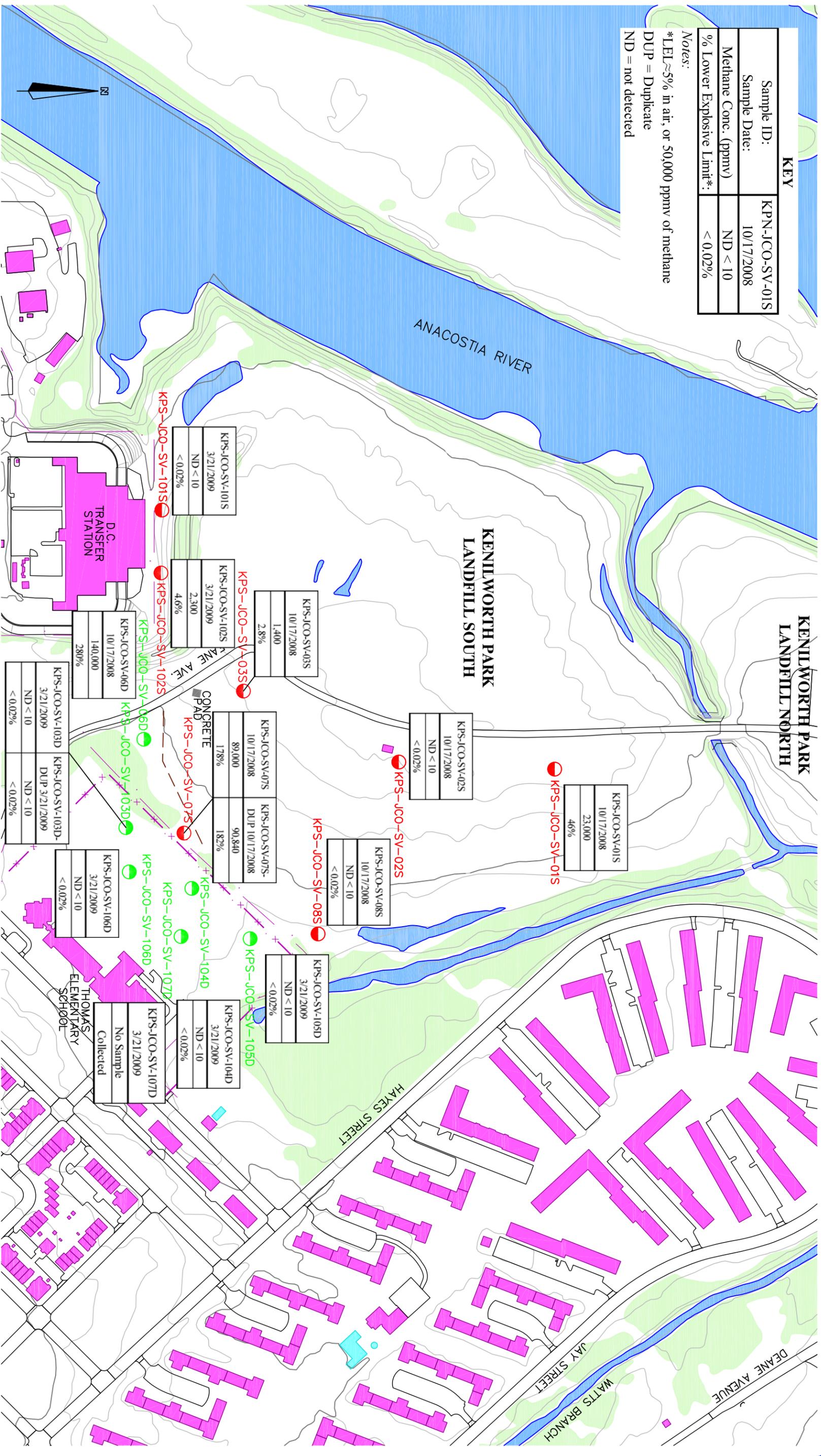
Base Map: District of Columbia Geographic Information System.

The Johnson Company
 100 State Street, Suite 600
 Montpelier, VT 05602
 (802) 229-4600
 Drawn by: TJK Date: 12/2/08
 Chk'd by: CMC Date: 12/31/08
 Scale: As Shown Project: 3-0700-11

FIGURE 3-1(a)
SOIL VAPOR METHANE RESULTS
KENILWORTH PARK LANDFILL NORTH
WASHINGTON, DISTRICT OF COLUMBIA

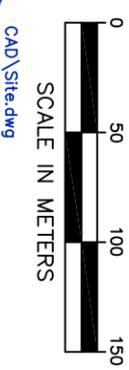
KEY	
Sample ID:	KPN-JCO-SV-01S
Sample Date:	10/17/2008
Methane Conc. (ppmv)	ND < 10
% Lower Explosive Limit*	< 0.02%

Notes:
 *LEL ~5% in air, or 50,000 ppmv of methane
 DUP = Duplicate
 ND = not detected



LEGEND

	Existing Building		Shallow Soil Vapor Sampling Location
	Wooded Area		Deep Soil Vapor Sampling Location
	Surface Water		1m Ground Surface Contour
	Fence/line (Approximate)		Sewer Line*



Base Map: District of Columbia Geographic Information System.

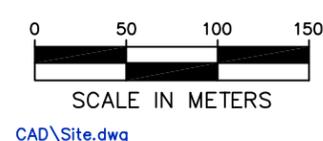
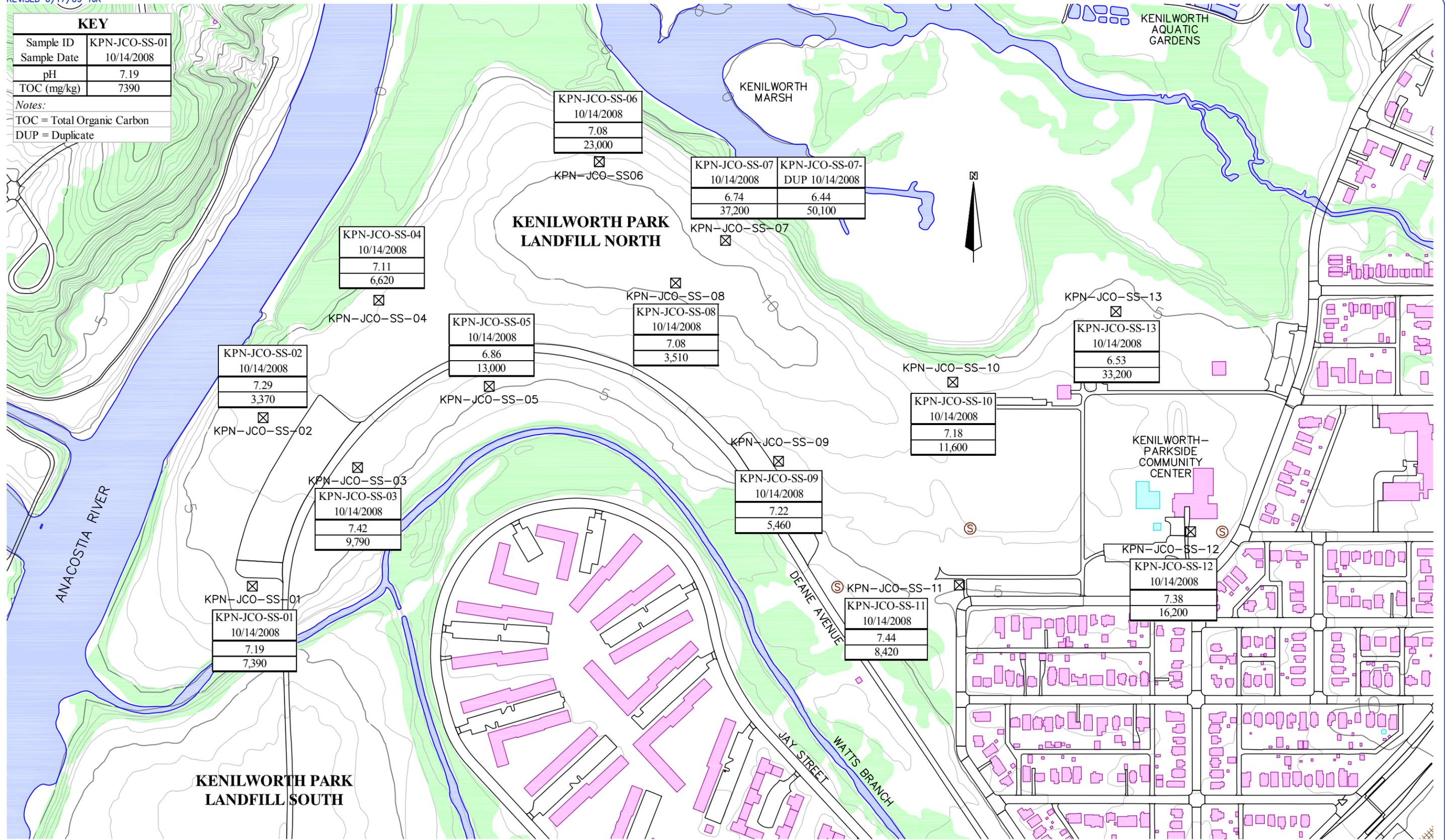
The Johnson Company

100 State Street, Suite 600
 Montpelier, VT 05602
 (802) 229-4600

Drawn by: TJK Date: 12/2/08
 Ck'd by: CMC Date: 12/31/08
 Scale: As Shown Project: 3-0700-11

FIGURE 3-1(10)
SOIL VAPOR METHANE RESULTS
KENILWORTH PARK LANDFILL SOUTH
WASHINGTON, DISTRICT OF COLUMBIA

KEY	
Sample ID	KPN-JCO-SS-01
Sample Date	10/14/2008
pH	7.19
TOC (mg/kg)	7390
Notes:	
TOC = Total Organic Carbon	
DUP = Duplicate	



- LEGEND**
- Existing Building
 - Wooded Area
 - Surface Water
 - 1m Ground Surface Contour
 - Sewer Manhole Location*
 - Surface Soil Sampling Location*
- * Location Established by Trimble GPS

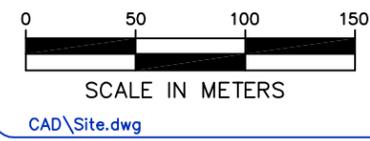
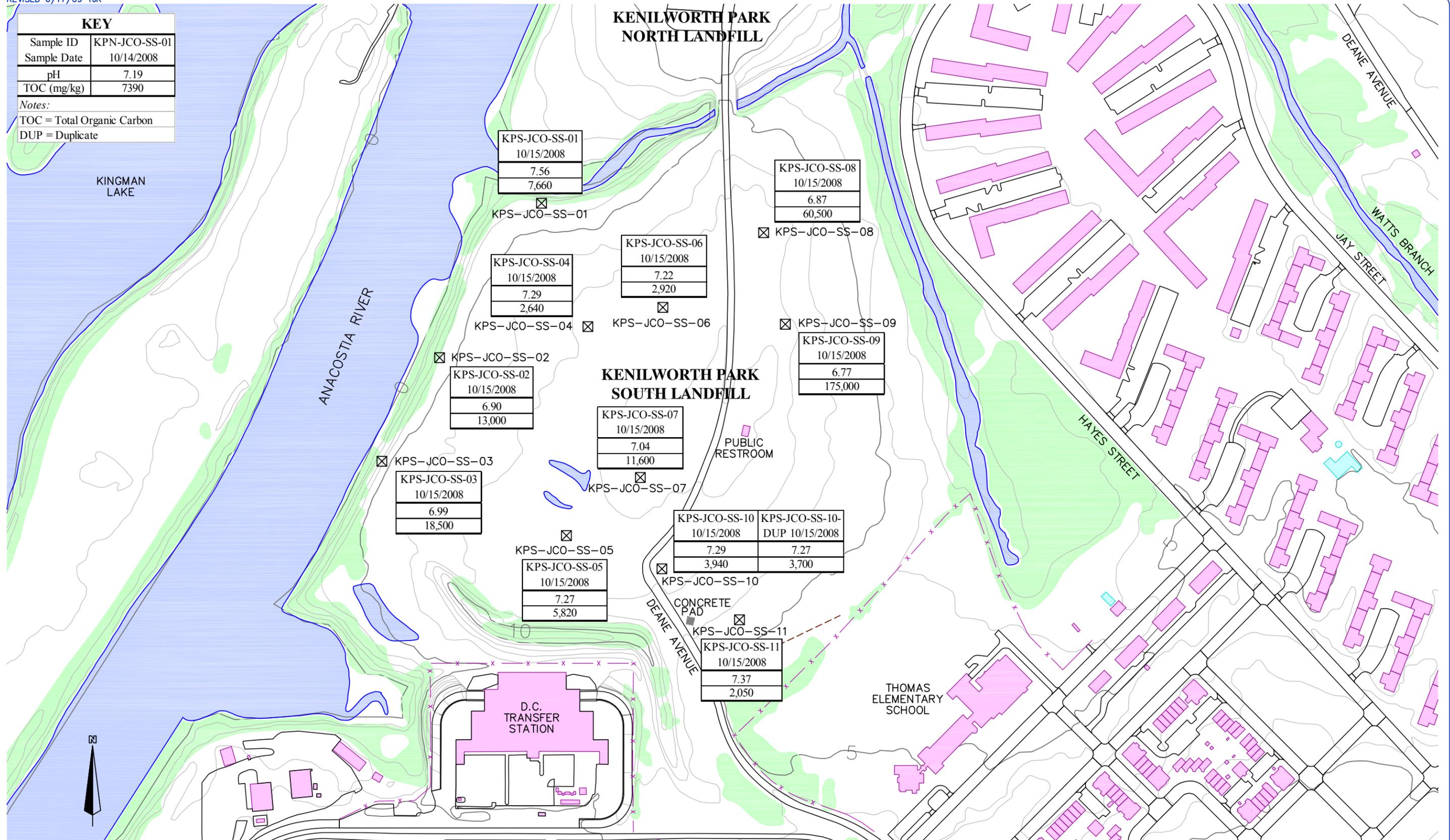
Base Map: District of Columbia Geographic Information System.

100 State Street, Suite 600
Montpelier, VT 05602
(802) 229-4600

Drawn by: TJK Date: 12/2/08
Chk'd by: DWS Date: 12/3/08
Scale: As Shown Project: 3-0700-11

FIGURE 3-2(a)
SURFACE SOIL pH & TOC RESULTS
KENILWORTH PARK LANDFILL NORTH
WASHINGTON, DISTRICT OF COLUMBIA

KEY	
Sample ID	KPN-JCO-SS-01
Sample Date	10/14/2008
pH	7.19
TOC (mg/kg)	7390
Notes:	
TOC = Total Organic Carbon	
DUP = Duplicate	



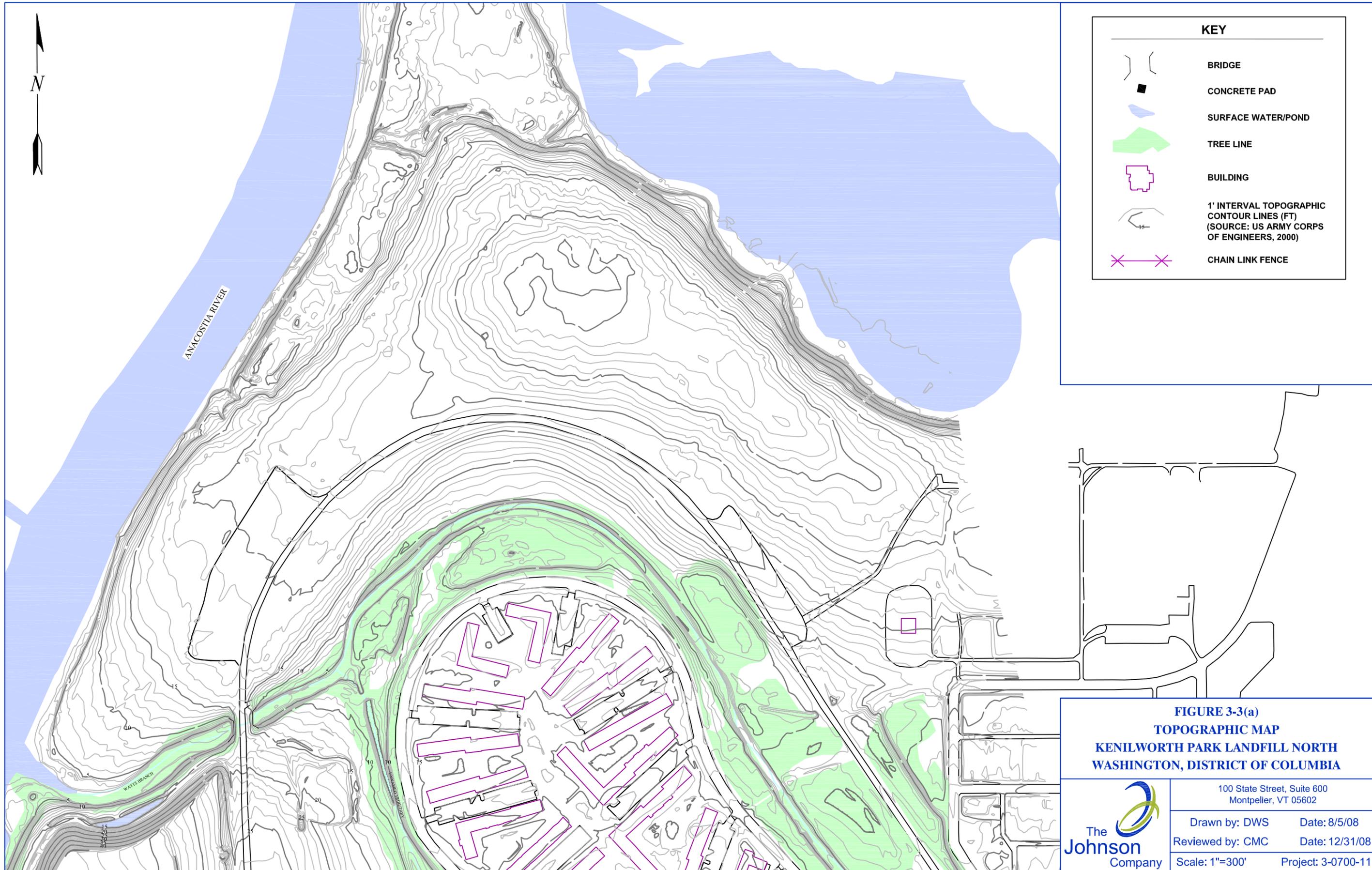
LEGEND	
	Existing Building
	Wooded Area
	Surface Water
	1m Ground Surface Contour
	Fenceline (Approximate)
	Sewer Line*

Surface Soil Sampling Location*
 * Location Established by Trimble GPS
 Base Map: District of Columbia Geographic Information System.

100 State Street, Suite 600
 Montpelier, VT 05602
 (802) 229-4600

Drawn by: TJK Date: 12/2/08
 Chk'd by: DWS Date: 12/3/08
 Scale: As Shown Project: 3-0700-11

FIGURE 3-2(b)
SURFACE SOIL pH & TOC RESULTS
KENILWORTH PARK LANDFILL SOUTH
WASHINGTON, DISTRICT OF COLUMBIA



KEY

-  BRIDGE
-  CONCRETE PAD
-  SURFACE WATER/POND
-  TREE LINE
-  BUILDING
-  1' INTERVAL TOPOGRAPHIC CONTOUR LINES (FT)
(SOURCE: US ARMY CORPS OF ENGINEERS, 2000)
-  CHAIN LINK FENCE

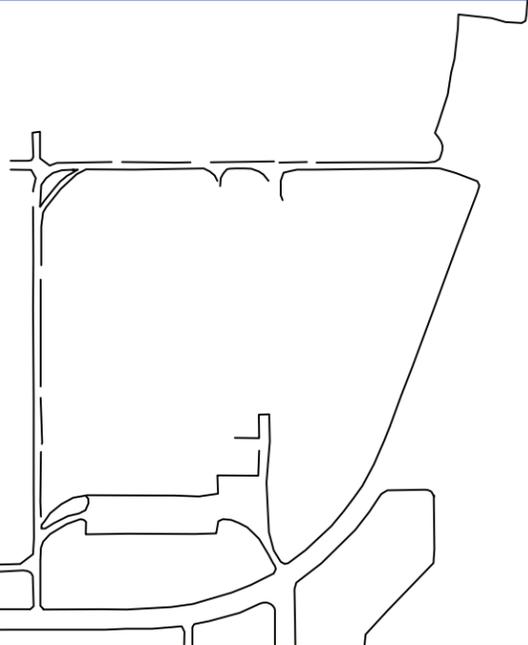
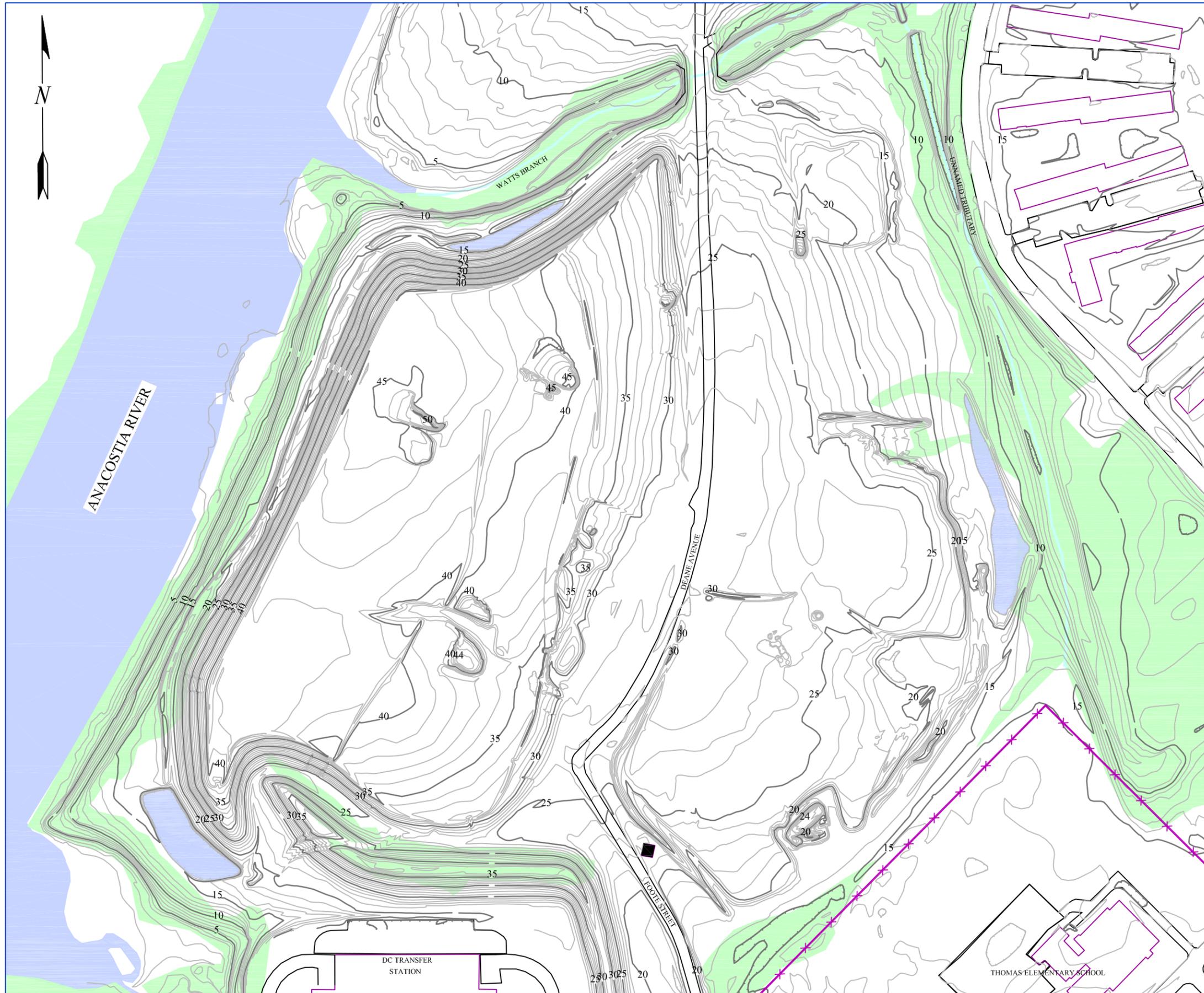


FIGURE 3-3(a)
TOPOGRAPHIC MAP
KENILWORTH PARK LANDFILL NORTH
WASHINGTON, DISTRICT OF COLUMBIA

	100 State Street, Suite 600 Montpelier, VT 05602	
	Drawn by: DWS	Date: 8/5/08
	Reviewed by: CMC	Date: 12/31/08
	Scale: 1"=300'	Project: 3-0700-11



KEY	
	BRIDGE
	CONCRETE PAD
	SURFACE WATER/POND
	TREE LINE
	BUILDING
	1' INTERVAL TOPOGRAPHIC CONTOUR LINES (FT) (SOURCE: US ARMY CORPS OF ENGINEERS, 2000)
	CHAIN LINK FENCE

FIGURE 3-3(b)
TOPOGRAPHIC MAP
KENILWORTH PARK LANDFILL SOUTH
WASHINGTON, DISTRICT OF COLUMBIA



100 State Street, Suite 600
 Montpelier, VT 05602

Drawn by: DWS Date: 8/5/08
 Reviewed by: CMC Date: 12/31/08

Scale: 1"=200' Project: 3-0700-2

APPENDIX 1
DAILY LOGS AND FIELD NOTES
(OCTOBER 2008 AND MARCH 2009)

THE JOHNSON COMPANY, INC.

DAILY LOG

Site : Kenilworth Park Landfill, Washington, District of Columbia

Date: 10/14/2008

Page: 1

Time the field work started: 07:00

Time finished: 16:30

Meteorological conditions and changes in these conditions:

Hand Augering very Difficult, In hardpan soils
80°F Hot/HUMID, v. little change

Names of field personnel:

Thomas Osborne
 NPS Staff:

Joel Behrsing:
Other (list):

General Description of Work Completed:

Install shallow vapor points (SV-01-09)
collect surface soils.

Location and description of the samples and sample sites including site sketches or diagrams

(add page if required) KPN site only (see Figures 4.1 (VP), + 4.3 (SS))

Sample Matrix	Sample Name or Range of Names	COC Number
Soils	14 X JCO-SS-01-13 (KPN)	8223
soils	+ 1 - Duplicate sample "	8224

Record of any field measurements made (unless otherwise recorded on applicable field sheets)

See field sheets.

Calibration and decontamination procedures and/or adjustments (unless otherwise recorded on applicable field sheets)

See Field Logs.
Deconed with Alconox + DI w/ paper towels.

THE JOHNSON COMPANY, INC.

DAILY LOG

Site : Kenilworth Park Landfill, Washington, District of Columbia

Date: 10/15/2008

Page: 1

Time the field work started: 7:00

Time finished: 5:30

Meteorological conditions and changes in these conditions:

Mostly Sunny and Hot in Afternoon

Names of field personnel:

Thomas Osborne
 NPS Staff:

Joel Behrsing:
Other (list): Vironex 1:15 - 5:30 Geoprobe Op.

Visit by Arlene Weiner and Stephen

General Description of Work Completed:

- @ KPS collect surface soil samples and GPS locations (ss only)
construct KPS-SV-01 - SV-03 ^{by hand} and SV-06 w/geoprobe
- @ KPN construct SV-10 to SV-13 w/geoprobe

Location and description of the samples and sample sites including site sketches or diagrams
(add page if required)

see Figures in SAP

Sample Matrix	Sample Name or Range of Names	COC Number
Soil	KPS-500-SS-01 - 5511 and 1 Dupe	8225

Record of any field measurements made (unless otherwise recorded on applicable field sheets)

see field sheets

Calibration and decontamination procedures and/or adjustments (unless otherwise recorded on applicable field sheets)

see field logs

Attempt Indoor Air Methane Sample - problem with regulator - had to abort.

THE JOHNSON COMPANY, INC.

DAILY LOG

Site : Kenilworth Park Landfill, Washington, District of Columbia

Date: 10/16/2008

Page:

Time the field work started: 7:00

Time finished: 2:30

Meteorological conditions and changes in these conditions:

brief sprinkle

Names of field personnel:

Thomas Osborne

Joel Behrsing:

NPS Staff:

Other (list):

General Description of Work Completed: purge SVs w/ multi gas meter

Build KPS-JCO-SV 07 4, 08; collect TCLP metals

GPS all KPN locations,

Location and description of the samples and sample sites including site sketches or diagrams

(add page if required)

Send KPS SVs see FSI figures

composite from 5 gal bucket of spoil from KPN

set IA summary @ Rec Center @ ~~20:00~~ 19:50

Sample Matrix	Sample Name or Range of Names	COC Number
soil		8228
Sample composite from 5 gal bucket IDW from KPN	Composite KPN 1	

Record of any field measurements made (unless otherwise recorded on applicable field sheets)

see field sheets

Calibration and decontamination procedures and/or adjustments (unless otherwise recorded on applicable field sheets)

see field sheets

THE JOHNSON COMPANY, INC.

DAILY LOG

Site : Kenilworth Park Landfill, Washington, District of Columbia

Date: 10/17/08

Page: 1

Time the field work started: 6:30

Time finished: 16:15

Meteorological conditions and changes in these conditions:

mostly cloudy cooler

Names of field personnel:

Thomas Osborne
 NPS Staff:

Joel Behrsing:
Other (list):

General Description of Work Completed:

stop/collect IA summary 6L (2)
collect 3.2L from all SV's and 3 Dupes

Location and description of the samples and sample sites including site sketches or diagrams
(add page if required)

see figure

Sample Matrix	Sample Name or Range of Names	COC Number
Soil Gas	KPN-JCO-SV-01-07 & 07 DUP	8226
Indoor Air	KPN-JCO-IA-01 & -01 DUP	8226
Soil Gas	KPN-JCO-SV-08, -09, -09 DUP -10D; -10S; 11D; 11S; -12; -13	8227
Soil Gas	KPS-JCO-SV-01; -02; -03; 06 ; 07; 07 DUP; 08	8228

Record of any field measurements made (unless otherwise recorded on applicable field sheets)

Calibration and decontamination procedures and/or adjustments (unless otherwise recorded on applicable field sheets)

The Johnson Company, Inc.
 100 State Street, Suite 600
 Montpelier, VT 05602

Phone: (802) 229-4600
 Fax: (802) 229-5876
 www.johnsonco.com

PID CALIBRATION SHEET				
Equipment ID: <i>Miq; Roe 3000</i>		Serial # <i>592-000284</i>		Lamp: <i>10.6 eV</i>
Brand of Standard		<i>Spec Air</i>		
Lot #		<i>008028</i>		
Expiration Date		<i>7/10/09</i>		
Date	Time	Initials	100 ppm Isobutylene Value (ppm)	Site Background Value (ppm)
<i>10/14/08</i>	<i>7:15</i>	<i>TRC</i>	<i>100 ppm</i>	<i>Zero Air (Fresh) = 0.1</i>
<i>10/16/08</i>	<i>8:30</i>	<i>TRC</i>	<i>100 ppm</i>	<i>" " " = 0.1 ppm</i>
<i>10/17/08</i>	<i>7:00</i>	<i>TW</i>	<i>100 ppm</i>	<i>" " " = 0.1 ppm</i>

NPS - Hemilworth

10/14/08 3-0700-11

720 / J-B on site 17:00

P. Cloudy - 60°F

Barometric Pressure 30.21" Hg

Calibrate Land fill gas meter 7:30

Land tac GEM 2000 SN GM 07061 HR

Cal gas 50% CH₄, 35% CO₂, Balance Nitrogen

Lot # LTK 167 - mm-cm Exp 10/10

CH₄ to 50%, CO₂ to 55% & O₂ to 20.9%

16:20

Start dev. of V.P. KPN - SV.02

e 16:23 to 16:26 3 min.

Barometric 30.09 in Hg

PID Background 0.07ppm

10/14/08 3-0700-11 NPS - Hemilworth

3

KPN		SV	develop
V.P.	FID	CH ₄	CO ₂
-02	0.7ppm	0%	1.0%
			19.4%
			O ₂
			LEL
			0

4
10/15/08 Cloudy ~ 65°F NPS - Hamilton
3-0700-11
3-0700-11
ON site 7:00 TRO/S.B

check out Miss Utility marks
Cal. LF Gas meter

Go to KPS gate @ Foote St.

7:30

Calibrate handbill gas meter

CH₄: 50%, CO₂: 35%, O₂: 20.7%

R101508 A GPS file name

KPN-JCO-SV-12

drive 4' 44" recovery
red/brown sand/gravel
coarse @ 12" and 30" ~ 2-3" band
fill

4-6.5' 2.5" 30" recovery
Fine reddish sand
no stones - native?

screen @ 6.5 - 6.0 BGS

TOP sand 5'-8"

Bentrite to 4'-10"

5
10/15/08 3-0700-11 NPS - Hamilton
TRO/S.B

2:45 KPN-JCO-SV-13
~ 7' south of MW-11

drive 4' 28" recovery

no. 12' TFSL

reddish sand/gravel
brighter w/ depth

drive 4'-6-2"

18" recovery

reddish sand

screen set 6.0 - 5.5' BGS
sand pack to 5.0' BGS
Bentrite to 4.3' BGS

3:00 @ KPN-SCO-SV-11 - DEEP

drive 4' 0-8" FSL 42" rec

0-24" red/brown sand/gravel
quartz rock

bottom 12" silty w/some ash
little glass

2' drive recovery 16"

top 2" same ash

then 2" red clay

screen 6-5.5

sand pack 6.0 ~~SBS~~ - 5.3

Bentrite 5.3 - 6.1 granular B

S.B 5.1 - ~~DE~~ 3ochips

6 3-0700-11
NPS - Kenilworth

10/15/08
TRO/J-B

KPN-JCO - SV-11 shallow
~3' south of SV-11 deep

drone 30" RC. 30"
top ~12" brown silty loam
12-18" brown silt sand little gravel
18-30" red/brown silty s/g

screen 2.0 - 1.5
sand 1.5 - 1.3
green bet 1.3 - 0.9

3:47

KPN-JCO - SV-10 - Deep
drive 4' 42" Rec

0-12" Br. F.S.L.
12-24" Red sand/gravel
24-36" Pr. Br / Red
bits of ash/glass
36"-42" red brown gravel
little glass in tip

Drive 4'-6.5"
~28" Rec
brown sand & gravel
some ash/glass
clean sand bottom ~4"

10/15/08 NPS - Kenilworth 3-0700-11 7

KPN-JCO - SV-10 Deep TRO/J-B

screen 6.0 - 6.5'
sand 6.5 - 5.5'
gravel B 5.5 - 4.6

KPN-JCO - SV-10 shallow
2' south of SV-10 Deep

24" - 18" screen
24" - 12" sand
12" - 6" granular B

maybe concrete in bottom
8-10% pulverized in cone / her

8 NPS - Mendon
3-0700-11
10/15/08

4:45 KPS-50-54-06

TR0/5-B

Drive 4' ~ 4' Rec
0-10" Brown loamy sand

10-36" tan silty sand
w/brick chips
98" trace wood/ash ~ 2-3" leaves
in dark br/grey

Drive to 6" ~ 6" recovery

~ 4" gravel brick chips

~ 2" track - paper/glass

- offset and create

Hole to 4'

similar to let Hole

Vironex 1:15 - 5:30

NPS - Mendon
10/15/08 3-0700-11

KPN-50-1A-01 TR0/5-B

Serial Camister 4633
" " Regulator 2989

START VACUUM

KPN-50-1A-01 DUP
Serial # Camister 7632
Regulator 2993

START VACUUM

regulator nut stripped
about sample effort
because unit do
both.

NPS - Kenilworth

TR0/5-B

10/16/08 3:07:00-11

TR0/5-B 7:15

Cloudy ~ 65°

KPS-JCO-SV-07

- 10' east of sewer

20" TD ~ 2-4" bottom

ash mixed w/soil

Brown s&g ~ 16-18°

20-14 screen

20-12 sand

12-10 Gran. B.

KPS-JCO-SV-08

(4 add. holes point)

BoH 349

~ 8-10" Top soil

10-30" Tan coarse sand

34" sandy clay tan/red

w/mottles

screen 34-28

sand 28-34-25

→ bot 25-19

NPS - Kenilworth 3:07:00-11

10/16/08

101608A GPS file KPS

PID Background 0.0 ppm, Barometric Press = 29.84" Hg

KPN SV Development Rate = 5000 ft/min

VP#	PID	CH4%	CO2%	O2%	LEL%	Time	Purge Time
12	0.1	0.02	7.02	12.28	0.02	9:55	3min
13	0.1	0.0	8.2	12.0	0.02	10:05	3min
06	0.4	0.0	1.1	20.3	0.02	10:25	3min
01	0.4	0.0	3.6	16.2	0.0	10:40	5min
03	1.4	0.0	0.4	20.8	0.0	10:55	3min
04	6.3	0.0	4.9	15.7	0.0	11:10	3min
05	0.5	0.0	0.7	20.7	0.0	11:20	3min
07	0.9	0.0	0.9	20.2	0.0	11:30	3min
08	0.6	0.0	0.9	19.8	0.0	11:45	3min
09	0.7	43.5	2.4	08.1	7100%	12:00	3min
10	0.2	0.0	1.9	17.8	0.0	12:20	3min
105	0.4	0.0	0.0	13.8	0.0	12:40	3min
115	1.0	0.0	1.4	19.7	0.0	12:25	3min
10D	12.0	0.0	9.4	0.3	0.0	12:35	3min

KPS-JCO-SV

01	5.3	77%	14.6	0.5	77%	13:05	3min
02	0.4	0.0	3.3	17.7	0.20	13:15	3min
03	1.0	8.0	17.4	0.4	77%	13:30	3min
06	1.8	69.5	30.0	0.1	77%	13:55	3min
07	0.7	21.5	13.6	7.1	77%	14:00	3min
08	0.3	0.0	2.9	17.7	0.0	13:52	3min

12
NPS - Kemilworth
3-0 700-11
10/16/08

TR0/J-B

collect composite soil
sample from 1 5-gal pail
of soils from KPN
for Metals TCLP
collected 16:00 by fho
w/ auger and composite
in baggie to jar

Left Bucket w/ Arlene Weiner
@ Park Head quarters.

13
NPS - Kemilworth
3-0 700-11

TR0/J-B

10/16/08

(9:45
KPN-ICO-IA-01

serial # canister
Regulator

4633
2989

GL
12 hr

VACUUM

29 in Hg

START 19:50:51

STOP 7:25

10/16

10/17

KPN-ICO-IA-01 DUP

canister # 7632

regulator # 2973

GL

12 hr.

VACUUM

START 19:50:51

STOP 7:25

29.5 in Hg

~1" Hg

STOP 10/17

14 3-0700-11 NPS Kemilworth
TR0 J.B

10/17/08

6:45 63.4°F 45% humidity

Barometric 30.1" Hg

KPN-5CO-SV-13 3.2L
SUMMA # 0125 VACUUM
RES. # 959 TIME 30.5
START: 7:12
STOP: 7:36 2.0

KPN-5CO-SV-12 3.2L
SUMMA # 0114 VAC
RES. # 2847
START: 7:40 29
STOP: 8:01 1.25

NPS - Kemilworth 10/17/08
3-0700-11 TR0 J.B

KPN-5CO-SV-11 D 3.2L
SUMMA # 1079
RES # 26 TIME VAC
START 8:02 30"
STOP 8:30 3"

KPN-5CO-SV-11 S 3.2L
SUMMA # 1089
RES # 1300 TIME VAC
START 8:11 31"
STOP 8:41 3"

NPS - Kemilworth
3-0700-11
10/17/08

TRD/J-B
3.2 L

KPN-JCO-SV-10 D 2967 J-B

Summa # 0124
Reg # 2857
TIME 8:37
START 8:53
STOP /
VAC 29
/

faulty

KPN-JCO-SV-10 S 3.2 L

Summa # 0107
Reg # 2858
TIME 8:27
START 8:42
STOP /
VAC 29
/

KPN-JCO-SV-01 3.2 L

Summa # 0132
Reg # 2860
TIME 9:10
START 9:25
STOP /
VAC 29
1"

NPS - Kemilworth
3-0700-11
10/17/08

TRD-J-B
3.2 L

KPN-JCO-SV-02

Summa # 1074
Reg # 826
TIME 9:38
START 9:53
STOP /
VAC 29
/

KPN-JCO-SV-03 3.2 L

Summa # 0127
Reg # 01
TIME 9:47
START 10:09
STOP /
VAC 30"
2"

KPN-JCO-SV-04 3.2 L

Summa # 0131
Reg # 037
TIME 10:15
START 10:40
STOP <2
VAC 29
<2

18 NPS - Menilworth
3-0700-11
10/17/08

KPN - JCO - SV - 05

Summa # 1077

Res # 58

TIME

STOP 10:47

START 10:23

VAC

2"

30"

TR0/J-B

NPS - Menilworth
3-0700-11
10/17/08

KPN - JCO - SV - 08

Summa # 0112

Reg # 2863

Start 14:23

Stop 14:52

VAC

29" Hg

2" Hg

TR0/J-B

19

NPS - Menilworth
3-0700-11
10/17/08

KPN - JCO - SV - 06

Summa # 1082

Reg # 2862

TIME

13:44

14:02

VAC

30"

1

TR0/J-B

NPS - Menilworth
3-0700-11
10/17/08

KPN - JCO - SV - 09

Summa # 0128

Reg # 2870

Start 14:59

Stop 15:16

VAC

29" Hg

7" Hg

TR0/J-B

NPS - Menilworth
3-0700-11
10/17/08

KPN - JCO - SV - 07

Summa # 0103

Reg # 861

TIME

13:56

14:15

VAC

30" Hg

7" Hg

TR0/J-B

NPS - Menilworth
3-0700-11
10/17/08

KPN - JCO - SV - 09 Dup

Summa # 0135

Reg # 42

Start 14:59

Stop 15:16

VAC

30" Hg

2" Hg

TR0/J-B

NPS - Menilworth
3-0700-11
10/17/08

KPN - JCO - SV - 07 DUP

Summa # 0106

Res # 68

TIME

13:56

14:15

VAC

32" Hg

4" Hg

TR0/J-B

NPS - Menilworth
3-0700-11
10/17/08

OFF-SITE

4:15

3.0700-11-00
11-00
11-00

NPS 1109111111111111
10/17/00

21
TRO/JHS

50
M05001

KPS 12:00

KPS-JCO-SV06

Summe # 1086

RES # 049 TIME

START: 12:29

STOP: 12:48

VAC

29

<1"

KPS-JCO-SV07 N18 FT. N. S Fence

Summe # 1073

RES # 080

TIME

START: 12:19

STOP: 12:39

VAC

31

4

KPS-JCO-SV07 DUP

Summe # 1091

RES # 2861

TIME

START: 12:19

STOP: 12:39

VAC

29

<1

10/17/08

10/17/08
J. O'Connell

KPS - JCO - SV - 08 ~ 65 N. A Fence
Tree/J-B

Summ # 0166
Res # 054
TIME VAC
START: 12:14 31
STOP: 12:35 ~ 2.5
ready @ 2:15
when closed

KPS - JCO - SV - 03

Summ # 1083
Res # 016
TIME VAC
START: 12:57 29.5
STOP: 13:19 1"

KPS - JCO - SV - 02

Summ # 1084
Res # 1312
TIME VAC
START: 12:58 30"
STOP: 13:26 3"

KPS - JCO - SV - 01

Summ # 1072
Res # 2962
TIME VAC
START: 13:04 29
STOP: 13:29 < 1

Site : Kenilworth Park Landfill, Washington, District of Columbia

Date: 3/20/09

Page: 1

Time the field work started: 9:30

Time finished: 19:00

Meteorological conditions and changes in these conditions:

Clear, slight Breeze, 40°F

Names of field personnel:

Thomas Osborne

Joel Behrsing:

NPS Staff:

Other (list): Vironex (Geoprobe operator)

See Barnett (to unlock gate)

15:05 - 18:00

General Description of Work Completed:

Hand Auger and core (w/geo probe rig) to install soil vapor points.

Location and description of the samples and sample sites including site sketches or diagrams

(add page if required) KPS - 2 points along fence line w/ DC Transfer station. Five points behind Thomas Elementary School on NPS property

Sample Matrix	Sample Name or Range of Names	COC Number
Soil Gas	KPS-JKO-SV-1015-1025	7047
" "	KPS-JKO-SV-1030-1070	7047

Record of any field measurements made (unless otherwise recorded on applicable field sheets)

See Field Data sheets

Calibration and decontamination procedures and/or adjustments (unless otherwise recorded on applicable field sheets)

See Field Data sheets

THE JOHNSON COMPANY, INC.

DAILY LOG

Site : *Kenilworth Park Landfill, Washington, District of Columbia*

Date: *3/21/09*

Page: *1*

Time the field work started: *8:30*

Time finished: *14:30*

Meteorological conditions and changes in these conditions:

Names of field personnel:

- Thomas Osborne
- NPS Staff:

- Joel Behrsing:
- Other (list):

General Description of Work Completed:

Purge soil vapor points. Collect 6L Summa canister samples from 6 locations

Location and description of the samples and sample sites including site sketches or diagrams (add page if required)

See figure included w/ field notes/Field data sheets

Sample Matrix	Sample Name or Range of Names	COC Number
<i>Soil Gas</i>	<i>KPS-JCO-SV-101S+102S</i>	<i>7047</i>
<i>" "</i>	<i>KPS-JCO-SV-103D-107D</i>	<i>7047</i>

Record of any field measurements made (unless otherwise recorded on applicable field sheets)

See Field Data sheets

Calibration and decontamination procedures and/or adjustments (unless otherwise recorded on applicable field sheets)

See field Data sheets

Location Hemilworth Park DC Date 3/24/09

Project / Client NPS 3-0700-11
TPO

(202) 426-6905 Hemilworth Aquatic Gardens

Weather: clear 40°F, slight breeze.
On site 9:30

Review planned locations contacted

Arlene Weiner (443) 996-0743 (C)

Steve Syphax (202) 359-1717 (C)

about site access. Will need to

Keep Arlene updated of site progress

Stopped in at Thomas Elementary

to talk w/ principal Ruth Barnes

(202) 724-4593.

JCO walked w/Ruth to discuss

Buring locations and access issues.

All clear for after school start

Met Sue Bennett w/NPS at intersection

of Foute St. + Anacostia Ave to

unlock gate.

Location Kenilworth Park, DCDate 3/20/09Project / Client NPS 3-0700-11TRD

Set up to start VP install behind
DC Transfer station.
Calibrate PID

100 ppm Spn gas = 100.9 ppm OVM
Back ground 0.0 ppm

KPS-JCO-SV-1015 west end of DC Transfer
station \approx 20' N. of fence line
0-0.4' Br moist silty fs. Topsoil
0.4-1.9' Br-orange silty fs + grv
Brick frags (fill).

Pnt. set Total hole depth 1.9' Bgs
screen set 1.8-1.8' sand to 1.1' Bgs. 0-4'
Bent. to 0.4' Bgs
Back fill w/ Native.
PID VP. screen 0.6 ppm max
purged \approx 1.5 minutes

KPS-JCO-SV-1025 e. end of DC Transfer
station \approx 15' N. of fence line
0-0.4' Br moist silty fs. Lit grv
0.4-1.5' Bgs Tr/orange Silt 1.1' fs
+ grv.

Location Kenilworth Park DCDate 3/20/09Project / Client NPS 3-0700-11TRD

Screen set 1.0-1.5' Bgs
Sand to 0.8' Bgs
Bent. to 0.3' Bgs Hydrated
Back filled w/ Native Soils
Purged Vapor Screen w/PID
1.5 minutes. Max ppm = 0.0 ppm.

Vironics on-site 13:05

Setup at 1st location
old Spn Screen \approx 50' South

KPS-JCO-SV-103D 4.0' Rec.
0-0.35' Br moist silt/ffs. Topsoil
0.35-1.1' Orange dense fs 1.1' silt
tr grv. Siltc 1.1-4.0' Dr Br-Black
Sand + grv + slag. Brick chips

4-6' 2.0' Rec. 0-5' Dr Br moist
f. ms. 0.5-2.0' Lit Trash - Ash sand + Gr.
Bentonite 4-6' Hydrate
Set Screen 3.5-3.0' Bgs
Sand 2.5-4.0' Bent 1.0-2.5'
Sand 0-1.0 w/ Red Box Lid Below sod.

Location Kenilworth Park, DC Date 3/20/09
 Project / Client NPS 3-0700-11 TRD

NPS-JCO-SV-104D
 0-4' 3.3' Rec.
 0-0.4' Br moist silt 1.4' ss. Topsoil
 0.4-0.9' Orange moist/wet ms-fs.
 silt. 0.9'-2.1' Gray - Dry gray Black Ash
 + grv. glass shards in bottom 0.05'.
 2.1-2.7' Dr Br fs. 2.7-3.3' Gray
 Dr gray Black Ash / + grv. white -
 gray wet/sat.
 Set screen @ 2.7' - 3.2'
 Sand peat 2.5' - 3.3'
 X Bentonite, granular 1.0-2.5'
 Sand w/ Rd Box cover 0-1.0' Below Sed

Location Kenilworth Park, DC Date 3/20/09
 Project / Client NPS 3-0700-11 TRD

NPS-JCO-SV-105D
 0-4' 2.0' Rec. soft
 0-0.5' Br moist silt same fs.
 Topsoil. 0.5-1.0 Orange moist
 fs + grv. 1.0-1.4' Dr Br moist silt +
 grv. glass shards 1.4-1.8 Tan/Br moist
 fs + silt lit grv. 1.8-2.0' Red
 Brick + Black Ash.
 4.6' - 2.6' Rec
 0-0.2' Red moist fs-ms + glass chips
 0.2-2.2' Br - Dr Br fs. Lit grv.
 2.2-2.6' Black moist fs - grv
 ash + slag.
 Screen 3.5-4.0' Sand to 2.8'
 Bent. to 1.0' Sand - 0.0-1.0
 w/ Road Box lid for marking (below sed)

Location Menilworth Park DC Date 3/20/09
 Project / Client NPS 3-0700-11 TRW

HPS-JW-SV-106D
 0-4' 2.7' Rec.
 0-0.4' Br moist silt h+fs
 0.4-1.0' orange moist fs 1.1' gry SMC
 1.0-2.2' Dr gray Blacke Ash mixed
 w/ fs + gry. lit glass frags throughout
 4-6' 2.2' Rec
 0-0.6' Dr Br moist fs-gry. glass
 fragments 0.6-1.9' Dr. Br - Pr orange
 fs 1.1' gry. 1.9-2.2' Bl - white - gray
 ash cinders
 Screen 3.5-4.0' Sand to 2.3'
 Benf. to 1.0' Bgs Sand to surface
 w/ Wood Box lid Below Sod

Location Menilworth Park DC Date 3/20/09
 Project / Client NPS 3-0700-11 TRW

HPS-JCO-107D
 0-4' 2.7' Rec.
 0-0.15' Br moist silt 1.1' fs Topsoil.
 0.5-2.3' Orange moist ms-fs.
 gry 0.75-1.05' 1.4-1.5'
 2.3-2.7 Black moist cinders
 and glass shards. 0.0 ppm
 4-6' 1.8' Rec.
 Bl Wood chunks. 0-0.3'
 0.3-1.4' Dr Br - Bl. gry. some
 Bl cinders ^{cont} 1.4-1.8' Dr Br fs-ms.
 No VP Screen installed.

offsite 19:00

Location Hemilworth Park DC Date 3/21/09
 Project / Client NPS 3-0700-11

On site 8:30

Weather Clear Mid 30s

Calibrate Gm 2000

S/N GMO7600

Barometric Pressure 30.35 Hg

Calibrate City to 50%

CO₂ to 35%

O₂ to 20.9%

Cal Gas - Spec Air Time Env

Lot # 00867E Exp Date 12/4/11

PEP Calibration

Setup @ Vapor Tent KPS-JCO-SV-103D

Duplicate Sample collected.

Purged Vapor screen before sample collection, See field sheets for additional sample information and location

Off site 14:30

CHAIN OF CUSTODY RECORD

9047

Client / Project Name <i>M/S - King North Hill & Sons, Inc</i>		Project Location <i>White Station, VT</i>		ANALYZES	
Project No. <i>2-12-00-11</i>		Field Logbook No. <i>FR-1 / Fullerton</i>			
Sampler: (Signature) <i>[Signature]</i>		Chain of Custody Tape No. <i>Mr. Harris</i>			
Sample No. / Identification	Date	Time	Lab Sample Number	Type of Sample	REMARKS
<i>MS-300-SV-1029</i>	<i>3/1/04</i>	<i>13:22</i>		<i>Mr (50160)</i>	<i>27 10782850</i>
<i>MS-300-SV-1028</i>		<i>14:10</i>			<i>23 1072 40</i>
<i>MS-300-SV-1029</i>		<i>12:14</i>			<i>27 0117 2395</i>
<i>MS-300-SV-1029</i>		<i>10:14</i>			<i>27 0127 2563</i>
<i>MS-300-SV-1029</i>		<i>10:14</i>			<i>25 0135 56</i>
<i>MS-300-SV-1029</i>		<i>10:14</i>			<i>30 0109 1306</i>
<i>MS-300-SV-1029</i>		<i>10:14</i>			<i>25 1099 2.6</i>
Relinquished by: (Signature)		Date	Time	Received by: (Signature)	
Relinquished by: (Signature)		Date	Time	Received for Laboratory: (Signature)	
Sample Disposal Method:		Disposed of by: (Signature)		Date	Time
SAMPLE COLLECTOR		ANALYTICAL LABORATORY		Shipper ID #	
100 State Street, Suite 600 Montpelier, VT 05602 (802) 229-4600 Fax (802) 229-5876		Spectrum Analytical Ayerham MA (603) 759-7115		<i>Courtesy/Boo</i>	

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

TERMS AND CONDITIONS

Due to the high costs of media used for air sampling, the following terms and conditions are summarized below for your information and our laboratory's use.

1. Media shall be returned in the same condition as received, if not, full replacement costs will be invoked to client.
2. Media will be returned to the laboratory within ten days of receipt.
3. Media not returned to the laboratory for any reason will be charged a rental fee as described below.
 - Summa Canisters not returned after ten days \$ 50.00 rental fee per week per canister
 - Summa Canisters not returned \$900.00 per canister – plus rental fee
 - Passive Flow Controller \$600.00 per controller
 - Stainless steel tubing attachment not returned \$ 15.00 per canister
 - In-line Air Sampling Filter not returned \$100.00 per filter
4. Cleaning fee for media returned unused \$ 50.00 per canister

CHAIN OF CUSTODY RECORD - INSTRUCTIONS

GENERAL

1. All applicable information must be completed.
2. Forms must be completed legibly and in indelible ink.
3. Any errors must be corrected by a single line strikethrough along with the date and initials of the individual making the correction.

FORM COMPLETION

4. **Page Numbering** - Enter the total number of pages and the page number of each individual page.
5. **Special Handling** – Check whether standard or rush turn around time is needed. For rush TAT indicate date.
6. **Report To** - Enter the company name, address, phone and fax numbers.
7. **Project Mgr.** - Enter the Project Manager's name.
8. **Invoice To** - Enter the company name, address, phone and fax numbers.
9. **P.O. No.** - Enter P.O. number to appear on invoice.
10. **RQN** - List quotation number if applicable.
11. **Project Number/Site Name/Location/State** - Enter project number (if applicable). The project name and location/state must be completed.
12. **Sampler(s)** - Print name(s) of sampler(s) and the organization by which they are employed.
13. **SAMPLE INFORMATION** - It is the intent of this form that each unique sample taken from the same location at the same time be listed per line.
 - a. **Sample ID** - Enter the field sample ID number(s) of each unique sample (s).
 - b. **Date** - Enter the date(s) sampled.
 - c. **Time Start** - Enter the start time of sample collection. Military time preferred.
 - d. **Time Stop** - Enter the stop time of sample collection. Leave blank for grab sample.
 - e. **Canister Pressure Start** - Enter pressure at time of start of sample.
 - f. **Canister Pressure Stop** - Enter pressure at time of end of sample.
 - g. **Interior Temp. Start** - Enter temperature at time of start of sample.
 - h. **Interior Temp. Stop** - Enter temperature at time of end of sample.
 - i. **Analyses** - Specify the test(s) to be requested by method number(s).
 - j. **Matrix** - Enter a matrix type.
 - k. **Check box if canister is returned unused** - Check if no analysis required for canister.
14. **Temperature/Pressure** - Complete as necessary
15. **Special Instructions/QC Requirements** - Pertinent remarks about the sample or sample condition may be noted as well. List any QA/QC notes including reporting level or applicable limits to be met.
16. **REPORT DELIVERY** - Indicate whether results are to be emailed and list email address. Also indicate EDD format if one is needed in addition to PDF of laboratory report.
17. **Condition Upon Receipt** - For laboratory use only.
18. **SIGNATURES FOR CUSTODY PURPOSES** - Use as many lines as necessary to show transfer and receipt of samples.
 - a. **Relinquished by** - Signature of person who relinquishes samples.
 - b. **Received by** - Signature of person who accepts samples.
 - c. **Date/Time** - List date and time of sample transfer.

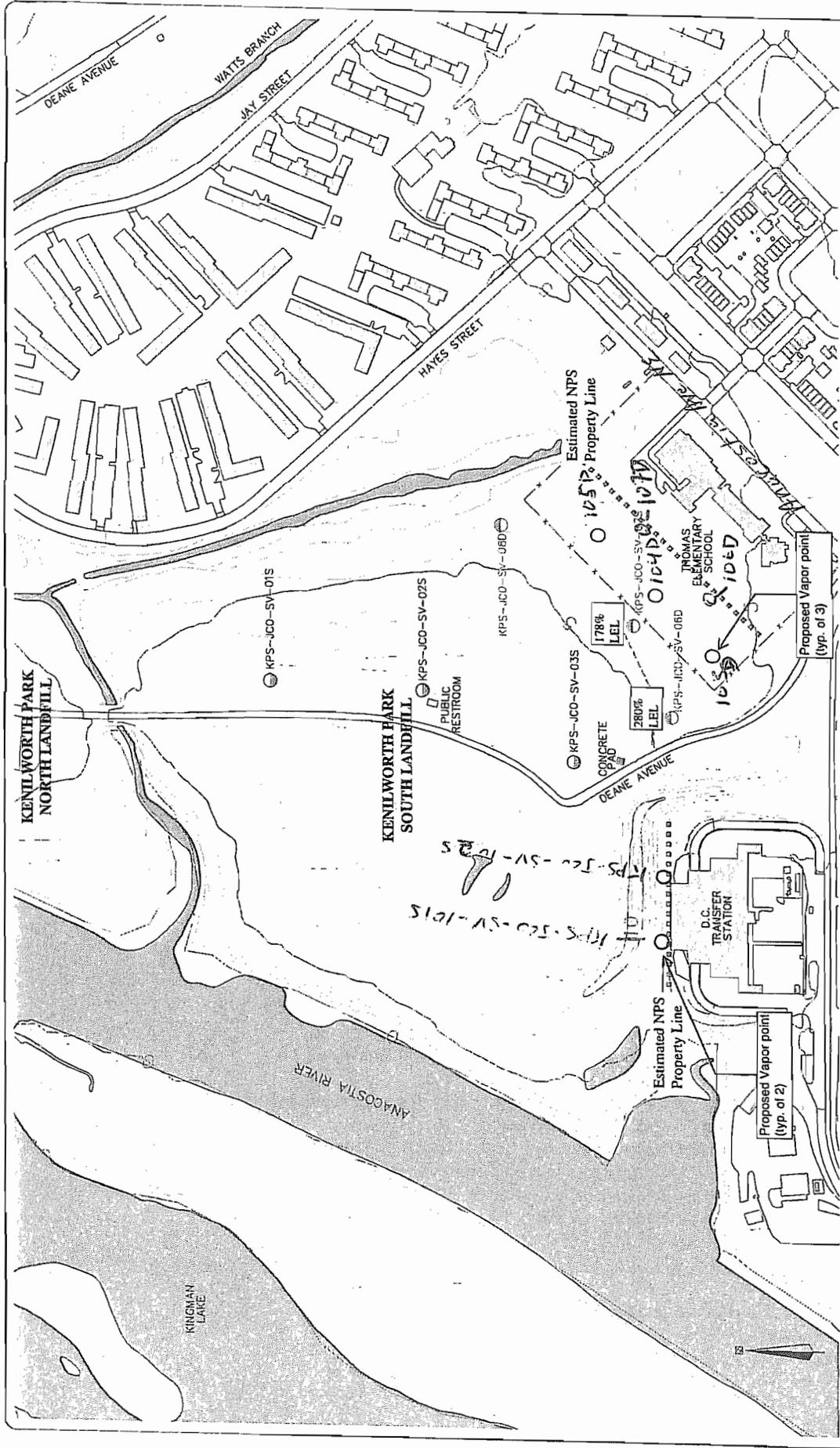


FIGURE 3
 PROPOSED ADDITIONAL SOIL VAPOR PROBES
 KENILWORTH PARK SOUTH
 WASHINGTON, DISTRICT OF COLUMBIA

100 Bus Street, Suite 600
 Alexandria, VA 22302
 (802) 220-4800
 Date: 12/20/03
 Drawn by: DKS
 Checked by: DEVS
 Date: 12/20/03
 Project: 0302011

The
 Johnson
 Company

Shallow Soil Vapor Sampling Location*
 Deep Soil Vapor Sampling Location*
 Location Established by Trimble GPS
 Base Map: District of Columbia
 Geographic Information System

LEGEND
 Existing Building
 Wooded Area
 Surface Water
 1m Ground Surface Contour
 Fenceline (Approximate)
 Sewer Line*

Proposed Vapor point
 (typ. of 2)

Proposed Vapor point
 (typ. of 3)

SCALE IN METERS
 0 50 100 150
 CAD/She.dwg

▲ **Pine Environmental Services, Inc**

29 Washington Ave. Unit A, Scarborough, ME 04074

888-779-PINE(Toll-Free)

207-797-4100(Phone)

207-797-5174(Fax)

pine-me@pine-environmental.com

Certificate of GEM 2000 Calibration

GEM 2000 Serial Number gm07600/04 was calibrated to the manufacturer's specifications with NIST standards.

Model: 2000

Pine No: 4379

Serial No: gm07600/04

lot Number:87303 (Gem-50-35)

Calibration Standard	Instrument Output	Allowable Range	% Difference
Methane: 50%	50%	47.5-52.5 %	0%
Carbon Dioxide: 35%	35%	33.25-36.75 %	0%

Environmental Conditions of Test Area:

Temperature Degree 70 %Relative Humidity 23
F:

Calibrated By: Paul Troutman

Date: 3/17/2009 4:02:00 PM

All instruments are calibrated by Pine Environmental Services, Inc. according to the manufacturer's specifications, but it is the customer's responsibility to calibrate and maintain this unit in accordance with the manufacturer's specifications and/or the customer's own specific needs.

**Notify Pine Environmental Services, Inc. of any defect within 24 hours of receipt of equipment
Please call 888-779-PINE for Technical Assistance**

(discontinued printing list)

▲ **Pine Environmental Services, Inc**

29 Washington Ave. Unit A, Scarborough, ME 04074
 888-779-PINE(Toll-Free)
 207-797-4100(Phone)
 207-797-5174(Fax)
 pine-me@pine-environmental.com

GEM 2000 Packing List

Pine No: 4379

Serial No: gm07600/04

Standard Items	Prepared	QC Check	Received by Customer	Received by Pine
Manual	/	/	/	/
Quick reference card	/	/	/	/
Charger and AC power cord	/	/	/	/
(2) 4' lengths of sample tubing w/ (4) male quick connects	/	/	/	/
Hydrophobic filter assembly	/	/	/	/
(2) extra male quick connects	/	/	/	/
NIST traceable calibration sheet	/	/	/	/
Extra hydrophobic filter	/	/	/	/
Optional Accessory	Prepared	QC Check	Received by Customer	Return to Pine
CH4 and CO2 calibration gas mix	/	/	/	/
Low O2 calibration gas	/	/	/	/
.5 lpm gas regulator + tubing w/ q-connect	/	/	/	/
H2S sensor pod	/	/	/	/
CO sensor pod	/	/	/	/
H2S calibration gas	/	/	/	/
CO calibration gas	/	/	/	/
temperature probe	/	/	/	/
Software and comm. cable	/	/	/	/

Prepared By: PIQC By: [Signature]

Date: 3/17/2009

This packing list is to ensure that every item needed to operate the unit was sent and received. Upon receiving a shipment, please fill out the "Received by customer" column. Call Pine within 24 hrs. of receiving the equipment if any pieces are missing, damaged, or malfunctioning. Thank you for choosing Pine Environmental Services, Inc.

For Technical Support call 888-779-PINE

APPENDIX 2
SOIL VAPOR PROBE CONSTRUCTION AND SAMPLING LOGS
(OCTOBER 2008 AND MARCH 2009)

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-SV-01 Field Personnel: J-B / TRO Recorded by: J-B

Permit Number: / / Installation Date: 10/14/08 Driller: J-B / TRO
 Drilling Method: / / Drilling Fluid: / / Fluid Loss During Drilling: / /
 Ambient PID Reading: / / Borehole PID Reading: 0.3 ppm background

Well Construction Details: (all measurements relative to ground surface)

Riser Pipe Material: Teflon Tubing

Sandpack Material: Filter Sand
 Top: 14 Bottom: 23

Screen Material: SS
 Top: 16" Bottom: 23"
 Length: 6" Diameter: 1/2"

Protective Casing AA Material: / /
 Slab Thickness: / /
 Material Under Slab: / /
 Road Box Seal: / /

Annular Seal Material: Bentonite
 Top: 10 Bottom: 14

Secondary Seal Material: / /
 Top: / / Bottom: / /

Notes: Tan sand w/ stones grading to reddish brown brick chips @ ~22" backfill above bentonite w/ native soil

Integrity Testing:

Date Completed: / / Injection Pressure: / /
 Tracer Type: / / Tracer Grade: / /

Tracer Gas Detection Meter:
 Model: / /
 Serial: / /

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: TRO / J-B Method: Teflon tube from V.P. JCO #: / /

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-JCO-SV-01</u>	<u>10/17/08</u>	<u>9:10</u>	<u>9:25</u>	<u>0132</u>	<u>29"</u>	<u>1"</u>	<u>8226</u>

Notes: / /
 / /
 / /

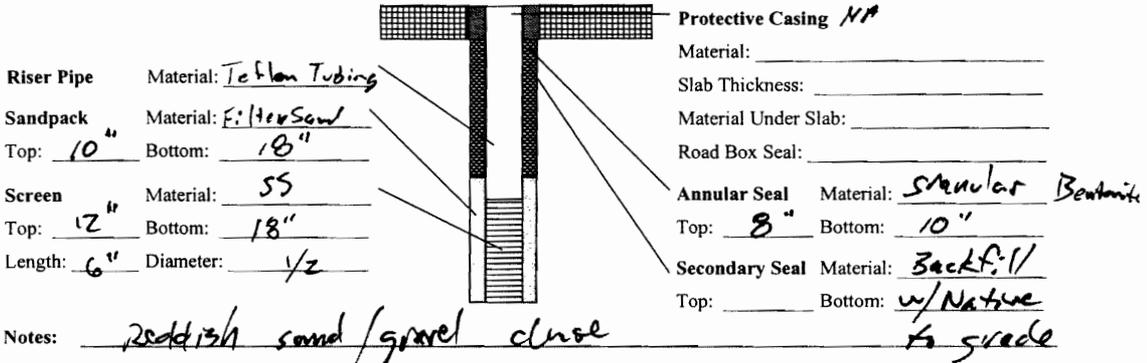
Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-JCO-SV-02 Field Personnel: TR0/J-B Recorded by: J-B
 Permit Number: - Installation Date: 10/14/08 Driller: J-B/TRC
 Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: - Borehole PID Reading: 8 ppm

Well Construction Details: (all measurements relative to ground surface)



set off 10' N from 1st hole @ SS-02

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TR0/J-B Method: _____ JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
KPN-JCO-SV-02	10/14/08	9:38	9:53	1074	29	1	8226

@ SS-02 Notes: 1st hole 25" BGS @ 18" ash/black/odor
8 ppm methane PID
CH4 = 0.4%, CO2 = 0.2%, O2 = 19.7% LEL = 9%

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

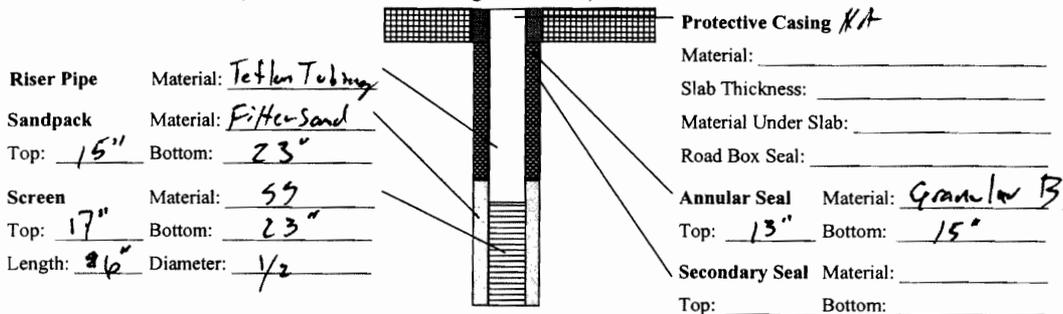
Well ID: KPN-JCO-SV-03 Field Personnel: J.D. / TRO Recorded by: J.D.

Permit Number: - Installation Date: 10/14/08 Driller: -

Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -

Ambient PID Reading: 0.2 ppm Borehole PID Reading: 0.3 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Reddish brown sand w/ gravel
Backfill w/ native to grade

Integrity Testing:
 Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: _____ Method: _____ JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-JCO-SV-03</u>	<u>10/17/08</u>	<u>9:47</u>	<u>10:09</u>	<u>0127</u>	<u>30</u>	<u>2</u>	<u>8226</u>

Notes: _____

Soil Gas Well Construction Log

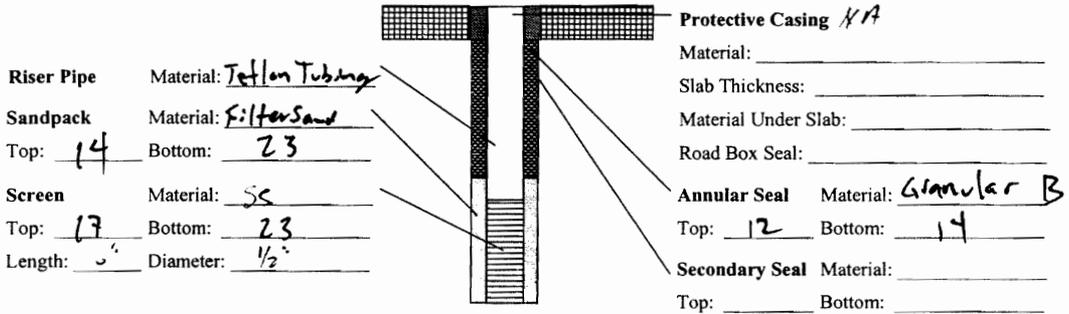
KPN
SV-04

The Johnson Company, Inc. pg. 1/1
100 State Street, Suite 600
Montpelier, VT 05602
Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
Project Number: 3-0700-11 (126)
Site Location: Northeast Washington, DC

Well ID: KPN-JCO-SV-04 Field Personnel: J.B / TRO Recorded by: J.D
Permit Number: - Installation Date: 10/14/08 Driller: -
Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -
Ambient PID Reading: 0.0 Borehole PID Reading: 6.3

Well Construction Details: (all measurements relative to ground surface)



Notes: Red / Brown sand and gravel v. dense cannot auger

Integrity Testing:
Date Completed: _____ Injection Pressure: _____
Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:
Model: _____
Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
Sampler: TRO / J.B Method: Tetlon tube from VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-JCO-SV-04</u>	<u>10/17/08</u>	<u>10:15</u>	<u>10:40</u>	<u>0131</u>	<u>29</u>	<u><2</u>	<u>8226</u>

Notes: _____

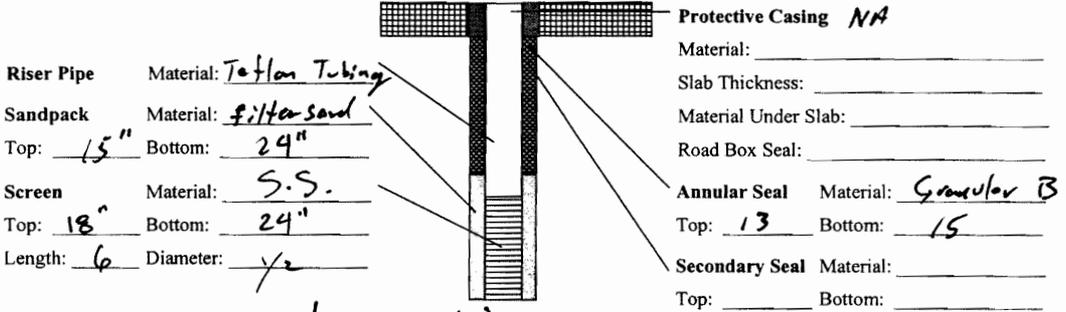
Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-5C0-SV-05 Field Personnel: TR0 · J.B Recorded by: J.B
 Permit Number: - Installation Date: 10/14/08 Driller: -
 Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.5 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Brown Gravel clay/silty @ ~ 18"
Bricks, maybe little ash mixed in towards B.O.H.

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TR0 / J.B Method: Summa - Teflon - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-5C0-SV-05</u>	<u>10/17/08</u>	<u>10:23</u>	<u>10:47</u>	<u>1077</u>	<u>30</u>	<u>2</u>	<u>8226</u>

Notes: _____

Soil Gas Well Construction Log

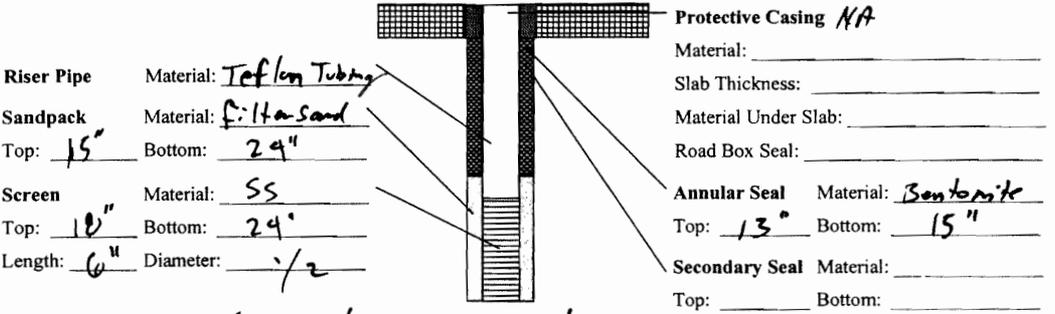
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-360-SV-06 Field Personnel: TR0/J.B Recorded by: J.B

Permit Number: - Installation Date: 10/14/08 Driller: -
 Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.4 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Reddish sand some gravel
Top 12" all sand

Integrity Testing:	Time	Sampling Rate	Concentration
Date Completed: _____ Injection Pressure: _____			
Tracer Type: _____ Tracer Grade: _____			
Tracer Gas Detection Meter:			
Model: _____			
Serial: _____			

Sampling Details:
 Sampler: TR0/J.B Method: Summa - Teflon Tubing to VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-360-SV-06</u>	<u>10/17/08</u>	<u>13:44</u>	<u>14:02</u>	<u>1082</u>	<u>30</u>	<u>1</u>	<u>8226</u>

Notes: @ low point in cap

Soil Gas Well Construction Log

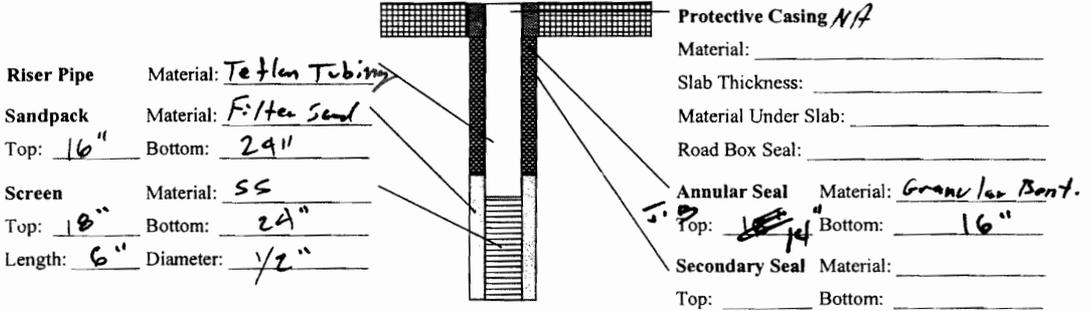
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-58-07 Field Personnel: TRO/J.B. Recorded by: J.B.

Permit Number: - Installation Date: 10/14/08 Driller: -
 Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.9

Well Construction Details: (all measurements relative to ground surface)



Notes: Reddish sand gravel 0-12"
clay/silt mixed in -12" BGS to 24"

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TRO/J.B. Method: Summa - Tetlon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
KPN-JCO-58-07	10/17/08	13:56	11:15	0103	30"	71"	8226
" " " DUP	" "	" "	" "	0106	72	4	8226

Notes: -20' N. of gravel P. lot.

Soil Gas Well Construction Log

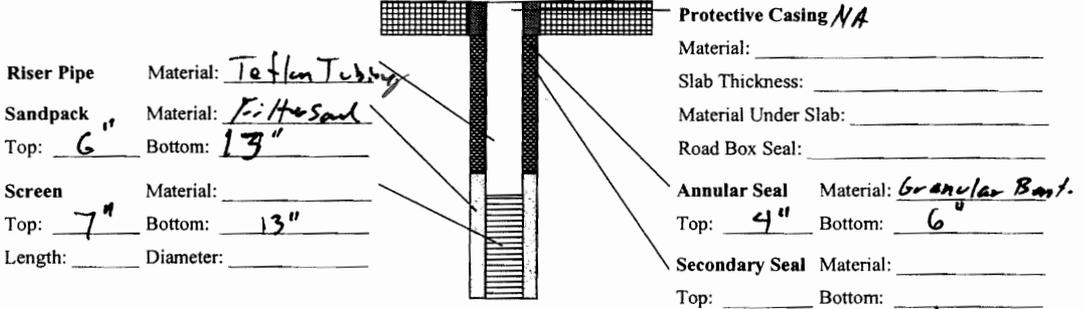
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-50-SV-08 Field Personnel: TRO/JSB Recorded by: JSB

Permit Number: - Installation Date: 10/14/08 Driller: -
 Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.6 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: T.D. 13" ~ 6" sand br. then soil mixed w/ black ash/glass no odor

Integrity Testing:
 Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____
Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: TRO/JSB Method: Summa - Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-50-SV-08</u>	<u>10/17/08</u>	<u>14:23</u>	<u>14:52</u>	<u>0112</u>	<u>29</u>	<u>2</u>	<u>9227</u>

Notes: 3rd hole glass/ash encounter in all three w/m 12" Δ g. surface

Soil Gas Well Construction Log

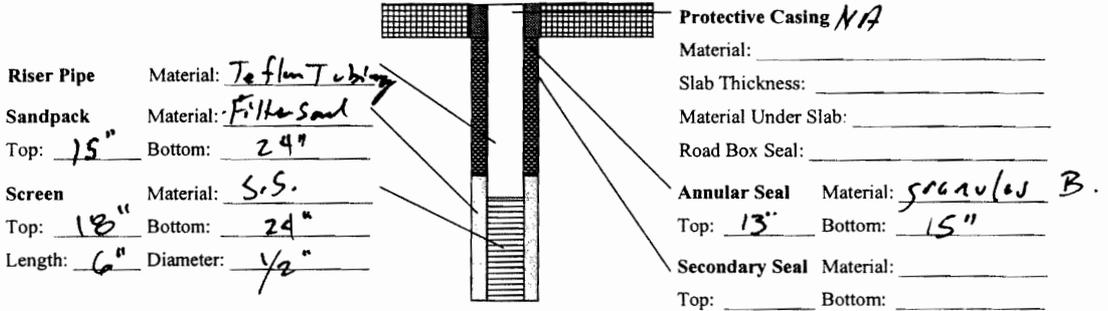
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-360-SV-09 Field Personnel: TRO / J.B Recorded by: J.B

Permit Number: - Installation Date: 10/19/08 Driller: -
 Drilling Method: - Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.7 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: dense red/brown sand w/stones

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TRO / J.B Method: Summa - Teflon Tube - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-360-SV-09</u>	<u>10/17/08</u>	<u>14:59</u>	<u>15:16</u>	<u>0128</u>	<u>29</u>	<u>> 1</u>	<u>8227</u>
<u>" " " DUP</u>	<u>" "</u>	<u>" "</u>	<u>" "</u>	<u>0135</u>	<u>30</u>	<u>2</u>	<u>8227</u>

Notes: _____

Soil Gas Well Construction Log

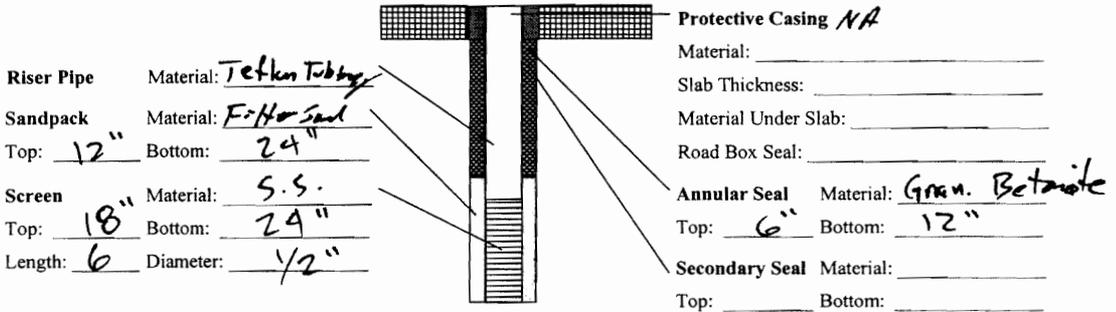
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-JCO-SV-10 Field Personnel: TR0/J.B Recorded by: J.B

Permit Number: Shallow Installation Date: 10/15/08 Driller: Vivonex
 Drilling Method: Geoprobe Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.4

Well Construction Details: (all measurements relative to ground surface)



Notes: _____

0-12" brown fine sandy loam
12-24" Red sand and gravel

Integrity Testing:	Time	Sampling Rate	Concentration
Date Completed: _____ Injection Pressure: _____			
Tracer Type: _____ Tracer Grade: _____			
Tracer Gas Detection Meter:			
Model: _____			
Serial: _____			

Sampling Details:
 Sampler: TR0/J.B Method: Summa - Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-JCO-SV-10 S</u>	<u>10/17/08</u>	<u>8:27</u>	<u>8:42</u>	<u>0107</u>	<u>29</u>	<u>1</u>	<u>8227</u>

Notes: _____

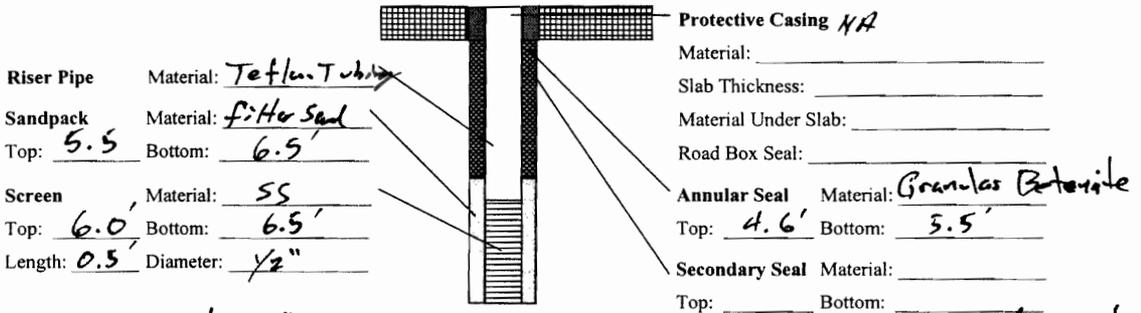
Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-JCO-SV-10 Field Personnel: J-B/770 Recorded by: J-B
 Permit Number: - Deep Installation Date: 10/15/08 Driller: Vironex
 Drilling Method: Geoprobe Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 4.2

Well Construction Details: (all measurements relative to ground surface)



Notes: Drive 4' 42" Recovery 0-12" Br. F.S.L.; 12-24" Red sand/gravel;
24-36" Dr. Br./Red sand/gravel with bits of ash/glass.
36-42" red/brown gravel, little glass in tip.

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TR05B Method: Summa-Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-SV-10D</u>	<u>10/17/08</u>	<u>8:37</u>	<u>8:53</u>	<u>0124</u>	<u>29</u>	<u>1</u>	<u>8227</u>

Notes: Drive 4-6.5' Bgs ~ 28" Recovery
~ 4-6' brown sand and gravel some ash/glass
6-6.3 clean brown sand

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

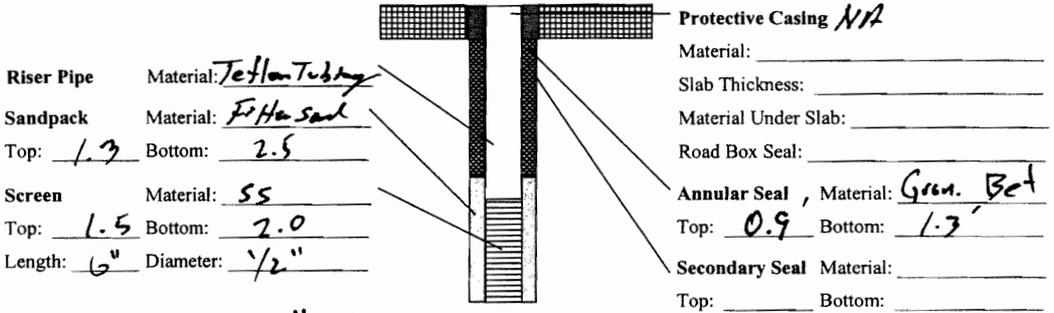
Well ID: KPNJCO-SV-11 Field Personnel: TRO/S-D Recorded by: J-B

Permit Number: shallow Installation Date: 10/15/08 Driller: Vivonex

Drilling Method: Geoprobe Drilling Fluid: - Fluid Loss During Drilling: -

Ambient PID Reading: 0.0 Borehole PID Reading: 1.0 ppm 3' south of SV-11 Deep

Well Construction Details: (all measurements relative to ground surface)



Notes: drive 30" Rec. 30"
0-12" brown silty loam
12-18" brown silty sand, little gravel 18-30" red/bk. silty s & G

Integrity Testing:	Time	Sampling Rate	Concentration
Date Completed: _____ Injection Pressure: _____			
Tracer Type: _____ Tracer Grade: _____			
Tracer Gas Detection Meter:			
Model: _____			
Serial: _____			

Sampling Details:
 Sampler: TRO / J.D Method: Summa-Teflon Tubing-VT JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPNJCO-SV-11 S</u>	<u>10/17/08</u>	<u>8:11</u>	<u>8:41</u>	<u>1089</u>	<u>31"</u>	<u>3"</u>	<u>8227</u>

Notes: _____

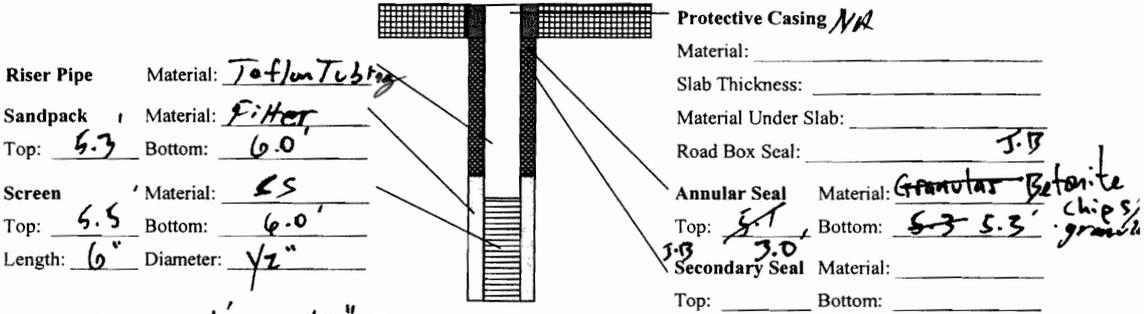
Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-JCO-SV-11 Field Personnel: TRO / J.B Recorded by: J.B
 Permit Number: Deep Installation Date: 10/15/08 Driller: Vironex
 Drilling Method: Geoprobe Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.2 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Drive 4' ~ 42" Recovery
0-8" F.S.L. 8-30" red/brown sand & gravel
30-42" br. silty sand w/some ash & little glass

Integrity Testing:		Time	Sampling Rate	Concentration
Date Completed:	Injection Pressure:			
Tracer Type:	Tracer Grade:			
Tracer Gas Detection Meter:				
Model:				
Serial:				

Sampling Details:
 Sampler: TRO / J.B Method: Summa - Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-JCO-SV-11 D</u>	<u>10/17/08</u>	<u>8:02</u>	<u>8:30</u>	<u>1079</u>	<u>30</u>	<u>3</u>	<u>0.227</u>

Notes: Drive 4-6' 16" recovery
top 2" some ash in silty sand
then reddish silty clay

Soil Gas Well Construction Log

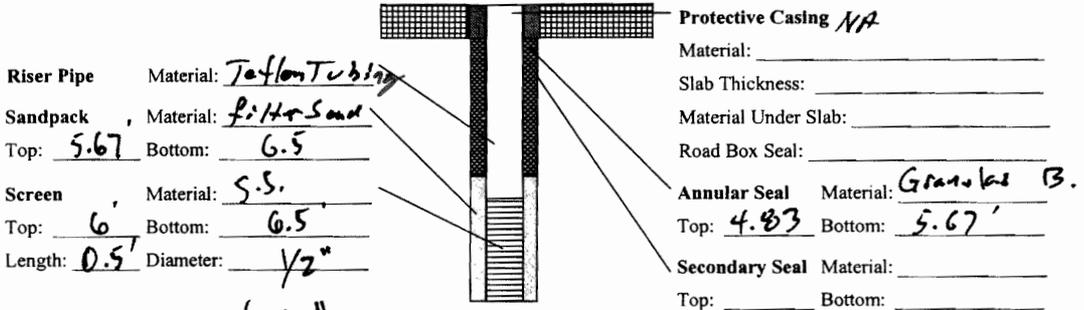
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-JCO-SV-12 Field Personnel: J.B / TRO Recorded by: J.B

Permit Number: - Installation Date: 10/15/09 Driller: Viroxex
 Drilling Method: Geoprobe Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.1 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Drive 4' 44" Recovery
red/brown sand and gravel w/ coarse 2-3" band
of gran. fill @ 12" & 30" bss

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TRO/SB Method: Summa - Teflon Tubing - VT JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-JCO-SV-12</u>	<u>10/17/08</u>	<u>7:40</u>	<u>8:01</u>	<u>0114</u>	<u>29</u>	<u>21</u>	<u>8227</u>

Notes: Drive 4-6.5 30" recovery
Fine Reddish sand - no stones

Soil Gas Well Construction Log

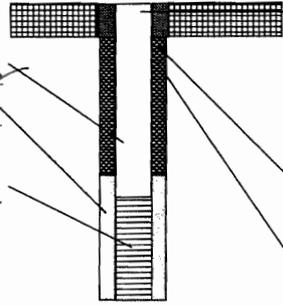
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPN-JCO-SV-13 Field Personnel: TRB/J.B Recorded by: J.B

Permit Number: - Installation Date: 10/15/08 Driller: V. Vonex
 Drilling Method: Geoprobe Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.1 ppm

Well Construction Details: (all measurements relative to ground surface)



Riser Pipe Material: Teflon Tubing
 Sandpack Material: Filter
 Top: 5.0' Bottom: 6.0'
 Screen Material: S.S.
 Top: 5.5' Bottom: 6.0'
 Length: 6" Diameter: 1/2"

Protective Casing NA
 Material: _____
 Slab Thickness: _____
 Material Under Slab: _____
 Road Box Seal: _____
 Annular Seal Material: Granular Bedrock
 Top: 4.3' Bottom: 5.0'
 Secondary Seal Material: -
 Top: _____ Bottom: _____

7' south of MW-11

Notes: Drive 0-4'; 28" Recovery
0-12" has fine sandy loam; reddish sand/gravel
weightier w/depth

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TRB/J.B Method: Summa - Teflon Tubing - VP JCO #: -

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPN-JCO-SV-13</u>	<u>10/17/08</u>	<u>7:12</u>	<u>7:36</u>		<u>30.5"</u>	<u>2"</u>	<u>0227</u>

Notes: Drive 4 - 6'-2" 18" recovery reddish sand

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

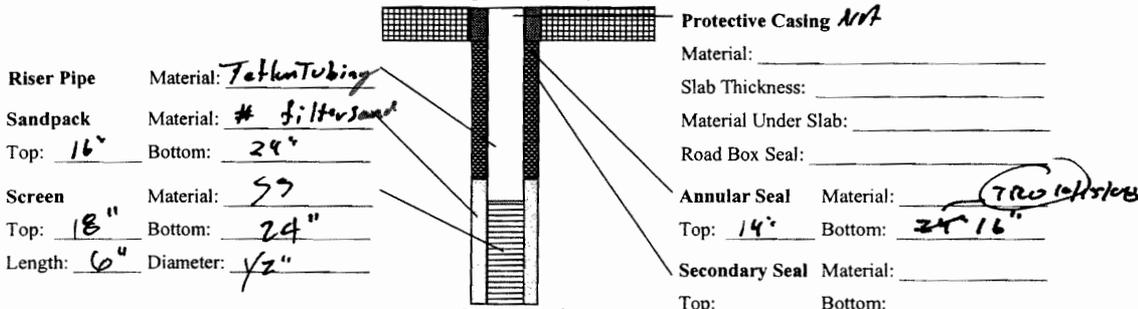
Well ID: KPS-JCO-SV-01 Field Personnel: TR0/J-B Recorded by: J-B

Permit Number: _____ Installation Date: 10/15/08 Driller: _____

Drilling Method: Hand auger Drilling Fluid: _____ Fluid Loss During Drilling: _____

Ambient PID Reading: 0.0 Borehole PID Reading: 5.3 ppm

Well Construction Details: (all measurements relative to ground surface)



Riser Pipe Material: Teflon tubing
 Sandpack Material: # filter sand
 Top: 16" Bottom: 24"
 Screen Material: 57
 Top: 18" Bottom: 24"
 Length: 6" Diameter: 1/2"

Protective Casing NA
 Material: _____
 Slab Thickness: _____
 Material Under Slab: _____
 Road Box Seal: _____
 Annular Seal Material: TR0 cells
 Top: 14" Bottom: 24" 16"
 Secondary Seal Material: _____
 Top: _____ Bottom: _____

Notes: Reddish sand/gravel

Integrity Testing:
 Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____
Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: TR0/J-B Method: Summa-Teflon Tubing-VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPS-JCO-SV-01</u>	<u>10/17/08</u>	<u>13:04</u>	<u>13:29</u>	<u>1072</u>	<u>29</u>	<u>< 1</u>	<u>8228</u>

Notes: _____

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

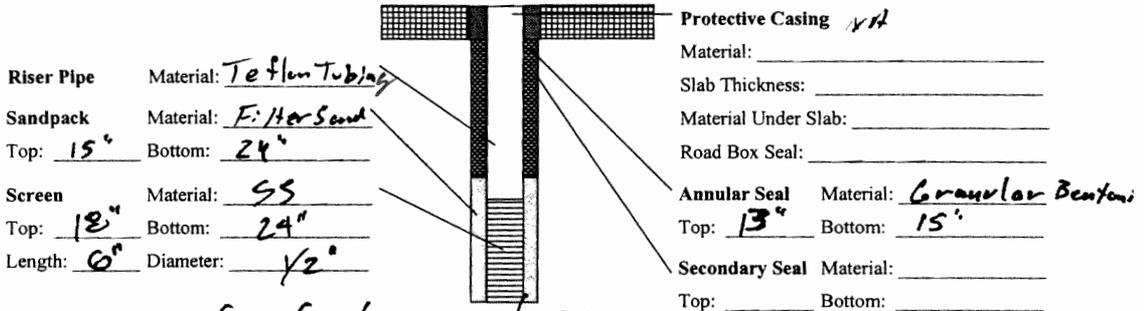
Well ID: KPS-JCO-SV-02 Field Personnel: TRO / J.B Recorded by: J.B

Permit Number: - Installation Date: 10/15/08 Driller: -

Drilling Method: hand auger Drilling Fluid: - Fluid Loss During Drilling: -

Ambient PID Reading: 0.0 Borehole PID Reading: 0.4 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Blown fine sand some stones
cracked valve in Bathroom Building - water spraying

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:

Sampler: TRO / J.B Method: Summa - Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPS-JCO-SV-02</u>	<u>10/17/08</u>	<u>12:58</u>	<u>13:26</u>	<u>1084</u>	<u>30"</u>	<u>3"</u>	<u>8228</u>

Notes: _____

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

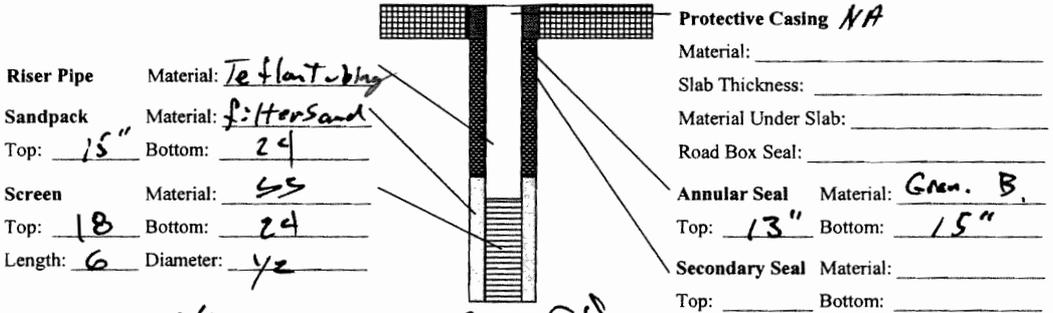
Well ID: KPS-JCO-SV-03 Field Personnel: TRO/J.B Recorded by: J.B

Permit Number: - Installation Date: 10/15/08 Driller: -

Drilling Method: hand auger Drilling Fluid: - Fluid Loss During Drilling: -

Ambient PID Reading: 0.0 Borehole PID Reading: 1.0 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: red/brown sand (new fill)
small stones / brick chips, compact

Integrity Testing:
 Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: TRO/J.B Method: Summa Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPS-JCO-SV-03</u>	<u>10/17/08</u>	<u>12:57</u>	<u>13:19</u>	<u>1083</u>	<u>29.5"</u>	<u>1"</u>	<u>8228</u>

Notes: _____

Soil Gas Well Construction Log

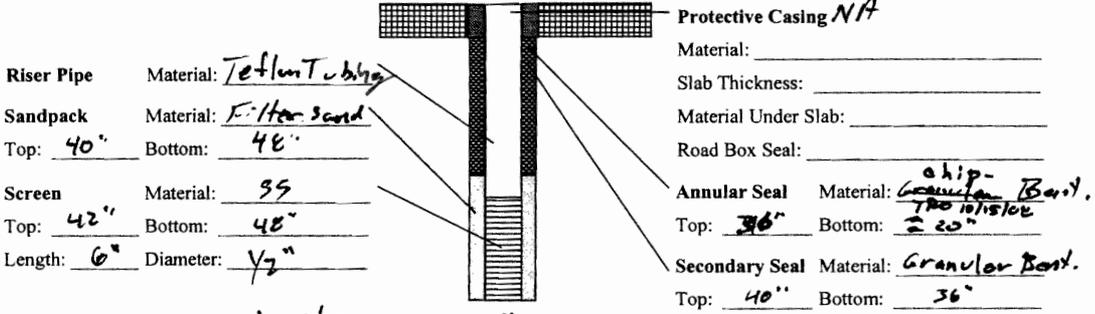
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPS-JCO-SV-06 Field Personnel: TRO/J.B Recorded by: J.B

Permit Number: — Installation Date: 10/15/08 Driller: Vironex
 Drilling Method: Geopipe Drilling Fluid: — Fluid Loss During Drilling: —
 Ambient PID Reading: 0.0 Borehole PID Reading: 1.0 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Drive 0-4' - 4' Rec 0-10" leamy brown sand
10-36" tan silty sand w/brick chips
36-48" dark br./grey silty sand 2-3 lens trace wood/ash

Integrity Testing:
 Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: TRO/J.B Method: Summa-Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPS-JCO-SV-06</u>	<u>10/17/08</u>	<u>12:29</u>	<u>12:48</u>	<u>1086</u>	<u>29"</u>	<u><1</u>	<u>8228</u>

Notes: Drive 4-6' 6" recovery
4" gravel & brick chips; 2" trash
Offset hole and set @ 4' BGS bottom screen

Soil Gas Well Construction Log

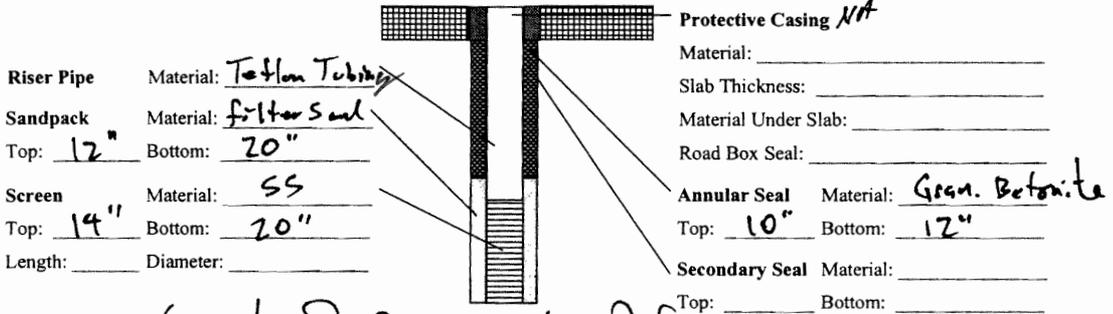
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPS-500-SV-07 Field Personnel: TRO / JTB Recorded by: JTB

Permit Number: - Installation Date: 10/16/08 Driller: -
 Drilling Method: hand auger Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.7 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: 10' east of sewer - 10' N. of fence
brown sand/gravel - some ash mixed in bottom
2-4"

Integrity Testing:
 Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: TRO / JTB Method: Summa - Teflon Tubing - VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPS-500-SV-07</u>	<u>10/17/08</u>	<u>12:19</u>	<u>12:39</u>	<u>1073</u>	<u>31</u>	<u>4</u>	<u>8228</u>
<u>" SV-07 DUP</u>	<u>" "</u>	<u>" "</u>	<u>" "</u>	<u>1091</u>	<u>29</u>	<u><1</u>	<u>8228</u>

Notes: _____

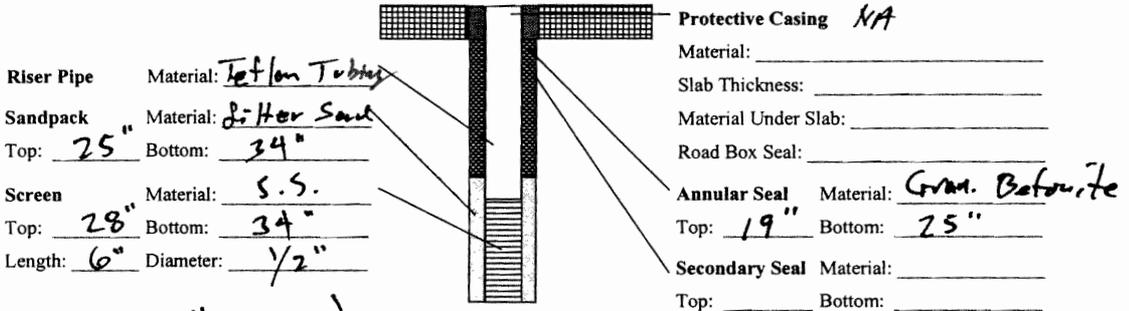
Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington, DC

Well ID: KPS-50-SV-08 Field Personnel: TRO/JB Recorded by: J-B
 Permit Number: - Installation Date: 10/16/08 Driller: -
 Drilling Method: Hand Auger Drilling Fluid: - Fluid Loss During Drilling: -
 Ambient PID Reading: 0.0 Borehole PID Reading: 0.3 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: 0.8" Topsoil
10-30" tan coarse sand
-34" Sandy reddish clay w/ mottles

Integrity Testing:
 Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: _____

Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate	Concentration

Sampling Details:
 Sampler: TRO/JB Method: Summa - Teflon Tubing, VP JCO #: _____

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC
<u>KPS-50-SV-08</u>	<u>10/17/08</u>	<u>12:14</u>	<u>12:35</u>	<u>0166</u>	<u>31</u>	<u>~2.5</u>	<u>0222</u>

Notes: -65' N. of fence line

Soil Gas Well Construction Log

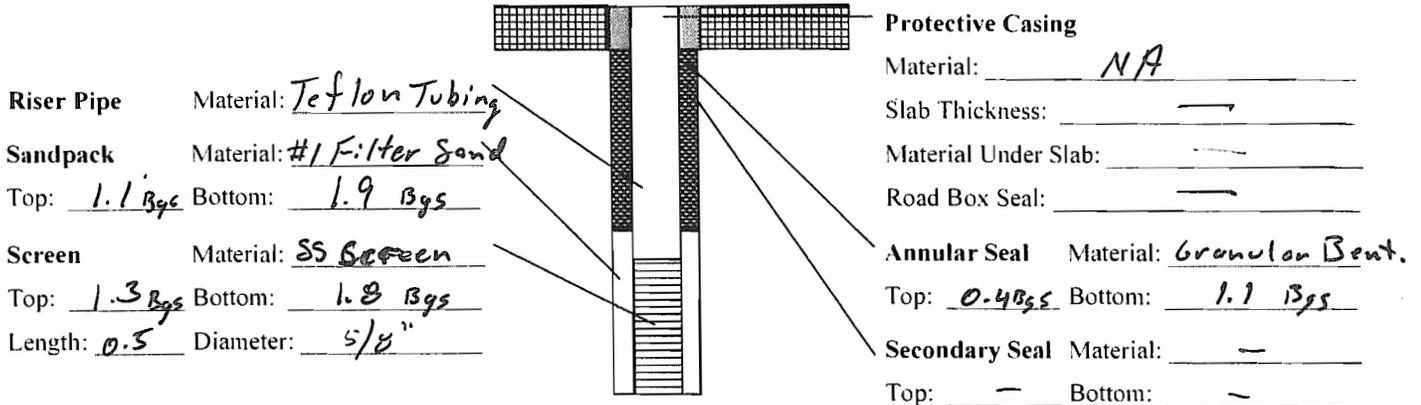
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (26)
 Site Location: North east Washington DC

Well ID: KPS-500-SV-1015 Field Personnel: FRO Recorded by: TRO

Permit Number: — Installation Date: 3/20/09 Driller: JCO/
 Drilling Method: Hand Auger Drilling Fluid: — Fluid Loss During Drilling: —
 Ambient PID Reading: 0.0 ppm Borehole PID Reading: 0.1 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Soils: 0-0.4' Br moist silty sand (Top soil), 0.4-1.9' Br-orange silty fs + gravel Brick fragments (fill).

Integrity Testing:

Date Completed: — Injection Pressure: —
 Tracer Type: — Tracer Grade: Gen zero

Tracer Gas Detection Meter:
 Model: —
 Serial: —

Time	Sampling Rate m ³ /min	Concentration			Balance
		CH ₄	CO ₂	O ₂	
12:47	500	0.0	4.9	15.5	79.5
12:49	↓	0.0	5.0	15.3	79.6
12:52	↓	0.0	4.9	15.4	79.6
12:42	500	0.1 ppm	1.2 max		
12:46	↓	0.0 ppm	—		

Sampling Details: Gen zero Btsand 0.0 0.0 21.0 78.9
 Sampler: TRO Method: Summa - Methane Sampling JCO #: 3-0700-11

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC	Reg #
KPS-JCO-SV-1015	3/21/09	12:53	13:27	1078	28	1	7047	2858
		(29 min)						

Notes: Barometric Pressure 30.53" Hg

Soil Gas Well Construction Log

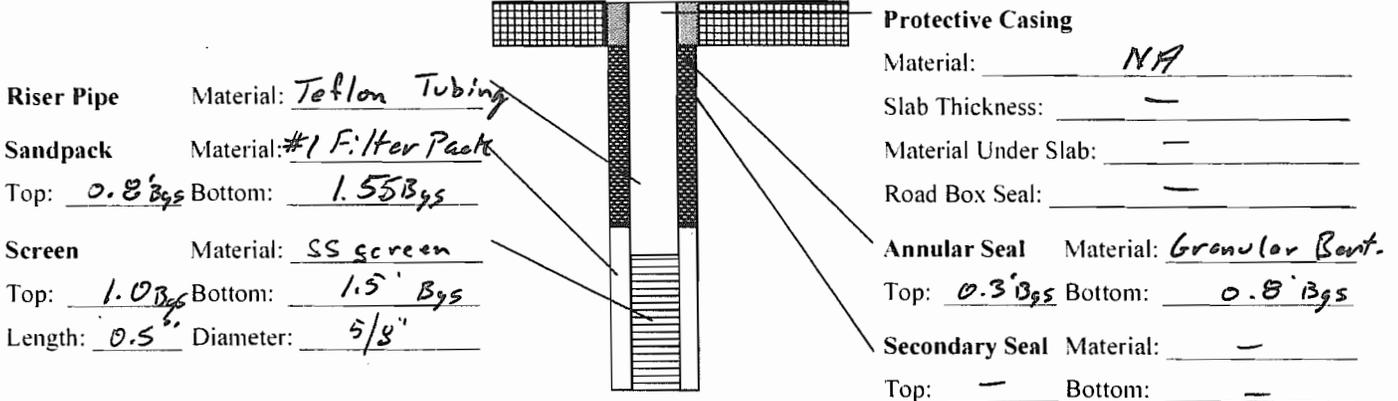
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington DC

Well ID: KPS-JCO-SV-1025 Field Personnel: TRO Recorded by: TRO

Permit Number: — Installation Date: 3/20/09 Driller: JCO
 Drilling Method: Hand Auger Drilling Fluid: — Fluid Loss During Drilling: —
 Ambient PID Reading: 0.0 ppm Borehole PID Reading: 0.0 ppm

Well Construction Details: (all measurements relative to ground surface)



Notes: Soils: 0-0.4' Br moist Silty fs, Little grv. 0.4-1.5' Br/orange silty + Lit. fs + grv.

Integrity Testing:

Date Completed: — Injection Pressure: —
 Tracer Type: — Tracer Grade: Gen 2000

Tracer Gas Detection Meter:

Model: —
 Serial: —

PID

Time	Sampling Rate/min	Concentration			Balance
		0.0	0.7	20.3	
13:01	500	0.0	0.7	20.3	78.9
13:03	↓	0.1	0.6	20.5	78.8
13:06		0.19	0.6	20.6	78.7
12:57	500	0.0 ppm			
13:06	↓	0.0 ppm			

Sampling Details:

Sampler: TRO Method: Summa Canister - Methane Sampling CO #: 3-0700-11

Gen 2000 Bkgnd.

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC	Reg. #
KPS-JCO-SV-1025	3/21/09	13:20	13:36	0118	31			
KPS-JCO-SV-102 Dup	3/21/09	13:20	13:36	0107	29	1		
KPS-JCO-SV-1025	3/21/09	13:47	14:10	1072	31	3	7047	40

Notes: Hose disconnected from Summa Canister # 0118 during part of sample collection. Discard sample canisters. Set up remaining canister for sample collection. Sample collected over 23 minutes
 Barometric Pressure: 30.54" Hg

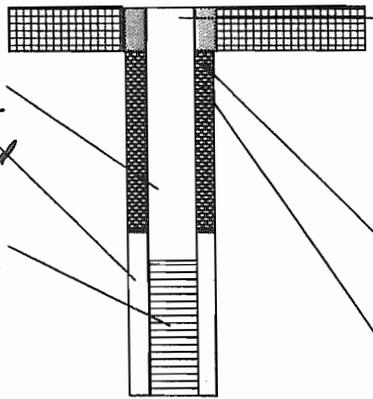
Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill #11
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington DC
 Well ID: KPS-JCO-SV-103D Field Personnel: TRD Recorded by: TRD

Permit Number: — Installation Date: 3/20/09 Driller: JCO/
 Drilling Method: Geoprobe Drilling Fluid: — Fluid Loss During Drilling: —
 Ambient PID Reading: 0.0 ppm Borehole PID Reading: 0.0 ppm

Well Construction Details: (all measurements relative to ground surface)



Protective Casing
 Material: 1/2 Teflon Tubing TRD 3/20/09
 Slab Thickness: —
 Material Under Slab: —
 Road Box Seal: —

Riser Pipe Material: Teflon Tubing

Sandpack Material: #1 Filter Sand
 Top: 2.5 Bottom: 4.0'

Screen Material: SS Screen
 Top: 3.0 Bottom: 3.5
 Length: 0.5' Diameter: 5/8"

Annular Seal Material: Granular Bentonite Hydrated
 Top: 1.0 Bottom: 2.5

Secondary Seal Material: Granular/chipse Bentonite
 Top: 4.0 Bottom: 6.0'

Notes: _____

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: PID

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

Time	Sampling Rate ml/min	Concentration
9:02	500	0.0 ppm
9:15	↓	0.0 ppm
9:18	500	CH ₄ 0.0% CO ₂ 7.4% O ₂ 6.8% Balance 85.8%
9:20	↓	0.0% 7.4% 6.7% 85.8%
9:23	↓	0.0% 7.5% 6.6% 85.7%

Sampling Details:

Sampler: TRD Method: Summa Canister - Methane Sampling JCO #: 3-0700-11

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC	Reg #
KPS-JCO-SV-103D	3/21/09	9:47	10:14	0113	28"	1"	7047	0288
KPS-JCO-SV-103D-Dup	3/21/09	9:47	10:14	0129	29"	2"	7047	2863

Notes: Barometric Pressure 30.54" Hg Total Sample Collection Time 27 minutes
Weather: clear slight breeze mid 30's

Soil Gas Well Construction Log

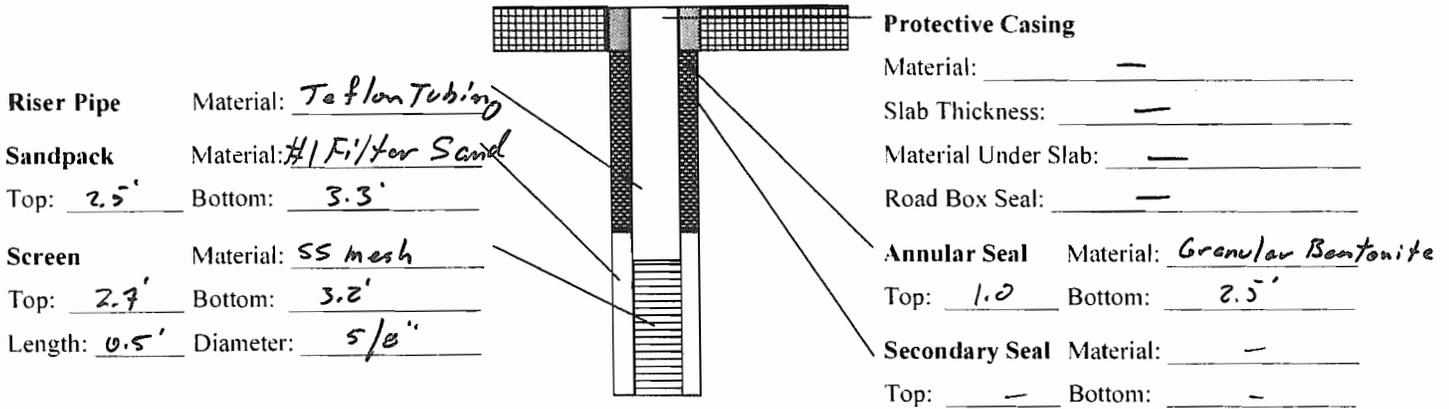
The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (26)
 Site Location: North east Washington DC

Well ID: KPS-JCO-SV-104D Field Personnel: TPO Recorded by: TPO

Permit Number: — Installation Date: 3/20/09 Driller: JCO /
 Drilling Method: Geoprobe Drilling Fluid: — Fluid Loss During Drilling: —
 Ambient PID Reading: 0.0 ppm Borehole PID Reading: —

Well Construction Details: (all measurements relative to ground surface)



Notes: _____

Integrity Testing:	Time	Sampling Rate (ft/min)	Concentration			Balance
			CH ₄	CO ₂	O ₂	
Date Completed: _____ Injection Pressure: _____	10:25	500	0.0	3.9	15.9	80.2
Tracer Type: _____ Tracer Grade: <u>gem 2000</u>	10:27	↓	0.0	3.9	15.7	80.4
Tracer Gas Detection Meter:	10:30	↓	0.0	3.9	15.7	80.4
Model: _____	10:21	500	0.0 ppm			
Serial: _____	10:24	↓	0.0 ppm			
			0.0	0.0	20.6	79.3

Sampling Details:
 Sampler: TPO Method: Summa Canister - Metamex Sample JCO #: 3-0700-11

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC	Reg #
KPS-JCO-SV-104D	3/21/09	10:32	11:02	0109	31	3	7047	1306

Notes: Sample Collection over 30 minutes
Barometric Pressure = 30.54" Hg

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (126)
 Site Location: Northeast Washington DC

Well ID: KPS-JCO-SV-105 Field Personnel: TRO Recorded by: TRO

Permit Number: — Installation Date: 3/20/09 Driller: JCO/

Drilling Method: Geoprobe Drilling Fluid: — Fluid Loss During Drilling: —

Ambient PID Reading: 0.0 ppm Borehole PID Reading: 0.0 ppm

Well Construction Details: (all measurements relative to ground surface)

Protective Casing
 Material: NA
 Slab Thickness: —
 Material Under Slab: —
 Road Box Seal: —

Riser Pipe Material: Teflon Tubing

Sandpack Material: #1 Filter Sand
 Top: 2.8 Bottom: 4.8

Screen Material: SS mesh
 Top: 3.5 Bottom: 4.0
 Length: 0.5' Diameter: 5/8"

Annular Seal Material: Granular Bentonite Hydrated
 Top: 1.0 Bottom: 2.8

Secondary Seal Material: —
 Top: — Bottom: —

Notes: _____

Integrity Testing:

Date Completed: _____ Injection Pressure: 6.8 psi
 Tracer Type: _____ Tracer Grade: 2000

Tracer Gas Detection Meter:

Model: _____
 Serial: _____

PID

Time	Sampling Rate (ml/min)	Concentration			Balance
		CH ₄	CO ₂	O ₂	
10:45	500	0.0	1.8	18.2	79.9%
10:47	↓	0.0	1.8	18.2	79.9%
10:50	↓	0.0	1.7	18.3	79.9%
10:40	500	0.0 ppm			
10:42	↓	0.0 ppm			

Sampling Details:

Sampler: TRO Method: Summa Canister - Methane Sampling JCO #: 3-0700-11

Beograd

0.0 0.0 20.9 78.9

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC	Reg #
KPS-JCO-SV-105D	3/21/09	10:57	11:22	1089	30	3	7047	26

Notes: Sample Collection over 25 minutes
Barometric Pressure = 30.54" Hg

Soil Gas Well Construction Log

The Johnson Company, Inc. pg. 1/1
 100 State Street, Suite 600
 Montpelier, VT 05602
 Tel. (802) 229-4600

Project Name: Kenilworth Park Landfill
 Project Number: 3-0700-11 (26)
 Site Location: Northeast Washington DC

Well ID: KPS-300-SV-106D Field Personnel: TRU Recorded by: TRU
 Permit Number: — Installation Date: 3/20/09 Driller: JCO / Veronics
 Drilling Method: Geoprobe Drilling Fluid: — Fluid Loss During Drilling: —
 Ambient PID Reading: 0.0 ppm Borehole PID Reading: 0.0 ppm

Well Construction Details: (all measurements relative to ground surface)

Riser Pipe Material: Teflon Tubing

Sandpack Material: #1 Fitter Sand
 Top: 2.3 Bottom: 4.0'

Screen Material: SS mesh
 Top: 3.5 Bottom: 4.0
 Length: 0.5' Diameter: 5/8"

Protective Casing
 Material: NA
 Slab Thickness: —
 Material Under Slab: —
 Road Box Seal: —

Annular Seal Material: Granular Bentonite
 Top: 1.0 Bottom: 2.3'

Secondary Seal Material: —
 Top: — Bottom: —

Notes: _____

Integrity Testing:

Date Completed: _____ Injection Pressure: _____
 Tracer Type: _____ Tracer Grade: GEM 2000

Tracer Gas Detection Meter:
 Model: _____
 Serial: _____

Time	Sampling Rate ml/min	Concentration			Balance
		CH ₄	CO ₂	O ₂	
9:59	500	0.076	2.0	18.8	79.270
10:02	↓	0.0	2.0	18.7	79.2
10:06	↓	0.0	2.0	18.7	79.1
9:55	500	PID			
9:58	↓	0.0 ppm			

Sampling Details:

Sampler: TRU Method: Summa Canister - Methane sampling CO #: 3-0700-11
 GEM 2000 Beh grad 0.0 0.0 21.3 78.6

Sample ID	Date	Time Started	Time Ended	Summa Canister #	Vacuum at Start	Vacuum at End	COC	Reg #
<u>KPS-300-SV-106D</u>	<u>3/21/09</u>	<u>10:09</u>	<u>10:34</u>	<u>0139</u>	<u>30'</u>	<u>2</u>	<u>7047</u>	<u>56</u>

Notes: Sample Collection 25 minutes

APPENDIX 3
INDOOR AIR PRE-SAMPLING SURVEY

Indoor Air Quality Building Survey

→ Sampler: Thomas Osborne Date: 10/16/2008 JCO #: 3-0700-11
Address: The Johnson Company
100 state St. ; Montpelier VT 05602
Contact Name: _____

Building Construction Characteristics:

What type of building is it? (Circle appropriate responses)

- | | | | |
|---------------|--|--------|------------|
| Single Family | Multi-Family | School | Commercial |
| Industrial | <u>Kenilworth Parkside Recreation Center</u> | | |
| Ranch | 2-Family | | |
| Raised Ranch | Duplex | | |
| Cape | Apartment House (# of units _____) | | |
| Colonial | Condominium (# of units _____) | | |
| Split Level | Other (specify) _____ | | |
| Mobile Home | | | |

General description of building construction materials: Masonry & Steel
Slab on grade; sewerage & pool water pump pite ext. 57
Blds.

Number of occupied stories: 1 Year built? Circa 1970-80

Has the building been weatherized with any of the following? (Circle all that apply)

- Insulation Storm windows Energy-efficient windows Other (specify)

Attached garage? (Y/N) N Vehicle(s) present? (Y/N) N

What type of basement does the building have? (Circle all that apply)

- Full basement Crawlspace Slab-on-grade Other (specify) Piers according to Arlene Wehner NPS
What are the characteristics of the basement? (Circle all that apply) NA

Finished Basement Floor: Foundation Walls:
Moisture:
Unfinished Concrete Poured concrete Wet
Partially finished (%) Dirt Block Damp
Other (specify) Field stone Dry

Source: MaDEP, 2002, "Indoor Air Sampling and Evaluation Guide, WSC Policy #02-430", Office of Research and Standards, Massachusetts Department of Environmental Protection, April, 2002.

Is a basement sump present? (Y/N) NA

Is sump sealed to indoor air? (Y/N) NA

boiler room

Does the basement have any of the following characteristics (e.g. preferential vapor pathways) that might permit soil vapor entry? (Circle all that apply)

Cracks

Foundation/slab drainage

Pipe/utility conduits

Other (specify)

Floor drain

Sump pumps

seam along slab and wall

Heating and Ventilation System(s) Present:

What types of heating system(s) are used in this building? (Circle all that apply)

Hot air circulation

Heat pump

Steam Radiation

Wood stove

Other (specify) Air conditioner (central/window)

Fireplace (wood/gas)

Boiler w/forced hot water radiators

What types of fuels are used in this building? (Circle all that apply)

Natural gas

Electric

Coal

Other (specify)

Fuel oil

Wood

Solar

What type of mechanical ventilation systems are present and/or currently operating in this building? (Circle all that apply)

Central air conditioning

Mechanical fans

Bathroom vent fan

Individual air conditioning

Kitchen range hood

Air-to-air heat exchanger

Open windows

Other (specify)

Outdoor Sources of Contamination:

Are there any natural gas lines in the vicinity of the building?

yes

Weather Conditions During Sampling:

Outside Temperature (°F):

Prevailing wind direction: _____

Describe the general weather conditions (e.g., sunny, cloudy, rain):

Was there any significant precipitation (0.1 inches) within 12 hours preceding the sampling event? No

Type of ground cover (e.g., grass, pavement, etc.) outside the building:

grass, pavement, swimming pool, concrete walkways

General Comments

Is there any other information about the structural features of this building, the habits of its occupants or potential sources of chemical contaminants to the indoor air that may be of importance in facilitating the evaluation of the indoor air quality of the building?

This is not an evaluation of indoor air quality.
Rather it is to sample air in a location w/ multiple
potential vapor pathways to test for methane.

APPENDIX 4
SURFACE SOIL SAMPLING LOGS

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-55-01

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/08

Weather Conditions: P. Sunny

Time on Site: 7:30

Sampler: J.B. / TR0

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: S. of Southern Parking Area

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: Hand Auger; V. dense L.F. cap

Sample depth range (ft): 0-6" < 1" soil

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	7:45	Tan sand w/pebbles

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Co-located w/KPN-JCO-5V-01

Lab Designation: Spectrum

Chain of Custody #: 8223 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-02

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/88

Weather Conditions: P. Sunny

Time on Site: 7:30

Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: west of road N. of S. Playfield; mowed grass

GPS coordinates of sampling location: _____ Coordinate system: some sod ~1-2"

Sample collection method: Hand Auger

Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	9:30	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Reddish Brown Sand 0-10" LF CA? material

Fine grey sand - dense
10' North of KPN-JCO-SS-02

Lab Designation: Spectrum

Chain of Custody #: 8223 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-03

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/08

Weather Conditions: P. Sunny

Time on Site: 7:30

Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: East of Road, Opp. SS-02

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: Hand Auger

Sample depth range (ft): 0-6" Reddish Brown Sand/gravel

L.F. material: mowed area
'some soil 2-3"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	10:45	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Co-located w/ KPN-JCO-SS-03

Lab Designation: Spectrum

Chain of Custody #: 8223 Shipper Tracking #: Feal.ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-04
Project Name: Kenilworth Park Landfill Project #: 3-0700-11 (126)
Site Location: Northeast Washington, DC Date: 10/14/08
Weather Conditions: P. Sunny warm Time on Site: 7:30
Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: N.E. of Playfield
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: Hand Auger
Sample depth range (ft): 0-6" grown sand & gravel - rounded stones

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	11:10	<u>L.F. cap material mowed grass; little good < 2"</u>

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Co-located w/ KPN-JCO-SV-04

Lab Designation: Spectrum
Chain of Custody #: 8223 Shipper Tracking #: Feed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-05

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/08

Weather Conditions: Sunny Warm

Time on Site: 7:30

Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: East St. Road mowed lawn area

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: Hand Auger

Sample depth range (ft): 0-6" Brown F.S.-L L.F. cap material

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	11:50	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Co-located w/KPN-JCO-SY-05

Lab Designation: Spectrum

Chain of Custody #: 8223 Shipper Tracking #: Fed. ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-06

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/08

Weather Conditions: Sunny Hot

Time on Site: 7:30

Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: in mowed; north of west playfields

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: hand dig

Sample depth range (ft): 0-6" FSL. brown LF. cap material

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	15:40	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

Lab Designation: Spectrum

Chain of Custody #: 0223 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

⁻⁵⁰⁰
Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-SS-07 15-45
Project Name: Kenilworth Park Landfill Project #: 3-0700-11 (126)
Site Location: Northeast Washington, DC Date: 10/14/08
Weather Conditions: _____ Time on Site: 7:30
Sampler: _____

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: Tall grass/brush
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: Hand Auger
Sample depth range (ft): 0-6" Unmowed West No. of applicable cells

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	15:45	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____
 Duplicate sample collected from this location Duplicate Name/Time: KPN-500-SS-07 DUP 15:50
General comments / notes: _____

Lab Designation: Spectrum
Chain of Custody #: 8223 Shipper Tracking #: Fed. ex

Reviewed by:
server01/projects/3-0700-2/Kenilworth North Feasibility Study/FSP/Appendix I - Field Forms/Soil Sample Log-NPS-Kenilworth.doc

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-08

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/08

Weather Conditions: Swampy Warm

Time on Site: 7:30

Sampler: TRD

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: outside play fields in western moved area

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: hand auger

Sample depth range (ft): 0-6" Red fine sand - stray w/depth

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	12:30	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

@ SV-06 KPN-JCO-SV-06 - co-located

Lab Designation: Spectrum

Chain of Custody #: 0123 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN - JCO - 55-09

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/08

Weather Conditions: _____

Time on Site: 7:30

Sampler: TRO @ 13:05

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: N. of P. lot in grass

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: _____

Sample depth range (ft): 0-6" Brown Fine Sand

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	13:05	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: @ SV-07

Co-located @ KPN-JCO-SV-07

Lab Designation: Spectrum

Chain of Custody #: 8223 Shipper Tracking #: Fed ex

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-10

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/17/08

Weather Conditions: Sunny warm

Time on Site: 7:30

Sampler: TR0

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: N.W. of new track

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: Hand Auger

Sample depth range (ft): 0-6" brown sand w/ stones

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	13:30	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: → KPN SV-08 @ toe of recent fill in non-mowed area moved ash/glass 6-8" BGS

Lab Designation: Spectrum

Chain of Custody #: 8224 Shipper Tracking #: Fed. ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-TCO-SS-11 15:55
Project Name: Kenilworth Park Landfill
Site Location: Northeast Washington, DC
Weather Conditions: Sunny & warm
Sampler: TZO

Project #: 3-0700-11 (126)
Date: 10/14/08
Time on Site: 7:30

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: mowed area - brown clayey sand
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: Hand Auger
Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	15:55	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

Lab Designation: Spectrum
Chain of Custody #: 8224 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-JCO-SS-12 16:07
Project Name: Kenilworth Park Landfill Project #: 3-0700-11 (126)
Site Location: Northeast Washington, DC Date: 10/14/08
Weather Conditions: Sunny & Warm Time on Site: 7:30
Sampler: TRP

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: lawn in front of Rec Center
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: Hand Auger Top sandy loam to sand
Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	16:07	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

Lab Designation: Spectrum

Chain of Custody #: 8224 Shipper Tracking #: Fed - ex

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPN-50-55-13

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/14/08

Weather Conditions: _____

Time on Site: 7:30

Sampler: TRD

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: N. of defect courts @ N. end of

GPS coordinates of sampling location: _____ Coordinate system: Comm. Center

Sample collection method: Hand Auger

Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon-lined lid	15:20	

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Mowed area

Composit soil sample collected from soil bucket.

Sample Date 10/16/08 Time 16:00 1x 8oz Amber Jar for TCLP metals

Lab Designation: Spectrum

Chain of Custody #: 8224 Shipper Tracking #: Fed. ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: NPS-JCO-SS-01 10:05

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/15/08

Weather Conditions: SUNNY warm

Time on Site: 7:00

Sampler: T20

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: in brush near watts branch

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: _____

Sample depth range (ft): 0-6" hand auger

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	10:05	dk. brown loam

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Heavy underbrush; scant surface veg.

Lab Designation: Spectrum

Chain of Custody #: 8225 Shipper Tracking #: Fed. ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-510-SS-02 10:15

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/15/08

Weather Conditions: Sunny Warm

Time on Site: 7:00

Sampler: TLO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: outside salt fence - near river

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: hand auger

Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	10:15	brown sand

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: think we jumped a deer

Lab Designation: Spectrum

Chain of Custody #: B225 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-300-SS-03 10:25
Project Name: Kenilworth Park Landfill
Site Location: Northeast Washington, DC
Weather Conditions: Sunny Warm
Sampler: TR

Project #: 3-0700-11 (126)
Date: 10/15/08
Time on Site: 7:00

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: Brush / over grown / L.F. cap
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: _____
Sample depth range (ft): 0-6" Hand Auger

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	10:25	reddish sand little gravel & silt

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Heavy Under brush

Lab Designation: Spectrum

Chain of Custody #: 8225 Shipper Tracking #: Fed-Ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-JCO-SS-04 10:00
Project Name: Kenilworth Park Landfill Project #: 3-0700-11 (126)
Site Location: Northeast Washington, DC Date: 10/15/08
Weather Conditions: Sunny Warm Time on Site: 7:00
Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: grown up LF cap
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: hand auger
Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	10:00	red/brown sand gravel

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: over grown field

Lab Designation: Spectrum
Chain of Custody #: 9225 Shipper Tracking #: Fed. ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-JCO-SS-05 11:00

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/15/08

Weather Conditions: Sunny Warm

Time on Site: 7:00

Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: Grass on LF cap

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: Hand Auger

Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	11:00	dense red sand gravel

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Over grown field

Lab Designation: Spectrum

Chain of Custody #: 8225 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-JCO-SS-06 9:50

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/15/08

Weather Conditions: Warm P. Sunny

Time on Site: 7:00

Sampler: TR0

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: grown-up cap

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: _____

Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	9:50	similar L.F. cap material

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

Lab Designation: Spectrum

Chain of Custody #: 0225 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-JCO-SS-07 10:55
Project Name: Kenilworth Park Landfill Project #: 3-0700-11 (126)
Site Location: Northeast Washington, DC Date: 10/15/08
Weather Conditions: Grass on LF cap Time on Site: 7:00
Sampler: TR0

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: slight grassy slope on LF. cap
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: Hand Auger
Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	10:15	Reddish sandy gravel

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

Lab Designation: Spectrum
Chain of Custody #: 8225 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KRS-JCO-SS-08 9.36
Project Name: Kenilworth Park Landfill
Site Location: Northeast Washington, DC
Weather Conditions: Sunny / warm
Sampler: TRO

Project #: 3-0700-11 (126)
Date: 10/15/08
Time on Site: 7:00

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: Tall grass next to grown up P. Lot
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: Hand Ager
Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid		Reddish sand little gravel

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: Just off parking area

Lab Designation: Spectrum

Chain of Custody #: 8225 Shipper Tracking #: Fed-ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-JCO-SS-09

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/15/08

Weather Conditions: Sunny / Mild

Time on Site: 7:00

Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: Tall grass off parking lot

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: _____

Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	9:45	compact brown to red sand

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

Lab Designation: Spectrum

Chain of Custody #: 8225 Shipper Tracking #: Fed - ex

Reviewed by
s:\env\01\projects\3-0700-2\Kenilworth North Feasibility Study FSP Appendix 1 - Field Forms Soil Sample Log- NPS- Kenilworth.doc

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS-JCO-SS-10 11:05
Project Name: Kenilworth Park Landfill Project #: 3-0700-11 (126)
Site Location: Northeast Washington, DC Date: 10/15/08
Weather Conditions: Sunny Warm Time on Site: 7:00
Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: grass on LF cap
GPS coordinates of sampling location: _____ Coordinate system: _____
Sample collection method: hand auger
Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	11:05	Reddish sandy gravel

MS/MSD Samples collected from this location MS/MSD Sample Names: _____
 Duplicate sample collected from this location Duplicate Name/Time: KPS-JCO-SS-10-DUP / 11:05
General comments / notes: _____

Lab Designation: Spectrum
Chain of Custody #: 8225 Shipper Tracking #: Fed. ex

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, VT 05602

Phone: (802) 229-4600
Fax: (802) 229-5876
www.johnsonco.com

Discrete Soil Sample Collection Record

Soil Sample Location ID: KPS - JCO - SS - 11

Project Name: Kenilworth Park Landfill

Project #: 3-0700-11 (126)

Site Location: Northeast Washington, DC

Date: 10/15/08

Weather Conditions: Windy & Sunny

Time on Site: 7:00

Sampler: TRO

1. SAMPLE LOCATION AND COLLECTION METHODOLOGY INFORMATION:

Description of soil sampling location: grass on LF cap

GPS coordinates of sampling location: _____ Coordinate system: _____

Sample collection method: Hand Auger

Sample depth range (ft): 0-6"

2. SAMPLE INFORMATION:

Sample depth (ft)	Sample type (analyte(s))	Field or fixed lab analysis	Type of container	Collection time	Sample notes, observations, comments
0-6"	pH, TOC	Fixed- Mitkem Division, Spectrum Analytical, Inc.	4 oz amber glass jar with Teflon®-lined lid	11:15	Red sand & gravel

MS/MSD Samples collected from this location MS/MSD Sample Names: _____

Duplicate sample collected from this location Duplicate Name/Time: _____

General comments / notes: _____

Lab Designation: Spectrum

Chain of Custody #: 0225 Shipper Tracking #: Fed-ex

APPENDIX 5
SOIL VAPOR (OCTOBER 2008 AND MARCH 2009),
INDOOR AIR, AND INVESTIGATION-DERIVED WASTE LABORATORY REPORTS



A DIVISION OF SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

November 18, 2008

The Johnson Company, Inc.
100 State Street
Montpelier, VT 05602
Attn: Mr. Daniel Smith

RE: Client Project: Kenilworth Park DC
Lab Project #: G1915

Dear Mr. Smith:

Enclosed please find the data reports from Spectrum and Mitkem for the required analyses for the sample associated with the above referenced project. If you have any questions regarding this report, please call me.

We appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edward A. Lawler', is written over the word 'Sincerely,'.

Edward A. Lawler
Laboratory Operations Manager

Analytical Data Package for The Johnson Company, Inc.

Client Project: Kenilworth Park DC

Mitkem Project ID: G1915

November 18, 2008

Prepared For: The Johnson Company, Inc.
 100 State Street
 Montpelier, VT 05602
 Attn: Mr. Daniel Smith

Prepared By: Mitkem Laboratories
 175 Metro Center Boulevard
 Warwick, RI 02886
 (401) 732-3400

Client: The Johnson Company, Inc.

Client Project: Kenilworth Park DC

Lab Project: G1915

Date samples received: 10/20/08

Project Narrative

This data report includes the analysis results for nineteen (19) air samples and one (1) soil sample that were received from The Johnson Company, Inc. on October 20, 2008 and logged into Mitkem workorder G1915.

Sample analysis was performed by EPA Method 3C. Spike recoveries were within the QC limits for the laboratory control samples. Duplicate analyses were performed on samples KNP-JCO-IA-01 and KPS-JCO-SV-07-DUP. Replicate RPDs were within the QC limits.

One soil sample was analyzed for TCLP metals. Spike recoveries were within the QC limits for the laboratory control samples.

No other unusual observation was made for the analysis.

All pages in this report have been numbered consecutively, starting with the title page and ending with a page saying only "Last Page of Data Report".

I certify that this data package is in compliance, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.



Edward A. Lawler
Operations Project Manager

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KNP-JCO-IA-01

Project: Kenilworth Park DC

Lab ID: G1915-01

Collection Date: 10/16/08 19:51

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 09:46	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-IA-01-DUP

Lab ID: G1915-02

Project: Kenilworth Park DC

Collection Date: 10/16/08 19:51

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 10:36	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-01

Project: Kenilworth Park DC

Lab ID: G1915-03

Collection Date: 10/17/08 09:10

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 11:02	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-02

Project: Kenilworth Park DC

Lab ID: G1915-04

Collection Date: 10/17/08 09:38

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 11:27	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

0000

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-03

Lab ID: G1915-05

Project: Kenilworth Park DC

Collection Date: 10/17/08 09:47

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 11:52	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-04

Project: Kenilworth Park DC

Lab ID: G1915-06

Collection Date: 10/17/08 10:15

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 12:17	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit



Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-05

Project: Kenilworth Park DC

Lab ID: G1915-07

Collection Date: 10/17/08 10:23

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 12:43	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit



Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-06

Project: Kenilworth Park DC

Lab ID: G1915-08

Collection Date: 10/17/08 13:44

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 13:08	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-07

Project: Kenilworth Park DC

Lab ID: G1915-09

Collection Date: 10/17/08 13:56

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 13:33	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-07-DUP

Project: Kenilworth Park DC

Lab ID: G1915-10

Collection Date: 10/17/08 13:56

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 13:58	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPS-JCO-SV-01

Project: Kenilworth Park DC

Lab ID: G1915-11

Collection Date: 10/17/08 13:04

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	23000		100	ppmv	10	11/07/2008 13:03	39887

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPS-JCO-SV-02

Project: Kenilworth Park DC

Lab ID: G1915-12

Collection Date: 10/17/08 12:58

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/30/2008 14:49	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPS-JCO-SV-03

Project: Kenilworth Park DC

Lab ID: G1915-13

Collection Date: 10/17/08 12:57

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	1400		10	ppmv	1	10/30/2008 15:14	39680

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPS-JCO-SV-06

Project: Kenilworth Park DC

Lab ID: G1915-14

Collection Date: 10/17/08 12:29

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	140000		1000	ppmv	100	11/07/2008 13:28	39887

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPS-JCO-SV-07

Lab ID: G1915-15

Project: Kenilworth Park DC

Collection Date: 10/17/08 12:19

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	89000		500	ppmv	50	11/07/2008 13:47	39887

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPS-JCO-SV-07-DUP

Project: Kenilworth Park DC

Lab ID: G1915-16

Collection Date: 10/17/08 12:19

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	91000		500	ppmv	50	11/07/2008 14:07	39887

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPS-JCO-SV-08

Lab ID: G1915-17

Project: Kenilworth Park DC

Collection Date: 10/17/08 12:14

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/31/2008 11:24	39721

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-08

Project: Kenilworth Park DC

Lab ID: G1915-19

Collection Date: 10/17/08 14:23

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/31/2008 11:59	39721

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 10-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-09

Project: Kenilworth Park DC

Lab ID: G1915-20

Collection Date: 10/17/08 14:59

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	37000		200	ppmv	20	11/07/2008 14:33	39887

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

0021

CLIENT: The Johnson Company, Inc.
 Work Order: G1915
 Project: Kenilworth Park DC

ANALYTICAL QC SUMMARY REPORT
3C_AIR
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C

Sample ID: MB-39680	SampType: MBLK	TestCode: 3C_AIR	Prep Date: 10/30/2008	Run ID: V9_081030A
Client ID: MB-39680	Batch ID: 39680	Units: ppmv	Analysis Date: 10/30/2008	SeqNo: 913542
Analyte	Result	POL	SPK value	SPK Ref Val
Methane	ND	10	%REC LowLimit HighLimit	RPD Ref Val
				%RPD RPDLimit
				Qual

Sample ID: MB-39721	SampType: MBLK	TestCode: 3C_AIR	Prep Date: 10/31/2008	Run ID: V9_081031A
Client ID: MB-39721	Batch ID: 39721	Units: ppmv	Analysis Date: 10/31/2008	SeqNo: 913858
Analyte	Result	POL	SPK value	SPK Ref Val
Methane	ND	10	%REC LowLimit HighLimit	RPD Ref Val
				%RPD RPDLimit
				Qual

Sample ID: MB-39887	SampType: MBLK	TestCode: 3C_AIR	Prep Date: 11/07/2008	Run ID: V9_081107A
Client ID: MB-39887	Batch ID: 39887	Units: ppmv	Analysis Date: 11/07/2008	SeqNo: 920137
Analyte	Result	POL	SPK value	SPK Ref Val
Methane	ND	10	%REC LowLimit HighLimit	RPD Ref Val
				%RPD RPDLimit
				Qual

Sample ID: LCS-39680	SampType: LCS	TestCode: 3C_AIR	Prep Date: 10/30/2008	Run ID: V9_081030A
Client ID: LCS-39680	Batch ID: 39680	Units: ppmv	Analysis Date: 10/30/2008	SeqNo: 913543
Analyte	Result	POL	SPK value	SPK Ref Val
Methane	453.2	10	500.0	0
			%REC LowLimit HighLimit	RPD Ref Val
				%RPD RPDLimit
				Qual

Sample ID: LCS-39721	SampType: LCS	TestCode: 3C_AIR	Prep Date: 10/31/2008	Run ID: V9_081031A
Client ID: LCS-39721	Batch ID: 39721	Units: ppmv	Analysis Date: 10/31/2008	SeqNo: 913859
Analyte	Result	POL	SPK value	SPK Ref Val
Methane	457.3	10	500.0	0
			%REC LowLimit HighLimit	RPD Ref Val
				%RPD RPDLimit
				Qual

Sample ID: LCS-39887	SampType: LCS	TestCode: 3C_AIR	Prep Date: 11/07/2008	Run ID: V9_081107A
Client ID: LCS-39887	Batch ID: 39887	Units: ppmv	Analysis Date: 11/07/2008	SeqNo: 920138
Analyte	Result	POL	SPK value	SPK Ref Val
Methane	438.6	10	500.0	0
			%REC LowLimit HighLimit	RPD Ref Val
				%RPD RPDLimit
				Qual

0022

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 B - Analyte detected in the associated Method Blank

ANALYTICAL QC SUMMARY REPORT
3C_AIR
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C

CLIENT: The Johnson Company, Inc.
Work Order: G1915
Project: Kenilworth Park DC

Sample ID: G1915-01ADUP Samp Type: DUP Test Code: 3C_AIR Prep Date: 10/30/2008 Run ID: V9_081030A
 Client ID: KNP-JCO-IA-01 Batch ID: 39680 Units: ppmv Analysis Date: 10/30/2008 SeqNo: 913545
 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Methane ND 1.0 0 0 0 0 0 0 0 0 30

Sample ID: G1915-16A Samp Type: DUP Test Code: 3C_AIR Prep Date: 10/31/2008 Run ID: V9_081107A
 Client ID: KPS-JCO-SV-07-DU Batch ID: 39721 Units: ppmv Analysis Date: 11/07/2008 SeqNo: 920142
 Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Methane 90840 500 0 0 0 0 0 88590 2.52 30



Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

Mitkem Laboratories

Date: 03-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: COMPOSITEPN-1

Lab ID: G1915-18

Project: Kenilworth Park DC

Collection Date: 10/16/08 16:00

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
SW846 6010 -- Metals by ICP							SW6010_W
Arsenic -- TCLP	ND		20	µg/L	1	10/31/2008 11:30	39706
Barium -- TCLP	950		200	µg/L	1	10/31/2008 11:30	39706
Cadmium -- TCLP	17		5.0	µg/L	1	10/31/2008 11:30	39706
Chromium -- TCLP	ND		20	µg/L	1	10/31/2008 11:30	39706
Lead -- TCLP	260		10	µg/L	1	10/31/2008 11:30	39706
Selenium -- TCLP	ND		30	µg/L	1	10/31/2008 11:30	39706
Silver -- TCLP	ND		30	µg/L	1	10/31/2008 11:30	39706
SW846 7470 -- Mercury by FIA							SW7470
Mercury -- TCLP	ND		0.20	µg/L	1	10/31/2008 10:56	39710

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 B - Analyte detected in the associated Method Blank
 DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 E - Value above quantitation range
 RL - Reporting Limit

CLIENT: The Johnson Company, Inc.
 Work Order: G1915
 Project: Kenilworth Park DC

ANALYTICAL QC SUMMARY REPORT
 SW6010_W
 SW846 6010 -- Metals by ICP

Sample ID: MB-39674 Samp Type: MBLK TestCode: SW6010_W Prep Date: 10/30/2008 Run ID: OPTIMA2_081031A
 Client ID: MB-39674 Batch ID: 39706 Units: µg/L Analysis Date: 10/31/2008 SeqNo: 913874

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic -- TCLP	ND	20	0	0	0	0	0	0	0	0	
Barium -- TCLP	ND	200	0	0	0	0	0	0	0	0	
Cadmium -- TCLP	ND	5.0	0	0	0	0	0	0	0	0	
Chromium -- TCLP	ND	20	0	0	0	0	0	0	0	0	
Lead -- TCLP	ND	10	0	0	0	0	0	0	0	0	
Selenium -- TCLP	ND	30	0	0	0	0	0	0	0	0	
Silver -- TCLP	ND	30	0	0	0	0	0	0	0	0	

Sample ID: MB-39706 Samp Type: MBLK TestCode: SW6010_W Prep Date: 10/30/2008 Run ID: OPTIMA2_081031A
 Client ID: MB-39706 Batch ID: 39706 Units: µg/L Analysis Date: 10/31/2008 SeqNo: 913875

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	20									
Barium	ND	200									
Cadmium	ND	5.0									
Chromium	ND	20									
Lead	ND	10									
Selenium	ND	30									
Silver	ND	30									

Sample ID: LCS-39706 Samp Type: LCS TestCode: SW6010_W Prep Date: 10/30/2008 Run ID: OPTIMA2_081031A
 Client ID: LCS-39706 Batch ID: 39706 Units: µg/L Analysis Date: 10/31/2008 SeqNo: 913876

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	500.4	20	455.0	0	110	80	120	0	0	0	
Barium	9567	200	9100	0	106	80	120	0	0	0	
Cadmium	238.6	5.0	227.0	0	105	80	120	0	0	0	
Chromium	968.7	20	910.0	0	106	80	120	0	0	0	
Lead	485.8	10	455.0	0	107	80	120	0	0	0	
Selenium	492.7	30	455.0	0	108	80	120	0	0	0	
Silver	1305	30	1130	0	115	80	120	0	0	0	



Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

ANALYTICAL QC SUMMARY REPORT

CLIENT: The Johnson Company, Inc.
Work Order: G1915
Project: Kenilworth Park DC

SW7470
SW846 7470 -- Mercury by FIA

Sample ID: MB-39674	SampType: MBLK	TestCode: SW7470	Prep Date: 10/30/2008	Run ID: FIMS1_081031A	
Client ID: MB-39674	Batch ID: 39710	Units: µg/L	Analysis Date: 10/31/2008	SeqNo: 913926	
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit HighLimit
Mercury -- TCLP	ND	0.20	0	0	0 0

Sample ID: MB-39710	SampType: MBLK	TestCode: SW7470	Prep Date: 10/30/2008	Run ID: FIMS1_081031A	
Client ID: MB-39710	Batch ID: 39710	Units: µg/L	Analysis Date: 10/31/2008	SeqNo: 913924	
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit HighLimit
Mercury	ND	0.20	0	0	0 0

Sample ID: LCS-39710	SampType: LCS	TestCode: SW7470	Prep Date: 10/30/2008	Run ID: FIMS1_081031A	
Client ID: LCS-39710	Batch ID: 39710	Units: µg/L	Analysis Date: 10/31/2008	SeqNo: 913925	
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit HighLimit
Mercury	4.652	0.20	0	10.2	80 120



Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits
 S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits
 B - Analyte detected in the associated Method Blank

Mitkem Laboratories

25/Oct/08 10:57

WorkOrder: G1915

Client ID: JOHNSON

Project: Kemilworth Park DC

Location:

Comments: N/A

Case:

SDG:

PO: 3-0700-11

HC Due: 11/03/08

Fax Due:

Report Level: LEVEL 2

EDD: ENVIRO_16

Sample ID	HS Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Lab Test Comments	Hold	MS	SEL	Storage
G1915-01A	KPN-JCO-1A-01	10/16/2008 19:51	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-02A	KPN-JCO-1A-01-DUP	10/16/2008 19:51	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-03A	KPN-JCO-SV-01	10/17/2008 9:10	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-04A	KPN-JCO-SV-02	10/17/2008 9:38	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-05A	KPN-JCO-SV-03	10/17/2008 9:47	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-06A	KPN-JCO-SV-04	10/17/2008 10:15	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-07A	KPN-JCO-SV-05	10/17/2008 10:23	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-08A	KPN-JCO-SV-06	10/17/2008 13:44	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-09A	KPN-JCO-SV-07	10/17/2008 13:56	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-10A	KPN-JCO-SV-07-DUP	10/17/2008 13:56	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA

Client Rep: Edward A Lawler

Mitkem Laboratories

27/Oct/08 8:40

WorkOrder: G1915

Client ID: JOHNSON

Project: Kenilworth Park DC

Location:

Comments: N/A

Case:

SDG:

PO: 3-0700-11

HC Due: 11/03/08

Fax Due:

Report Level: LEVEL 2

EDD: ENVIRO_16

Sample ID	HS Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Lab Test Comments	Hold	MS	SEL	Storage
G1915-11A	KPS-JCO-SV-01	10/17/2008 13:04	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-12A	KPS-JCO-SV-02	10/17/2008 12:58	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-13A	KPS-JCO-SV-03	10/17/2008 12:57	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-14A	KPS-JCO-SV-06	10/17/2008 12:29	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-15A	KPS-JCO-SV-07	10/17/2008 12:19	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-16A	KPS-JCO-SV-07-DLIP	10/17/2008 12:19	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-17A	KPS-JCO-SV-08	10/17/2008 12:14	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1915-18A	COMPOSITE MPN-1	10/16/2008 16:00	10/20/2008	Soil	SW6010_W SW7470	TCLP_METALS TCLP_METALS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	AI
G1915-19A	KPN-JCO-SV-08	10/17/2008 14:23	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA

Client Rep: Edward A Lawler

Client ID: JOHNSON

Project: Kenilworth Park DC

Location:

Comments: N/A

Case:

SDG:

PO: 3-0700-11

HC Due: 11/03/08

Fax Due:

Report Level: LEVEL 2

EDD: ENVIRO_16

Sample ID	HS Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Lab Test Comments	Hold	MS	SEL	Storage
-----------	---------------------	-----------------	-------------	--------	-----------	-------------------	------	----	-----	---------

G1915-20A	KPN-JCO-SV-09	10/17/2008 14:59	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
-----------	---------------	------------------	------------	-----	--------	--------------	--------------------------	--------------------------	-------------------------------------	-----



CHAIN OF CUSTODY RECORD

8226

EPA 303/B
Mod.

Client / Project Name		Project Location		ANALYZES		
NPS		Kenilworth Park DC		METHANE		
Project No.		Field Logbook No.				
3-0700-11						
Sampler: (Signature)		Chain of Custody Tape No.				
<i>[Signature]</i>						
Sample No. / Identification	Date	Start Time	End Time	Lab Sample Number	Type of Sample	REMARKS
KPN-JCO-IA-01	10/16/08	9:51	7:25		INDOOR AIR	COL Summary
" " " " -OLD DVP	" "	" "	7:25		" "	" "
KPN-JCO-SV-01	10/17/08	9:10	9:25		Soil VAPORS/GAS	3.2L Summary
" " " " SV-02		9:38	9:53			
" " " " SV-03		9:47	10:09			
" " " " SV-04		10:15	10:40			
" " " " SV-05		10:23	10:47			
" " " " SV-06		13:44	14:02			
" " " " SV-07		13:56	14:15			
" " " " SV-07 DVP		13:56	14:15			
Released by: (Signature)	Date	Time	Received by: (Signature)	Date	Time	
<i>[Signature]</i>	10/16/08	08:40	<i>[Signature]</i>	10/18/08	08:10	
Relinquished by: (Signature)	Date	Time	Received for Laboratory: (Signature)	Date	Time	
<i>Michael Johnson</i>	10/20/08	12:50	<i>[Signature]</i>	10/20/08	12:50	
Sample Disposal Method:	Disposed of by: (Signature)		Date	Time		
SAMPLE COLLECTOR			ANALYTICAL LABORATORY			Shipper ID #
THE JOHNSON COMPANY, INC. 100 State Street, Suite 6100 Montpelier, VT 05602 (802) 229-4688 Environmental Sciences and Engineering Fax (802) 229-5876			Spectrum Analytical 11 Almsen Dr. Agawam, MA 01001			JCO DVP

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

CHAIN OF CUSTODY RECORD

8228

Methane mod EPA 3c/m
TCLP METALS

ANALYZES

Client / Project Name NPS		Project Location Kenilworth Park DC				
Project No. 3-0706-11		Field Logbook No.				
Sampler: (Signature) <i>[Signature]</i>		Chain of Custody Tape No.				
Sample No. / Identification	Date	START Time	TIME STOP	Lab Sample Number	Type of Sample	REMARKS
KPS-JCO-SV-01	10/17/08	13:04	-13:29		Soil GAS	3.2L summa
" " SV-02		12:58	-13:26			
" " SV-03		12:57	-13:19			
" " SV-06		12:29	-12:48			
" " SV-07		12:19	12:39			
" " SV-07DUP		12:19	12:39			
" " SV-08		12:14	12:35			
Composite KPN-1	10/16/08	16:00			Soil	802 Amber Jar
Relinquished by: (Signature) <i>[Signature]</i>	Date 10/16/08	Time 8:10	Received by: (Signature) <i>[Signature]</i>	Date 10/16/08	Time 0815	
Relinquished by: (Signature) Michael Mahan	Date 10/20/08	Time 12:50	Received for Laboratory: (Signature) <i>[Signature]</i>	Date 10/20/08	Time 12:50	
Sample Disposal Method:	Disposed of by: (Signature)		Date		Time	
SAMPLE COLLECTOR	ANALYTICAL LABORATORY		Shipper ID #		500 Drop	
100 State Street, Suite 600 Montpelier, VT 05602 (802) 229-4600 Fax: (802) 229-5826	Spectrum Analytical 11 Angren Drive Agawan MA 01001					

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

3.2L summa + 802 Amber Jar

CHAIN OF CUSTODY RECORD

8227

3c/36

Client / Project Name NPS		Project Location Kenilworth Park DC		ANALYZES		
Project No. 3-0700-11		Field Logbook No.				
Sampler: (Signature) <i>[Signature]</i>		Chain of Custody Tape No.				
Sample No. / Identification	Date	Start Time	End Time	Lab Sample Number	Type of Sample	REMARKS
KPN-30-SV-08	10/17/08	14:23	14:52	14162	Soil Gas	X 3, 2 L SUMMS
" " SV-09		14:59	15:16			
" " SV-09NVP		14:59	15:16			
" " SV-10D		15:37	15:53			
" " SV-10S		16:27	16:42			
" " SV-11D		16:02	16:30			
" " SV-11S		16:11	16:41			
" " SV-12		17:40	18:01			
" " SV-13		17:12	17:36			
Relinquished by: (Signature) <i>[Signature]</i>	Date 10/18/08	Time 0840	Received by: (Signature) <i>[Signature]</i>	Date 10/13/08	Time 0813	
Relinquished by: (Signature) <i>Michael Johnson</i>	Date 10/20/08	Time 12:50	Received for Laboratory: (Signature) <i>[Signature]</i>	Date 10/20/08	Time 11:50	
Sample Disposal Method:	Disposed of by: (Signature)					
SAMPLE COLLECTOR	ANALYTICAL LABORATORY		Shipper ID #			
100 State Street, Suite 600 Montpelier, VT 05602 (802) 259-4600 Fax (802) 259-5876	THE JOHNSON COMPANY, INC. Environmental Sciences and Engineering		Spectrum Analytical " Atmsgren Dr. Agawam, MA 01001			

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

MITKEM LABORATORIES
Sample Condition Form

Received By: <u>CAW</u>		Reviewed By: <u>J. K. [Signature]</u>		Date: <u>10/28/08</u>	MITKEM Workorder #: <u>01915</u>			
Client Project: <u>Kenilworth-LF</u>				Client: <u>Johnson</u>				Soil Headspace or Air Bubbles $\geq 1/4"$
		Lab Sample ID		Preservation (pH)			VOA Matrix	
				HNO ₃	H ₂ SO ₄	HCl	NaOH	H ₃ PO ₄
1) Cooler Sealed	Yes <input checked="" type="radio"/> No <input type="radio"/>	<u>015</u> 01						
		02						
2) Custody Seal(s)	Present <input checked="" type="radio"/> Absent <input type="radio"/>	03						
		04						
		05						
		06						
3) Custody Seal Number(s)	<u>NA</u>	07						
		08						
		09						
		10						
		11						
4) Chain-of-Custody	Present <input checked="" type="radio"/> Absent <input type="radio"/>	12						
		13						
5) Cooler Temperature		14						
Coolant Condition		15						
		16						
6) Airbill(s)	Present <input checked="" type="radio"/> Absent <input type="radio"/>	17						
Airbill Number(s)	<u>Cumy</u>	18						
		19						
		<u>01915</u> 20						<u>A</u>
7) Sample Bottles	Intact <input checked="" type="radio"/> Broken/Leaking <input type="radio"/>							
8) Date Received	<u>10/28/08</u>							
9) Time Received	<u>10:50</u>							
Preservative Name/Lot No:								

CAW
10/30/08

VOA Matrix Key:

US = Unpreserved Soil	A = Air
UA = Unpreserved Aqu.	H = HCl
M = MeOH	E = Encore
N = NaHSO ₄	F = Freeze

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes/ no

Last Page of Data Report



A DIVISION OF SPECTRUM ANALYTICAL, INC. Featuring HANIBAL TECHNOLOGY

November 18, 2008

The Johnson Company, Inc.
100 State Street
Montpelier, VT 05602
Attn: Mr. Daniel Smith

RE: Client Project: Kenilworth Park DC
Lab Project #: G1916

Dear Mr. Smith:

Enclosed please find the data reports from Spectrum and Mitkem for the required analyses for the sample associated with the above referenced project. If you have any questions regarding this report, please call me.

We appreciate your business.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edward A. Lawler', is written over the word 'Sincerely,'.

Edward A. Lawler
Laboratory Operations Manager

Analytical Data Package for The Johnson Company, Inc.

Client Project: Kenilworth Park DC

Mitkem Project ID: G1916

November 18, 2008

Prepared For: The Johnson Company, Inc.
 100 State Street
 Montpelier, VT 05602
 Attn: Mr. Daniel Smith

Prepared By: Mitkem Laboratories
 175 Metro Center Boulevard
 Warwick, RI 02886
 (401) 732-3400

Client: The Johnson Company, Inc.

Client Project: Kenilworth Park DC

Lab Project: G1916

Date samples received: 10/20/08

Project Narrative

This data report includes the analysis results for seven (7) samples that were received from The Johnson Company, Inc. on October 20, 2008 and logged into Mitkem workorder G1916.

Sample analysis was performed by EPA Method 3C. Spike recoveries were within the QC limits for the laboratory control samples. Duplicate analysis was performed on sample KPN-JCO-SV-09-DUP. Replicate RPDs were within the QC limits.

No other unusual observation was made for the analysis.

All pages in this report have been numbered consecutively, starting with the title page and ending with a page saying only "Last Page of Data Report".

I certify that this data package is in compliance, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.



Edward A. Lawler
Operations Project Manager
11/18/08

Mitkem Laboratories

Date: 13-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-09-DUP

Lab ID: G1916-01

Project: Kenilworth Park DC

Collection Date: 10/17/08 14:59

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	39000		200	ppmv		20 11/07/2008 14:54	39887

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 03-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-10D

Project: Kenilworth Park DC

Lab ID: G1916-02

Collection Date: 10/17/08 08:37

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	87			10	ppmv	1 10/29/2008 13:26	39661

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 03-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-10S

Project: Kenilworth Park DC

Lab ID: G1916-03

Collection Date: 10/17/08 08:27

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/29/2008 13:46	39661

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 03-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-11D

Project: Kenilworth Park DC

Lab ID: G1916-04

Collection Date: 10/17/08 08:02

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/29/2008 14:06	39661

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 03-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-11S

Lab ID: G1916-05

Project: Kenilworth Park DC

Collection Date: 10/17/08 08:11

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/29/2008 14:26	39661

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

Mitkem Laboratories

Date: 03-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-12

Project: Kenilworth Park DC

Lab ID: G1916-06

Collection Date: 10/17/08 07:40

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	870		10	ppmv	1	10/29/2008 14:46	39661

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit



Mitkem Laboratories

Date: 03-Nov-08

Client: The Johnson Company, Inc.

Client Sample ID: KPN-JCO-SV-13

Project: Kenilworth Park DC

Lab ID: G1916-07

Collection Date: 10/17/08 07:12

Analyses	Result	Qual	RL	Units	DF	Date Analyzed	Batch ID
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C							3C_AIR
Methane	ND		10	ppmv	1	10/29/2008 15:06	39661

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
DF - Dilution Factor

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range
RL - Reporting Limit

CLIENT: The Johnson Company, Inc.
 Work Order: G1916
 Project: Kenilworth Park DC

ANALYTICAL QC SUMMARY REPORT
3C_AIR
EPA 3C -- Determination Fixed Gases (Air) Modified EPA 3C

Sample ID: MB-39661	SampType: MBLK	TestCode: 3C_AIR	Prep Date: 10/29/2008	Run ID: V9_081029A			
Client ID: MB-39661	Batch ID: 39661	Units: ppmv	Analysis Date: 10/29/2008	SeqNo: 913219			
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit	HighLimit	RPD RefVal %RPD RPDLimit Qual
Methane	ND	1.0					

Sample ID: MB-39887	SampType: MBLK	TestCode: 3C_AIR	Prep Date: 11/07/2008	Run ID: V9_081107A			
Client ID: MB-39887	Batch ID: 39887	Units: ppmv	Analysis Date: 11/07/2008	SeqNo: 920137			
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit	HighLimit	RPD RefVal %RPD RPDLimit Qual
Methane	ND	1.0					

Sample ID: LCS-39661	SampType: LCS	TestCode: 3C_AIR	Prep Date: 10/29/2008	Run ID: V9_081029A			
Client ID: LCS-39661	Batch ID: 39661	Units: ppmv	Analysis Date: 10/29/2008	SeqNo: 913220			
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit	HighLimit	RPD RefVal %RPD RPDLimit Qual
Methane	487.1	1.0	0	97.4	7.0	1.30	0

Sample ID: LCS-39887	SampType: LCS	TestCode: 3C_AIR	Prep Date: 11/07/2008	Run ID: V9_081107A			
Client ID: LCS-39887	Batch ID: 39887	Units: ppmv	Analysis Date: 11/07/2008	SeqNo: 920138			
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit	HighLimit	RPD RefVal %RPD RPDLimit Qual
Methane	438.6	1.0	0	87.7	7.0	1.30	0

Sample ID: G1916-01ADUP	SampType: DUP	TestCode: 3C_AIR	Prep Date: 11/07/2008	Run ID: V9_081107A			
Client ID: KPN-JCO-SV-09-DU	Batch ID: 39887	Units: ppmv	Analysis Date: 11/07/2008	SeqNo: 920145			
Analyte	Result	PQL	SPK Ref Val	%REC	LowLimit	HighLimit	RPD RefVal %RPD RPDLimit Qual
Methane	403.90	2.00	0	0	0	0	387.60 4.1 30



Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

Mitekem Laboratories

27/Oct/08 8:41

WorkOrder: G1916

Client ID: JOHNSON
 Project: Kenilworth Park DC
 Location:
 Comments: N/A

Case:
 SDG:
 PO: 3-0700-11

HC Due: 11/03/08
 Fax Due:

Report Level: LEVEL 2
 EDD: ENVIRO_16

Sample ID	HS Client Sample ID	Collection Date	Date Recv'd	Matrix	Test Code	Lab Test Comments	Hold	MS	SEL	Storage
G1916-01A	KPN-JCO-SV-09-DUP	10/17/2008 14:59	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1916-02A	KPN-JCO-SV-10D	10/17/2008 8:37	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1916-03A	KPN-JCO-SV-10S	10/17/2008 8:27	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1916-04A	KPN-JCO-SV-11D	10/17/2008 8:02	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1916-05A	KPN-JCO-SV-11S	10/17/2008 8:11	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1916-06A	KPN-JCO-SV-12	10/17/2008 7:40	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA
G1916-07A	KPN-JCO-SV-13	10/17/2008 7:12	10/20/2008	Air	3C_AIR	Methane only	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VOA

8227

36 / 36

CHAIN OF CUSTODY RECORD

Client / Project Name NPS		Project Location Kearlworth Park DC		ANALYZES			
Project No. 3-0700-11		Field Logbook No.		METHANE			
Sampler: (Signature) <i>[Signature]</i>		Chain of Custody Tape No.					
Sample No. / Identification	Date	Start Time	End Time	Lab Sample Number	Type of Sample	REMARKS	
KPN-30-SV-08	10/17/08	14:23	14:52		Soil Gas	3, 2 L Summs	
" " " " SV-09		14:59	15:16				
" " " " SV-09 MVP		14:59	15:16				
" " " " SV-10 D		15:37	15:53				
" " " " SV-10 S		16:27	16:42				
" " " " SV-11 D		16:02	16:30				
" " " " SV-11 S		16:11	16:41				
" " " " SV-12		17:40	18:01				
" " " " SV-13		17:12	17:36				
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by: (Signature)		Date	Time
Relinquished by: (Signature) <i>Michael Duchon</i>		10/16/08	08:40	<i>[Signature]</i>		10/13/08	08:13
Sample Disposal Method:		Date	Time	Received for Laboratory: (Signature)		Date	Time
		10/20/08	12:50	<i>[Signature]</i>		10/20/08	11:50
		Disposed of by: (Signature)				Date	Time
SAMPLE COLLECTOR		ANALYTICAL LABORATORY		Shipper ID #			
100 State Street, Suite 600 Montpelier, VT 05602 (802) 229-4600 Fax (802) 229-5876		Spectrum Analytical " Almgren Dr. Agawam, MA 01001					

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

MITKEM LABORATORIES

Sample Condition Form

Received By: <u>C.A.J.</u>		Reviewed By: <u>[Signature]</u> 10/25/08		Date: <u>10/25/08</u>	MITKEM Workorder #: <u>01916</u>		
Client Project: <u>Kenilworth - LF</u>				Client: <u>Johnson</u>			Soil Headspace or Air Bubbles $\geq 1/4"$
		Preservation (pH)					VOA Matrix
		HNO ₃	H ₂ SO ₄	HCl	NaOH	H ₃ PO ₄	
1) Cooler Sealed	Yes/No	01916	01				
			02				
2) Custody Seal(s)	Present / Absent		03				
	Coolers / Bottles		04				
	Intact / Broken		05				
			06				
3) Custody Seal Number(s)	<u>NA</u>	01916	07				
/							
4) Chain-of-Custody	Present / Absent						
5) Cooler Temperature							
Coolant Condition							
6) Airbill(s)	Present / Absent						
Airbill Number(s)	<u>Cum</u>						
7) Sample Bottles	Intact / Broken / Leaking						
8) Date Received	<u>10/25/08</u>						
9) Time Received	<u>12:50</u>						
Preservative Name/Lot No:							

VOA Matrix Key:

US = Unpreserved Soil	A = Air
UA = Unpreserved Aqu.	H = HCl
M = MeOH	E = Encore
N = NaHSO ₄	F = Freeze

See Sample Condition Notification/Corrective Action Form yes / no

Rad OK yes/ no

Last Page of Data Report

Report Date:
02-Apr-09 15:13



- Final Report
 Re-Issued Report
 Revised Report

SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Laboratory Report

Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Attn: Bob Osborne

Project: Kennelworth Park - DC
Project 3-0700-11

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA92454-01	KPS-JCO-SV-101S	Air	21-Mar-09 13:22	22-Mar-09 09:20
SA92454-02	KPS-JCO-SV-102S	Air	21-Mar-09 14:10	22-Mar-09 09:20
SA92454-03	KPS-JCO-SV-103D	Air	21-Mar-09 10:14	22-Mar-09 09:20
SA92454-04	KPS-JCO-SV-103 Dup	Air	21-Mar-09 10:14	22-Mar-09 09:20
SA92454-05	KPS-JCO-SV-106D	Air	21-Mar-09 10:34	22-Mar-09 09:20
SA92454-06	KPS-JCO-SV-104D	Air	21-Mar-09 11:02	22-Mar-09 09:20
SA92454-07	KPS-JCO-SV-105D	Air	21-Mar-09 11:22	22-Mar-09 09:20

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435
Vermont # VT-11393



Authorized by:

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

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes.

Please note that this report contains 6 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supercedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report is available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

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 or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.

CASE NARRATIVE:

The samples were received 20.0 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

Sample Identification

KPS-JCO-SV-101S

SA92454-01

Client Project #

3-0700-11

Matrix

Air

Collection Date/Time

21-Mar-09 13:22

Received

22-Mar-09

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

Subcontracted Analyses

Analysis performed by MITKEM - 11522

74-82-8	Methane	BRL	U	PPMV	10	1	EPA 3C	26-Mar-09	26-Mar-09	42562	
---------	---------	-----	---	------	----	---	--------	-----------	-----------	-------	--

Sample Identification

KPS-JCO-SV-102S

SA92454-02

Client Project #

3-0700-11

Matrix

Air

Collection Date/Time

21-Mar-09 14:10

Received

22-Mar-09

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

Subcontracted Analyses

Analysis performed by MITKEM - 11522

74-82-8	Methane	2,300		PPMV	10	1	EPA 3C	26-Mar-09	26-Mar-09	42562	
---------	---------	-------	--	------	----	---	--------	-----------	-----------	-------	--

Sample Identification

KPS-JCO-SV-103D

SA92454-03

Client Project #

3-0700-11

Matrix

Air

Collection Date/Time

21-Mar-09 10:14

Received

22-Mar-09

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

Subcontracted Analyses

Analysis performed by MITKEM - 11522

74-82-8	Methane	BRL	U	PPMV	10	1	EPA 3C	26-Mar-09	26-Mar-09	42562	
---------	---------	-----	---	------	----	---	--------	-----------	-----------	-------	--

Sample Identification

KPS-JCO-SV-103 Dup

SA92454-04

Client Project #

3-0700-11

Matrix

Air

Collection Date/Time

21-Mar-09 10:14

Received

22-Mar-09

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

Subcontracted Analyses

Analysis performed by MITKEM - 11522

74-82-8	Methane	BRL	U	PPMV	10	1	EPA 3C	26-Mar-09	26-Mar-09	42562	
---------	---------	-----	---	------	----	---	--------	-----------	-----------	-------	--

Sample Identification

KPS-JCO-SV-106D

SA92454-05

Client Project #

3-0700-11

Matrix

Air

Collection Date/Time

21-Mar-09 10:34

Received

22-Mar-09

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

Subcontracted Analyses

Analysis performed by MITKEM - 11522

74-82-8	Methane	BRL	U	PPMV	10	1	EPA 3C	26-Mar-09	26-Mar-09	42562	
---------	---------	-----	---	------	----	---	--------	-----------	-----------	-------	--

Sample Identification

KPS-JCO-SV-104D

SA92454-06

Client Project #

3-0700-11

Matrix

Air

Collection Date/Time

21-Mar-09 11:02

Received

22-Mar-09

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

Subcontracted Analyses

Analysis performed by MITKEM - 11522

74-82-8	Methane	BRL	U	PPMV	10	1	EPA 3C	26-Mar-09	26-Mar-09	42562	
---------	---------	-----	---	------	----	---	--------	-----------	-----------	-------	--

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Sample Identification
KPS-JCO-SV-105D
SA92454-07

Client Project #
3-0700-11

Matrix
Air

Collection Date/Time
21-Mar-09 11:22

Received
22-Mar-09

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
Subcontracted Analyses											
<i>Analysis performed by MITKEM - 11522</i>											
74-82-8	Methane	BRL	U	PPMV	10	1	EPA 3C	26-Mar-09	26-Mar-09	42562	

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit BRL = Below Reporting Limit

Subcontracted Analyses - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 42562 - EPA 3C										
<u>DUP (H0451-02ADUP)</u>										
Prepared & Analyzed: 26-Mar-09										
Methane	2673		PPMV	10				-	16.5	30.0
<u>LCS (LCS-42562)</u>										
Prepared & Analyzed: 26-Mar-09										
Methane	429.0		PPMV	10			85.8	70-130		
<u>MBLK (MB-42562)</u>										
Prepared & Analyzed: 26-Mar-09										
Methane	BRL	U	PPMV	10				-		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit BRL = Below Reporting Limit

Notes and Definitions

U	Compound not detected above a reporting limit
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 plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): 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.

Matrix Spike: 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.

Method Blank: 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.

Surrogate: 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.

CHAIN OF CUSTODY RECORD

7047

SP92451 BM

Client / Project Name		Project Location		ANALYZES															
NPS - Kehilaworth Park South		Washington DC																	
Project No 3-0700-11		Field Logbook No. TR0-9 Field sheets																	
Sampler (Signature) <i>[Signature]</i>		Chain of Custody Tape No.																	
Sample No. / Identification	Date	End Time	Lab Sample Number	Type of Sample	REMARKS														
KPS-500-SV-1015	3/21/09	13:22	02	Air (Soil Gas)	3.2 L Summary														
KPS-500-SV-1025		14:10	02																
KPS-500-SV-1035		10:14	03																
KPS-500-SV-103 Drop		10:14	04																
KPS-500-SV-106D		10:34	05																
KPS-500-SV-104D		11:02	06																
KPS-500-SV-105D	3/21/09	11:22	07	Air (Soil Gas)	All samples to samples														
<table border="1"> <tr> <td>Signature</td> <td>Date</td> <td>Time</td> <td>Received by (Signature)</td> <td>Received by Laboratory (Signature)</td> <td>Date</td> <td>Time</td> </tr> <tr> <td><i>[Signature]</i></td> <td>3/21/09</td> <td>9:20</td> <td><i>[Signature]</i></td> <td></td> <td>3/18/09</td> <td>9:45 AM</td> </tr> </table>						Signature	Date	Time	Received by (Signature)	Received by Laboratory (Signature)	Date	Time	<i>[Signature]</i>	3/21/09	9:20	<i>[Signature]</i>		3/18/09	9:45 AM
Signature	Date	Time	Received by (Signature)	Received by Laboratory (Signature)	Date	Time													
<i>[Signature]</i>	3/21/09	9:20	<i>[Signature]</i>		3/18/09	9:45 AM													
Sample Disposal Method:		Disposed of by: (Signature)		Date															
SAMPLE COLLECTOR:		ANALYTICAL LABORATORY:		SHIPPER ID #															
THE JOHNSON COMPANY, INC. 1000 2nd Street Washington, DC 20004 Phone: 202-391-1000 Fax: 202-391-1000		Spectrum Analytical Hydram MFA Box 789-9115		Courier/Drop															

NOTE: To accompany sample to the lab and returned to the Johnson Co. YELLOW Lab copy. JMK - Transport only. GILD - Sampler copy.

202-

APPENDIX 6
SURFACE SOIL LABORATORY REPORTS

Report Date:
27-Oct-08 11:37



- Final Report
- Re-Issued Report
- Revised Report

SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Laboratory Report

Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Attn: Bob Osborne

Project: Kennelworth Park - DC
Project 3-0700-11

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA85969-01	KPN-JCO-SS-01	Soil	14-Oct-08 07:45	15-Oct-08 10:35
SA85969-02	KPN-JCO-SS-02	Soil	14-Oct-08 09:30	15-Oct-08 10:35
SA85969-03	KPN-JCO-SS-03	Soil	14-Oct-08 10:35	15-Oct-08 10:35
SA85969-04	KPN-JCO-SS-04	Soil	14-Oct-08 11:10	15-Oct-08 10:35
SA85969-05	KPN-JCO-SS-05	Soil	14-Oct-08 11:50	15-Oct-08 10:35
SA85969-06	KPN-JCO-SS-06	Soil	14-Oct-08 15:40	15-Oct-08 10:35
SA85969-07	KPN-JCO-SS-07	Soil	14-Oct-08 15:45	15-Oct-08 10:35
SA85969-08	KPN-JCO-SS-07Dup	Soil	14-Oct-08 15:50	15-Oct-08 10:35
SA85969-09	KPN-JCO-SS-08	Soil	14-Oct-08 12:30	15-Oct-08 10:35
SA85969-10	KPN-JCO-SS-09	Soil	14-Oct-08 13:05	15-Oct-08 10:35
SA85969-11	KPN-JCO-SS-10	Soil	14-Oct-08 13:30	15-Oct-08 10:35
SA85969-12	KPN-JCO-SS-11	Soil	14-Oct-08 15:55	15-Oct-08 10:35
SA85969-13	KPN-JCO-SS-12	Soil	14-Oct-08 16:07	15-Oct-08 10:35
SA85969-14	KPN-JCO-SS-13	Soil	14-Oct-08 15:20	15-Oct-08 10:35

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes.

Please note that this report contains 9 pages of analytical data plus Chain of Custody document(s).

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

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435
Vermont # VT-11393



Authorized by:

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

Technical Reviewer's Initial:

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 or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

Sample Identification

KPN-JCO-SS-01

SA85969-01

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 07:45

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	7,390	TOCp	mg/kg	100	1	SW846 9060	17-Oct-08	17-Oct-08	8101281	
Toxicity Characteristics											
	pH	7.19	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:16	8101079	X

Sample Identification

KPN-JCO-SS-02

SA85969-02

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 09:30

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	3,370	TOCk	mg/kg	100	1	SW846 9060	17-Oct-08	17-Oct-08	8101281	
Toxicity Characteristics											
	pH	7.29	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:21	8101079	X

Sample Identification

KPN-JCO-SS-03

SA85969-03

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 10:35

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	9,790	TOCi	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	7.42	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:26	8101079	X

Sample Identification

KPN-JCO-SS-04

SA85969-04

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 11:10

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	6,620	TOCj	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	7.11	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:29	8101079	X

Sample Identification

KPN-JCO-SS-05

SA85969-05

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 11:50

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	13,000	TOCn	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	6.86	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 12:49	8101079	X

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Page 2 of 9

Sample Identification
KPN-JCO-SS-06
SA85969-06

Client Project #
3-0700-11

Matrix
Soil

Collection Date/Time
14-Oct-08 15:40

Received
15-Oct-08

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Batch	Cert.
General Chemistry Parameters											
	Total Organic Carbon	23,000	TOCl	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	7.08	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 12:50	8101079	X

Sample Identification
KPN-JCO-SS-07
SA85969-07

Client Project #
3-0700-11

Matrix
Soil

Collection Date/Time
14-Oct-08 15:45

Received
15-Oct-08

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Batch	Cert.
General Chemistry Parameters											
	Total Organic Carbon	37,200	TOC	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	6.74	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 12:52	8101079	X

Sample Identification
KPN-JCO-SS-07Dup
SA85969-08

Client Project #
3-0700-11

Matrix
Soil

Collection Date/Time
14-Oct-08 15:50

Received
15-Oct-08

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Batch	Cert.
General Chemistry Parameters											
	Total Organic Carbon	50,100	TOCc	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	6.44	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 12:54	8101079	X

Sample Identification
KPN-JCO-SS-08
SA85969-09

Client Project #
3-0700-11

Matrix
Soil

Collection Date/Time
14-Oct-08 12:30

Received
15-Oct-08

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Batch	Cert.
General Chemistry Parameters											
	Total Organic Carbon	3,510	TOCf	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	7.08	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 12:57	8101079	X

Sample Identification
KPN-JCO-SS-09
SA85969-10

Client Project #
3-0700-11

Matrix
Soil

Collection Date/Time
14-Oct-08 13:05

Received
15-Oct-08

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	Dilution	Method Ref.	Prepared	Analyzed	Batch	Cert.
General Chemistry Parameters											
	Total Organic Carbon	5,460	TOCe	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	7.22	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 12:58	8101079	X

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Page 3 of 9

Sample Identification**KPN-JCO-SS-10**

SA85969-11

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 13:30

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	11,600	TOCo	mg/kg	100	1	SW846 9060	20-Oct-08	20-Oct-08	8101418	
Toxicity Characteristics											
	pH	7.18	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:04	8101079	X

Sample Identification**KPN-JCO-SS-11**

SA85969-12

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 15:55

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	8,420	TOCg	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530	
Toxicity Characteristics											
	pH	7.44	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:06	8101079	X

Sample Identification**KPN-JCO-SS-12**

SA85969-13

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 16:07

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	16,200	TOCd	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530	
Toxicity Characteristics											
	pH	7.38	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:07	8101079	X

Sample Identification**KPN-JCO-SS-13**

SA85969-14

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

14-Oct-08 15:20

Received

15-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	33,200	TOCb	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530	
Toxicity Characteristics											
	pH	6.53	pHHT	pH Units		1	SW846 9045C	15-Oct-08 11:09	15-Oct-08 13:12	8101079	X

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Page 4 of 9

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 8101281 - General Preparation										
<u>Blank (8101281-BLK1)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	BRL		mg/kg	100						
<u>Calibration Blank (8101281-CCB1)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	-1.37		mg/kg							
<u>Calibration Blank (8101281-CCB2)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	-2.90		mg/kg							
<u>Calibration Check (8101281-CCV1)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	894		mg/kg		1000		89	85-115		
<u>Calibration Check (8101281-CCV2)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	8040		mg/kg		8000		100	85-115		
<u>Calibration Check (8101281-CCV3)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	1030		mg/kg		1000		103	85-115		
<u>Calibration Check (8101281-CCV4)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	7880		mg/kg		8000		99	85-115		
<u>Duplicate (8101281-DUP1)</u>										
Source: SA85809-02										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	3780	TOCh	mg/kg	100		3390			11	20
<u>Reference (8101281-SRM1)</u>										
Prepared & Analyzed: 17-Oct-08										
Total Organic Carbon	2980		mg/kg	100	2490		120	57.35-180.7		
Batch 8101418 - General Preparation										
<u>Blank (8101418-BLK1)</u>										
Prepared & Analyzed: 20-Oct-08										
Total Organic Carbon	BRL		mg/kg	100						
<u>Calibration Blank (8101418-CCB1)</u>										
Prepared & Analyzed: 20-Oct-08										
Total Organic Carbon	-5.89		mg/kg							
<u>Calibration Blank (8101418-CCB2)</u>										
Prepared & Analyzed: 20-Oct-08										
Total Organic Carbon	10.7		mg/kg							
<u>Calibration Check (8101418-CCV1)</u>										
Prepared & Analyzed: 20-Oct-08										
Total Organic Carbon	933		mg/kg		1000		93	85-115		
<u>Calibration Check (8101418-CCV2)</u>										
Prepared & Analyzed: 20-Oct-08										
Total Organic Carbon	7920		mg/kg		8000		99	85-115		
<u>Calibration Check (8101418-CCV3)</u>										
Prepared & Analyzed: 20-Oct-08										
Total Organic Carbon	1040		mg/kg		1000		104	85-115		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch 8101418 - General Preparation									
<u>Calibration Check (8101418-CCV3)</u>									
Prepared & Analyzed: 20-Oct-08									
<u>Calibration Check (8101418-CCV4)</u>									
Prepared & Analyzed: 20-Oct-08									
Total Organic Carbon	7770		mg/kg		8000		97 85-115		
<u>Duplicate (8101418-DUP1)</u> Source: SA85969-04									
Prepared & Analyzed: 20-Oct-08									
Total Organic Carbon	7610	TOCm	mg/kg	100		6620		14	20
<u>Reference (8101418-SRM1)</u>									
Prepared & Analyzed: 20-Oct-08									
Total Organic Carbon	2150		mg/kg	100	2490		86 37.35-180.7		
Batch 8101530 - General Preparation									
<u>Blank (8101530-BLK1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	BRL		mg/kg	100					
<u>Calibration Blank (8101530-CCB1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	14.6		mg/kg						
<u>Calibration Blank (8101530-CCB2)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	-1.70		mg/kg						
<u>Calibration Check (8101530-CCV1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	980		mg/kg		1000		98 85-115		
<u>Calibration Check (8101530-CCV2)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	7950		mg/kg		8000		99 85-115		
<u>Calibration Check (8101530-CCV3)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	1010		mg/kg		1000		101 85-115		
<u>Calibration Check (8101530-CCV4)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	7860		mg/kg		8000		98 85-115		
<u>Duplicate (8101530-DUP1)</u> Source: SA85969-12									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	7820	TOCa	mg/kg	100		8420		7	20
<u>Reference (8101530-SRM1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	2310		mg/kg	100	2490		93 37.35-180.7		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Toxicity Characteristics - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 8101079 - General Preparation										
<u>Duplicate (8101079-DUP1)</u> Source: SA85969-01										
Prepared & Analyzed: 15-Oct-08										
pH	7.38		pH Units			7.19			3	5
<u>Duplicate (8101079-DUP2)</u> Source: SA85969-14										
Prepared & Analyzed: 15-Oct-08										
pH	6.48		pH Units			6.53			0.8	5
<u>Reference (8101079-SRM1)</u>										
Prepared & Analyzed: 15-Oct-08										
pH	7.04		pH Units		7.00		101	97.5-102.5		
<u>Reference (8101079-SRM2)</u>										
Prepared & Analyzed: 15-Oct-08										
pH	7.00		pH Units		7.00		100	97.5-102.5		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Notes and Definitions

pHHT	A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for pH is not specified within the method other than to state that the samples should be analyzed as soon as possible.
TOC	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 104.5.
TOCa	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 11.31.
TOCb	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 114.6.
TOCc	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 20.31.
TOCd	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 20.97.
TOCe	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 22.2.
TOCf	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 32.75.
TOCg	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 34.12.
TOCh	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 38.72.
TOCi	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 40.94.
TOCj	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 42.82.
TOCk	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 45.91.
TOCl	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 45.92.
TOCm	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 49.5.
TOCn	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 61.22.
TOCo	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 67.64.
TOCp	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 71.8.
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 plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): 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.

Matrix Spike: 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.

Method Blank: 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.

Surrogate: 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.

CHAIN OF CUSTODY RECORD

SARSR0901

8223

Client / Project Name

NPS

Project Location

Kennelworth Park DC

Project No.

Z-0700-11

Field Logbook No.

Chain of Custody Tape No.

8223

Sampler: (Signature)

[Signature]

ANALYZES

400 Amber
400 Amber

Sample No. / Identification

Date

Time

Lab Sample Number

Type of Sample

TOC
PH

REMARKS

KPN-JC0-SS-01	10/14/08	7:45	SARSR0901	Soil	X	X							
KPN-JC0-SS-02		9:30			X	X							
KPN-JC0-SS-03		10:35			X	X							
KPN-JC0-SS-04		11:10			X	X							
KPN-JC0-SS-05		11:50			X	X							
KPN-JC0-SS-06		15:40			X	X							
KPN-JC0-SS-07		15:45			X	X							
KPN-JC0-SS-07DP		15:50			X	X							
KPN-JC0-SS-08		12:30			X	X							
KPN-JC0-SS-09	10/14/08	13:05		Soil	X	X							
Relinquished by: (Signature)		<i>[Signature]</i>		Date	10/14/08	Time	13:00	Received for Laboratory: (Signature)		Date	10/15	Time	10:35
Relinquished by: (Signature)		<i>[Signature]</i>		Date		Time		Received by: (Signature)		Date		Time	
Sample Disposal Method:		FLEX		Disposed of by: (Signature)		<i>[Signature]</i>				Date		Time	

SAMPLE COLLECTOR

100 Star Street, Suite 600
Middletown, VT 05602
(802) 229-4600
Fax (802) 229-5876

THE JOHNSON COMPANY, INC.
Environmental Sciences and Engineering

ANALYTICAL LABORATORY

Spectrum Analytical
11 Altm Green Dr
577ICE Agawan, MA 01001

Shipper ID #
Fed Ex

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

CHAIN OF CUSTODY RECORD

SAS9A09 CR 8224

Client / Project Name NPS		Project Location Kennerly Park DC		ANALYZES			
Project No. 3-0700-11		Field Logbook No. —		REMARKS			
Sampler: (Signature) <i>[Signature]</i>		Chain of Custody Tape No. 8223		<p>TOC (4 oz Amber Ice)</p> <p>PH (4 oz Amber Ice)</p>			
Sample No. / Identification	Date	Time	Lab Sample Number	Type of Sample	Received by: (Signature)	Date	Time
HPN-TCO-SS-10	10/14/08	13:30	SAS9A09-11	Soil	<i>[Signature]</i>		
HPN-TCO-SS-11		15:55					
HPN-TCO-SS-12		16:07					
HPN-TCO-SS-13	10/14/08	15:20					
<p>Relinquished by: (Signature) <i>[Signature]</i> Date 10/14/08 Time 18:00</p> <p>Relinquished by: (Signature) FCX Date _____ Time _____</p> <p>Sample Disposal Method: _____ Disposed of by: (Signature) <i>[Signature]</i> Date _____ Time _____</p>							
SAMPLE COLLECTOR				ANALYTICAL LABORATORY			
100 State Street, Suite 600 Montpelier, VT 05602 (802) 229-4600 Fax (802) 229-5875				THE JOHNSON COMPANY, INC. Environmental Sciences and Engineering 5.73ICE Spectrum Analytical 11 Almgren Dr Agawan, NH 01001			
SHIPPER ID # FCX							

WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

FedEx US Airbill

Express

Tracking Number **8674 9945 0427**

1 From Date **10/14/08**



Sender's Name **Bob Osborne**

Address **The Johnson Co**

City **Montpelier** State **VT** ZIP **05602**

2 Your Internal Billing Reference **3-0700-11**

3 To Recipient's Name **Sample Receiving** Phone **413 789-9018**

Company **Spectrum Analytical**
Address **11 Almgren Dr**

City **Acquinn** State **MA** ZIP **01001**



8674 9945 0427

Post Office # **0200**

Recipient's Copy

4a Express Package Service

Packages up to 150 lbs.

FedEx Priority Overnight
Next business day, Monday through Friday, before 10:30 a.m. delivery. Signature required.

FedEx First Overnight
Next business day, Monday through Friday, before 8 a.m. delivery. Signature required.

4b Express Freight Service

Packages over 150 lbs.

FedEx 1 Day Freight
Next business day, Monday through Friday, before 10:30 a.m. delivery. Signature required.

FedEx 2 Day Freight
Second business day, Monday through Friday, before 10:30 a.m. delivery. Signature required.

5 Packaging

FedEx Envelope*
 FedEx Pak*
 FedEx Box
 FedEx Tube
 Other

6 Special Handling

SATURDAY Delivery
Saturday delivery. Signature required.
 HOLD Weekday
Hold package for pickup on a weekday.
 HOLD Saturday
Hold package for pickup on a Saturday.

Does this shipment contain dangerous goods?
 No
 Yes (Specify hazard class, hazard label, and proper shipping name.)

7 Payment

Sender's account
 Recipient's account
 Third Party
 Credit Card
 Cash/Check

Send funds from the credit/debit below:
 Discover
 Visa
 MasterCard
 American Express

Total Packages
Total Weight
Total Declared Value **\$ 2000.00**

8 Residential Delivery Signature Options

No Signature Required
 Direct Signature
 Indirect Signature
 Signature Required



Report Date:
27-Oct-08 15:10



- Final Report
- Re-Issued Report
- Revised Report

SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Laboratory Report

Johnson Company
100 State Street, Suite 600
Montpelier, VT 05602
Attn: Bob Osborne

Project: Kennelworth Park - DC
Project 3-0700-11

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA86050-01	KPS-JCO-SS-01	Soil	15-Oct-08 10:05	16-Oct-08 10:20
SA86050-02	KPS-JCO-SS-02	Soil	15-Oct-08 10:15	16-Oct-08 10:20
SA86050-03	KPS-JCO-SS-03	Soil	15-Oct-08 10:25	16-Oct-08 10:20
SA86050-04	KPS-JCO-SS-04	Soil	15-Oct-08 10:00	16-Oct-08 10:20
SA86050-05	KPS-JCO-SS-05	Soil	15-Oct-08 11:00	16-Oct-08 10:20
SA86050-06	KPS-JCO-SS-06	Soil	15-Oct-08 09:50	16-Oct-08 10:20
SA86050-07	KPS-JCO-SS-07	Soil	15-Oct-08 10:55	16-Oct-08 10:20
SA86050-08	KPS-JCO-SS-08	Soil	15-Oct-08 09:36	16-Oct-08 10:20
SA86050-09	KPS-JCO-SS-09	Soil	15-Oct-08 09:45	16-Oct-08 10:20
SA86050-10	KPS-JCO-SS-10	Soil	15-Oct-08 11:05	16-Oct-08 10:20
SA86050-11	KPS-JCO-SS-10-Dup	Soil	15-Oct-08 11:05	16-Oct-08 10:20
SA86050-12	KPS-JCO-SS-11	Soil	15-Oct-08 11:15	16-Oct-08 10:20

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Spectrum Analytical holds certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes.

Please note that this report contains 9 pages of analytical data plus Chain of Custody document(s).

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

Massachusetts # M-MA138/MA1110
Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538
New Jersey # MA011/MA012
New York # 11393/11840
Pennsylvania # 68-04426/68-02924
Rhode Island # 98
USDA # S-51435
Vermont # VT-11393



Authorized by:

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

Technical Reviewer's Initial:

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 or analyte indicated. Please refer to our "Quality" web page at www.spectrum-analytical.com for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).

Sample Identification**KPS-JCO-SS-01**

SA86050-01

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 10:05

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

General Chemistry Parameters

Total Organic Carbon	7,660	TOCf	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530		
----------------------	-------	------	-------	-----	---	------------	-----------	-----------	---------	--	--

Toxicity Characteristics

pH	7.56	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:48	8101193	X	
----	------	------	----------	--	---	-------------	--------------------	--------------------	---------	---	--

Sample Identification**KPS-JCO-SS-02**

SA86050-02

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 10:15

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

General Chemistry Parameters

Total Organic Carbon	13,000	TOCa	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530		
----------------------	--------	------	-------	-----	---	------------	-----------	-----------	---------	--	--

Toxicity Characteristics

pH	6.90	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:48	8101193	X	
----	------	------	----------	--	---	-------------	--------------------	--------------------	---------	---	--

Sample Identification**KPS-JCO-SS-03**

SA86050-03

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 10:25

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

General Chemistry Parameters

Total Organic Carbon	18,500	TOCm	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530		
----------------------	--------	------	-------	-----	---	------------	-----------	-----------	---------	--	--

Toxicity Characteristics

pH	6.99	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:49	8101193	X	
----	------	------	----------	--	---	-------------	--------------------	--------------------	---------	---	--

Sample Identification**KPS-JCO-SS-04**

SA86050-04

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 10:00

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

General Chemistry Parameters

Total Organic Carbon	2,640	TOCc	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530		
----------------------	-------	------	-------	-----	---	------------	-----------	-----------	---------	--	--

Toxicity Characteristics

pH	7.29	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:50	8101193	X	
----	------	------	----------	--	---	-------------	--------------------	--------------------	---------	---	--

Sample Identification**KPS-JCO-SS-05**

SA86050-05

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 11:00

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
----------------	-------------------	---------------	-------------	--------------	-------------	-----------------	--------------------	-----------------	-----------------	--------------	--------------

General Chemistry Parameters

Total Organic Carbon	5,820	TOCd	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530		
----------------------	-------	------	-------	-----	---	------------	-----------	-----------	---------	--	--

Toxicity Characteristics

pH	7.27	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:51	8101193	X	
----	------	------	----------	--	---	-------------	--------------------	--------------------	---------	---	--

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Page 2 of 9

Sample Identification**KPS-JCO-SS-06**

SA86050-06

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 09:50

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	2,920	TOCl	mg/kg	100	1	SW846 9060	21-Oct-08	21-Oct-08	8101530	
Toxicity Characteristics											
	pH	7.22	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:52	8101193	X

Sample Identification**KPS-JCO-SS-07**

SA86050-07

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 10:55

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	11,600	TOCh	mg/kg	100	1	SW846 9060	22-Oct-08	22-Oct-08	8101604	
Toxicity Characteristics											
	pH	7.04	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:52	8101193	X

Sample Identification**KPS-JCO-SS-08**

SA86050-08

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 09:36

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	60,500	TOCj	mg/kg	100	1	SW846 9060	23-Oct-08	23-Oct-08	8101788	
Toxicity Characteristics											
	pH	6.87	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:53	8101193	X

Sample Identification**KPS-JCO-SS-09**

SA86050-09

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 09:45

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	175,000	TOCb	mg/kg	100	1	SW846 9060	22-Oct-08	22-Oct-08	8101604	
Toxicity Characteristics											
	pH	6.77	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:53	8101193	X

Sample Identification**KPS-JCO-SS-10**

SA86050-10

Client Project #

3-0700-11

Matrix

Soil

Collection Date/Time

15-Oct-08 11:05

Received

16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	3,940	TOCo	mg/kg	100	1	SW846 9060	22-Oct-08	22-Oct-08	8101604	
Toxicity Characteristics											
	pH	7.29	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:54	8101193	X

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Page 3 of 9

Sample Identification
KPS-JCO-SS-10-Dup
SA86050-11

Client Project #
3-0700-11

Matrix
Soil

Collection Date/Time
15-Oct-08 11:05

Received
16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	3,700	TOCi	mg/kg	100	1	SW846 9060	22-Oct-08	22-Oct-08	8101604	
Toxicity Characteristics											
	pH	7.27	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:54	8101193	X

Sample Identification
KPS-JCO-SS-11
SA86050-12

Client Project #
3-0700-11

Matrix
Soil

Collection Date/Time
15-Oct-08 11:15

Received
16-Oct-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Cert.</i>
General Chemistry Parameters											
	Total Organic Carbon	2,050	TOCg	mg/kg	100	1	SW846 9060	22-Oct-08	22-Oct-08	8101604	
Toxicity Characteristics											
	pH	7.37	pHHT	pH Units		1	SW846 9045C	16-Oct-08 13:31	16-Oct-08 13:55	8101193	X

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Page 4 of 9

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch 8101530 - General Preparation									
<u>Blank (8101530-BLK1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	BRL		mg/kg	100					
<u>Calibration Blank (8101530-CCB1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	14.6		mg/kg						
<u>Calibration Blank (8101530-CCB2)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	-1.70		mg/kg						
<u>Calibration Check (8101530-CCV1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	980		mg/kg		1000		98 85-115		
<u>Calibration Check (8101530-CCV2)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	7950		mg/kg		8000		99 85-115		
<u>Calibration Check (8101530-CCV3)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	1010		mg/kg		1000		101 85-115		
<u>Calibration Check (8101530-CCV4)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	7860		mg/kg		8000		98 85-115		
<u>Duplicate (8101530-DUP1)</u> Source: SA85969-12									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	7820	TOC	mg/kg	100		8420		7	20
<u>Reference (8101530-SRM1)</u>									
Prepared & Analyzed: 21-Oct-08									
Total Organic Carbon	2310		mg/kg	100	2490		93 57.35-180.7		
Batch 8101604 - General Preparation									
<u>Blank (8101604-BLK1)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	BRL		mg/kg	100					
<u>Calibration Blank (8101604-CCB1)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	-4.63		mg/kg						
<u>Calibration Blank (8101604-CCB2)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	-0.176		mg/kg						
<u>Calibration Check (8101604-CCV1)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	1000		mg/kg		1000		100 85-115		
<u>Calibration Check (8101604-CCV2)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	7910		mg/kg		8000		99 85-115		
<u>Calibration Check (8101604-CCV3)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	1090		mg/kg		1000		109 85-115		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch 8101604 - General Preparation									
<u>Calibration Check (8101604-CCV3)</u>									
Prepared & Analyzed: 22-Oct-08									
<u>Calibration Check (8101604-CCV4)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	8060		mg/kg		8000		101 85-115		
<u>Duplicate (8101604-DUP1)</u> Source: SA86050-11									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	5220	QR5, TOCn	mg/kg	100		3700		34	20
<u>Duplicate (8101604-DUP2)</u> Source: SA86050-12									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	2140	TOCk	mg/kg	100		2050		4	20
<u>Reference (8101604-SRM1)</u>									
Prepared & Analyzed: 22-Oct-08									
Total Organic Carbon	2360		mg/kg	100	2490		95 37.35-180.7		
Batch 8101788 - General Preparation									
<u>Blank (8101788-BLK1)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	BRL		mg/kg	100					
<u>Calibration Blank (8101788-CCB1)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	-37.0		mg/kg						
<u>Calibration Blank (8101788-CCB2)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	-0.548		mg/kg						
<u>Calibration Check (8101788-CCV1)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	7590		mg/kg		8000		95 85-115		
<u>Calibration Check (8101788-CCV2)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	18100		mg/kg		20000		91 85-115		
<u>Calibration Check (8101788-CCV3)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	7810		mg/kg		8000		98 85-115		
<u>Calibration Check (8101788-CCV4)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	18200		mg/kg		20000		91 85-115		
<u>Duplicate (8101788-DUP1)</u> Source: SA86050-08									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	70200	TOCe	mg/kg	100		60500		15	20
<u>Reference (8101788-SRM1)</u>									
Prepared & Analyzed: 23-Oct-08									
Total Organic Carbon	4410		mg/kg	100	2490		177 37.35-180.7		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Toxicity Characteristics - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 8101193 - General Preparation										
<u>Duplicate (8101193-DUP1)</u> Source: SA85089-19										
Prepared & Analyzed: 16-Oct-08										
pH	8.63		pH Units			8.67			0.5	5
<u>Reference (8101193-SRM1)</u>										
Prepared & Analyzed: 16-Oct-08										
pH	7.10		pH Units		7.00		101	97.5-102.5		
<u>Reference (8101193-SRM2)</u>										
Prepared & Analyzed: 16-Oct-08										
pH	7.10		pH Units		7.00		101	97.5-102.5		

This laboratory report is not valid without an authorized signature on the cover page.

* Reportable Detection Limit

BRL = Below Reporting Limit

Notes and Definitions

pHHT	A hold time of 24 hours has been set to expedite the analyses through the laboratory. However, the hold time for pH is not specified within the method other than to state that the samples should be analyzed as soon as possible.
QR5	RPD out of acceptance range.
TOC	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 11.31.
TOCa	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 15.33.
TOCb	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 19.01.
TOCc	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 20.75.
TOCd	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 24.15.
TOCe	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 27.99.
TOCf	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 29.66.
TOCg	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 3.8.
TOCh	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 32.5.
TOCi	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 34.42.
TOCj	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 35.93.
TOCk	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 45.7.
TOCl	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 47.43.
TOCm	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 53.72.
TOCn	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 54.18.
TOCo	This sample was analyzed in quadruplicate per method SW-846 9060. The % RPD is 91.48.
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 plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): 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.

Matrix Spike: 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.

Method Blank: 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.

Surrogate: 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.
June O'Connor

CHAIN OF CUSTODY RECORD

SA 86050 8225

Client / Project Name
NPS

Project Location
Keenleyside Fort, DC

ANALYZES

Field Logbook No.

Project No.
3-0700-11

Chain of Custody Tape No.
8225

Sampler (Signature)
[Signature]

8225

Sample No. / Identification	Date	Time	Lab Sample Number	Type of Sample	Received by: (Signature)	Received for Laboratory: (Signature)	REMARKS
KPS-J10-SS-0110	10/15/08	10:05	86050-01	Soils	X	X	
KPS-J10-SS-02	10:15		-02		X	X	
KPS-J10-SS-03	10:25		-03		X	X	
KPS-J10-SS-04	10:00		-04		X	X	
KPS-J10-SS-05	11:00		-05		X	X	
KPS-J10-SS-06	9:50		-06		X	X	
KPS-J10-SS-07	10:55		-07		X	X	
KPS-J10-SS-08	9:36		-08		X	X	
KPS-J10-SS-09	9:45		-09		X	X	
KPS-J10-SS-10	11:05		-10		X	X	
KPS-J10-SS-11	11:05		-11		X	X	
KPS-J10-SS-12	11:15		-12		X	X	

TOC
PH
4oz Amber Jar
4oz Amber Jar

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
<i>[Signature]</i>	10/15/08	18:30	<i>[Signature]</i>		

Sample Disposal Method: **Fed exp**

Disposed of by: (Signature) *[Signature]*

SAMPLE COLLECTOR

200 Star Street, Suite 600 THE JOHNSON COMPANY, INC.
Montpelier, VT 05602
(802) 229-4600
Fax (802) 229-5876
Environmental Sciences and Engineering

ANALYTICAL LABORATORY
Spectrum Analytical
11 Almgren Dr.
Wagamon, NH 01001

Shipper ID #
FedEx
490

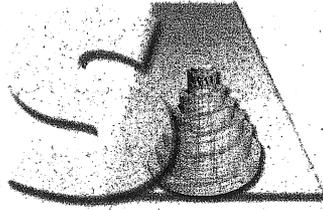
WHITE - To accompany sample to the lab and returned to the Johnson Co. YELLOW - Lab copy PINK - Transporter copy GOLD - Sampler copy

APPENDIX 7

LABORATORY TOC AND PH STANDARD OPERATING PROCEDURES



NY Lab # 11393/11840
FL Lab # E87600/E87936



Revision No. 8
Date: 11-17-08
Page 1 of 14

**UNCONTROLLED
COPY**

SPECTRUM ANALYTICAL, INC
Featuring
Hanibal Technology
11 Almgren Drive
Agawam, MA 01001

STANDARD OPERATING PROCEDURE
For
Total Organic and Inorganic Carbon
SW846 9060
SM5310B



Prepared by

11-17-08
Date



Reviewed by

11/17/08
Date



Lab Director

11/18/08
Date



NY Lab #11393/11840
FL Lab # E87600/E87936

Revision No. 8
Date: 11-17-08
Page 2 of 14

TABLE OF CONTENTS
STANDARD OPERATING PROCEDURE
for
TOTAL ORGANIC and INORGANIC CARBON
By SW846 9060/SM5310B

I.	SCOPE AND APPLICATION	4
II.	SUMMARY OF METHOD	4
III.	HEALTH & SAFETY	4
IV.	INTERFERENCES	4
V.	REAGENTS	4
VI.	APPARATUS AND MATERIALS	6
VII.	INSTRUMENT CALIBRATION	6
VIII.	SAMPLE COLLECTION, PRESERVATION, AND HANDLING	7
IX.	PROCEDURE	7
X.	DATA CALCULATION	10
XI.	QUALITY CONTROL	10
XII.	METHOD DETECTION LIMIT	11
XIII.	METHOD PERFORMANCE	11
XIV.	POLLUTION PREVENTION	11
XV.	WASTE MANAGEMENT	12
XVI.	ATTACHMENTS	13
XVII.	REFERENCES	13
XVIII.	GLOSSARY	14

I. SCOPE AND APPLICATION

- A. This method describes the measurement of total organic carbon (TOC) and inorganic carbon (IC) in various matrices:
Drinking, surface water as well as in domestic, industrial aqueous wastes and soil or sludge.
- B. This method is used to determine the concentration of total organic and/or inorganic carbon in particulated suspensions, water solutions and solids including samples such as soil, mud and sediments.
- C. The instrument measurement range is 4ppbC to 25,000ppmC. These values vary with sample type and analysis conditions.

II. SUMMARY OF METHOD

- A. This method provides the conditions for the detection of ppm levels of total organic carbon, inorganic carbon or total carbon by converting the various carbon forms to carbon dioxide by catalytic combustion.
- B. An infrared detector measures the carbon dioxide formed directly.
- C. The amount of carbon dioxide is directly proportional to the concentration of carbon in the sample.
- D. This method utilizes the external standard calibration technique to determine the carbon present. This is done by comparing the intensity of the sample absorbance to the response of the calibration standard.
- E. Total Organic Carbon (TOC) and Total Carbon (TC) analysis of soils, slurries, sediments, sludges, particulate-laden liquids, and other solids yield important insight in a variety of analytical applications. From quality assurance in chemical production to detection of contaminants in soils, this application could prove to be difficult without the proper equipment. Consequently, high temperature combustion oxidation with cobalt oxide as a catalyst and a CO₂ specific Infrared detector is the method of choice. Most TOC analyzers, such as the Apollo 9000 from Tekmar-Dohrmann, are often used for this application since it has a reliable infrared detector and it can be easily interfaced to a combustion "boat" apparatus. (183 Boat sampling module)



NY Lab #11393/11840
FL Lab # E87600/E87936

III. HEALTH & SAFETY

To maintain the application of OSHA regulations regarding the safe handling of the chemicals specified in this method, the laboratory must follow proper safety procedures:

- A. All chemical solvents should be transported on a cart when moved from room to room.
- B. All analytical operations, such as digestions, must be performed under a hood expressly designed for acid use.
- C. Safety glasses, gloves and protective clothing must be worn when preparing standards and digesting samples.
- D. The analyst must wear safety glasses and take extra care when opening the gas cylinders or checking for leaks in the gas lines. (See Spectrum's chemical hygiene plan on using compressed gas cylinders.)
- E. The analyst must dispose of all unwanted chemicals and acids in properly marked containers inside the hood and chemical cabinets. (See Spectrum's waste disposal plan.)

IV. INTERFERENCES

- A. Carbonate and bicarbonate carbons are interferences and must be removed or accounted for. Removal of carbonate and bicarbonate by acidification and purging is completed prior to TOC analysis.
- B. Any particulate in the sample may clog the openings in the syringe and must be avoided.
- C. Samples may need to be homogenized in a blender or a mortar and pestle in order to be injected reproducibly into the instrument.

V. REAGENTS/ STANDARDS

- A. Purchased
 - 1. Carbon Standard, 1000 ppm. And 2000 ppm.
Inorganic Carbon Standard, 1000 ppm
 - 2. DI water used in preparation of standards and for diluting of samples should be ultra pure to reduce the carbon concentration of the blank.



NY Lab #11393/11840
FL Lab # E87600/E87936

3. Sulfuric acid (H₂SO₄): TraceMetal grade.
4. Phosphoric acid: 25%.
5. TOC SRM for soil/ water.

B. Made In -House

1. Total organic \ inorganic carbon working solution: 5 &15 ppm: with a glass pipette add 0.5 and 1.5 mLs respectively of 1000 PPM organic/ inorganic standard and dilute to 100 mL. Prepare daily.
2. Total organic/inorganic carbon standard solutions for water: Prepare standard solutions of 0.5, 1, 5, 10, and 20 for applicable calibration curves.

Final ppm per 100 ml volume	Volume 1000 ppm Standard
20.0	2.0
10.0	1.0
5.0	0.5
1.0	0.1
0.5	0.05
0.0	0.0

3. Total organic carbon standard solutions for soil: 100, 500, 1000, 2000, 4000, 8000 ppm, directly injected by microliter syringe into the instrument for applicable calibration curves.

Final ppm per 100 ml volume	Volume 8000 ppm Standard
8000	As Is
4000	50.0
2000	25.0
1000	12.5
500	6.25
100	1.25

4. 8000 ppm Carbon Standard: Used to make TOC soil curve. Dissolve 4.2508g Potassium Hydrogen Pthalate in a 250mL volumetric flask. Bring to volume with DI H₂O.



NY Lab #11393/11840
FL Lab # E87600/E87936

Revision No. 8
Date: 11-17-08
Page 6 of 14

5. 1:1 HNO₃ and H₂O solution for removing IC from soil.

VI. APPARATUS AND MATERIALS

A. Water

1. Apollo 9000 TOC Combustion Analyzer. Model US06282005.
2. Analytical balance capable of accurately weighing 0.0001 g.
3. 40mL glass vials for autosampler.
4. Pipettes = all sizes needed.
5. Volumetric flasks = 100 mL.
6. 10 mL Luer-Lok syringe with 0.45 micron syringe filter for DOC

B. Soil

1. 183 Boat Sampling Module. Model US01130011.
2. Analytical balance capable of accurately weighing 0.0001g.
3. 50 microliter syringe.
4. Mortar and pestle for homogenization.
5. 60° C oven for removal of IC.
6. Quartz wool.

VII. INSTRUMENT CALIBRATION

A. Water calibration

1. Standards are made for the appropriate calibration range. For the low range calibration curve a blank, 0.5, 1, 5, 10 and 20 ppm standards are run. For high range a blank, 5, 10, 50, and 100 ppm standard are run.

NY Lab #11393/11840
FL Lab # E87600/E87936

2. Standards are run in ascending order.
3. See instrument manual for exact running procedures.
4. The instrument reads total organic carbon, inorganic carbon and total carbon, so standards must be prepared and the instrument must be calibrated for all.
5. At the completion of the calibration, a linear curve is displayed and printed for each type of analysis. It is up to the user to be sure that the calibration is acceptable. The R2 value must be ≥ 0.997 .

B. Soil Calibration

1. Standard solutions are used to perform multi spike concentration at various levels: 100, 500, 1000, 2000, 4000, and 8000 ppm.
2. The five-point calibration has been proven to be linear.

VIII. SAMPLE COLLECTION, PRESERVATION, AND HANDLING

- A. For both water and soil, sample containers must be pre-washed with detergents, acids, and DI water. Glass is preferable.
- B. Samples should be analyzed as soon as possible after sampling.
- C. Because of the possibility of oxidation or bacterial decomposition of some components of aqueous samples, the time between sample collection and the start of analysis should be minimal and the sample needs to be stored at 4°C and protected from sunlight and atmospheric oxygen.
- D. If samples cannot be analyzed right away, they should be preserved to a pH <2 with Phosphoric acid and kept at 4°C and away from sunlight.

IX. PROCEDURE

A. Water (TOC, TC, IC)

1. Pour about 30 mL of sample into a glass vial.

NY Lab #11393/11840
FL Lab # E87600/E87936

2. The instrument allows the sample to be recalculated against a different calibration curve if the sample is over range. If a sample is higher than the highest calibration range, it must be diluted.
3. See the instrument manual for complete details on running the samples.
4. All samples must be run in quadruplicate.

B. Water (DOC)

1. Filter sample and a blank using a 10 mL Luer-Lok syringe with a 0.45 micron syringe filter.
2. Proceed to step 1 under water (TOC, IC, and TC)

C. Boat Specifications

1. Standard Range of Detection is 0.5 to 160 μg of Carbon.
2. Range with Carbon Range Extension Kit – 0.5 to 800 μg of Carbon (P/N-885-462)
3. Sample Volume (Liquids) – 5 to 40 μL
4. Sample Weight (Solids) – 5 to 100 mg
5. Temperature - 700° C (samples which are composed of metals) to 900° C (normal operation)
 - a. The furnace temperature is adjustable up to 1000° C.
6. Method of Operation
 - a. Total Carbon (TC) is measured directly as a neat sample, without any pretreatment. TOC analysis is achieved by addition of a few drops of diluted HNO_3 : (1 part conc. HNO_3 ; 1 part H_2O) to the sample until effervescence is no longer visible. After the sample is acidified, it is placed in an oven at 60° C for 10-15 minutes, or until the sample appears to be dry, to assist in removal of inorganic carbon (IC). Inorganic carbon measurements can be made by subtracting TOC from TC (i.e., $\text{IC}=\text{TC} -$

NY Lab #11393/11840
 FL Lab # E87600/E87936

TOC).

- b. Homogeneous solid samples are weighed into a removable platinum or quartz boat, which is readily accessible through the flip-top hatch covered inlet. It is important that the solid samples be in a homogenized form for consistent repeatable results. Analytical mills, as seen in Tekmar-Dohrmann's laboratory product catalog such as the A-10 (P/N 23-0039-000) and A-20 (P/N 23-0042-000), may be used for homogenizing your solid samples. Liquids are injected directly into the sample boat through a removable septum port.
- c. The boat is manually advanced into the furnace, where the sample is combusted in the presence of a catalyst, cobalt oxide. The CO₂ gas formed from the combustion/oxidation of the sample is carried through a Teflon line from the combustion tube to the Apollo 9000 gas/liquid separator. There the sample gas is swept through the moisture and halide removal system with the carrier gas then detected by the CO₂ specific Non-Dispersive Infrared (NDIR) Detector. The detector measures the amount of carbon dioxide produced from the oxidation of carbon in the sample (as µg of carbon [C]).
- d. For solid samples, the actual concentration, ppmC, can be computed by dividing the software's resulting "ppmC" with the measured weight of the sample in grams (g). This will yield a result of "µg of C / g of sample", which is equal to ppm. This result in "µg of C" must fall below the "µg of C" of the highest standard on curve. If higher a smaller amount should be used. Soils are run in duplicate. The higher result is reported.
- e. For liquid samples, such as the Carbon standards, the actual concentration can be calculated by dividing the resulting ppmC value with the actual volume (ml) of the sample in the boat. Just as with solids, the final concentration units will be µg of C/ml of sample, which is equal to ppm.

An example of the calculation is given below:

$$\frac{\mu\text{g of C}}{(\text{g of sample}) \text{ or } (\text{mL of sample})} = \text{ppmC}$$

D. Cleaning Procedure

1. Run a cleaning procedure on the Apollo 9000 at the beginning and end of each sequence to clean out the system and prolong the life of the catalyst.



NY Lab #11393/11840
FL Lab # E87600/E87936

Revision No. 8
Date: 11-17-08
Page 10 of 14

a. In the TOC Talk 4.2 Software select Sample Setup. Go to File and select new. In the Pos column type in 1001 to draw DI water from the 1L supply. Select sample in the sample type column. Select cleaning procedure in the Method ID column. Run 6-10 reps.

X. DATA CALCULATION

The instrument prints out a value in ppm for total carbon, inorganic carbon, and organic carbon for each sample run. The value is calculated from the average of four sample repetitions. This number is multiplied by the dilution factor for the sample, if any. TOC boat sampler samples are calculated as an average of each of the four repetitions and reported along with the associated RPD value.

XI. QUALITY CONTROL

- A. QC standards are made up fresh daily from the total organic carbon stock solution of 1000 ppm.
- B. Any blank, and other DI water used, is taken directly from the DI water supply.
- C. For water: a blank, two mid-level, and two lower-level QC's, one of each is from a different lot # and an outside water SRM is also run. Results must fall within the manufacturers range. 5 and 15 ppm standard checks are run to verify the calibration curve. This QC must fall within 15 % of its known value.
- D. For soil: a blank, 2000ppm and 8000ppm each one from a different lot # and an outside soil SRM are run.
- E. To establish the ability to detect organic and inorganic carbon, the laboratory shall determine the MDL using a blank solution fortified at two to three times the estimated detection limit. To generate an MDL, seven identical aliquots are processed through the analytical method. The results are then entered in the MDL chart for TOC, where the actual MDL is calculated. The MDL generated must be low enough to detect carbon at the levels outlined in compliance monitoring regulations. This MDL is determined annually, unless a change in instrument hardware or operating conditions occurs which would warrant re-evaluation.

After all of these checks pass, a run may be started.

NY Lab #11393/11840
FL Lab # E87600/E87936

- A. There is a duplicate run for every 10 liquid samples. This result must be within 20%, of the original value. If the duplicate is more than +/- 20% of the value then the sample must be re-run if possible.
- B. On one of every ten samples, a matrix spike is performed. A known amount of total carbon is added to the sample. The % recovery must be within 30% or the data is suspect due to matrix interferences.
- C. QC check standards are run every 10 samples. This includes a QC of 5 ppm and a blank. A mid-run QC must be within 15% of its known concentration. If this check standard fails, a freshly prepared QC is run. If this fails, the entire run is suspect.

If any of these QC checks fail, another is run. If it fails again, the instrument must be checked for problems, i.e. it could be out of gas or out of a solution. In case of serious problems in the running of the instrument, the manufacturer can be contacted.

XII. METHOD DETECTION LIMIT

- A. Spectrum is in full compliance with NELAC requirements, however, MDL studies will be performed on an annual basis in support of state and program requirements such as CAM, RCP, ASP, CLP-like deliverables and specific project quality assurance objectives.
- B. To determine the MDL for each analyte, analyze a sample aliquot at 3-5X the detection limit or as specified by the method. The calculated MDL **must be greater** than 10% of the standard used. If the MDL is less than 10%, repeat the analysis using a smaller concentration. The ideal MDL will be slightly greater than 10% of the standard used.
- C. The results of the MDL studies must be within 50-150% of true value.

XIII. METHOD PERFORMANCE

Refer to Spectrum's Laboratory Information Management System (LIMS) for quality control charts.

XIV. POLLUTION PREVENTION

- A. Never dispose of samples, reagents, chemicals, or waste waters by pouring them down the sink. Always use designated waste containers for disposal.



NY Lab #11393/11840
FL Lab # E87600/E87936

- B. Plan accordingly to limit waste accumulation. Make only the amount of reagent that can be used before the expiration date. Do not make in excess.
- C. Clients should provide a sufficient amount of the sample for the requested analysis. Excess amounts of the sample result in increased disposal fees for the laboratory.

XV. WASTE MANAGEMENT

Spectrum Analytical is dedicated to implementing ways to efficiently utilize resources along with complying with all environmental laws and regulations in order to reduce the accumulation of waste as defined in Spectrum's Chemical Hygiene Plan. All questions and/or problems should be referred to the Health and Safety Manager.

A. Aqueous Wastes:

1. All **solvent contaminated** water must be collected in lab satellite-containers then transferred to a waste drum in the hazardous waste staging area where they are monitored and ultimately disposed of by a hazardous waste disposal facility.
2. All **non-solvent contaminated** aqueous wastes (including preserved water, digestates, instrument effluents, and corrosive aqueous wastes) are accumulated in lab satellite-containers and transferred to a drum in Hazardous Waste staging area #2 where they will be disposed by a licensed hazardous waste facility.
3. COD vials are disposed in a designated drum.

B. Solids:

1. Expired soil samples in the storage area are emptied into a drum and a sample is collected. The method of disposal will be determined by the findings of the sample profile.
2. Expired PCB containing samples (marked with yellow tape) are segregated and collected in the waste staging area and packed for disposal by a licensed hazardous waste facility.
3. Objects containing high levels of mercury (samples, broken thermometers, etc.) are segregated and collected in the waste staging area and packed for disposal by a hazardous waste facility.



NY Lab #11393/11840
FL Lab # E87600/E87936

C. Sludge, Tars, Oils:

These samples are accumulated in the waste staging area and packed for disposal by a hazardous waste facility/transporter.

- D. Highly contaminated objects (reagents, chemicals, vials, samples) are segregated and collected by each dept. to avoid mixing of incompatible materials. It is then collected, and packed periodically throughout the year by hazardous waste disposal facilities.

XVI. ATTACHMENTS

Daily Maintenance Checks for Apollo 9000.

Tips for maintaining Apollo 9000.

XVII. REFERENCES

Method 9060, Total Organic Carbon. September, 1986, U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Method 415.1, Total Organic Carbon. September, 1986, U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Standard Methods for the Examination of Water and Wastewater, Method 5310B: 18th, 19th, and 20th Editions.

Apollo 9000 TOC Combustion Analyzer, User Manual; Rev C. Version 11.09.00
Copy right 1999-2000

XVIII. GLOSSARY

TC:	Total Carbon
IC:	Inorganic Carbon
mg/L:	Milligram per Liter
mg/Kg:	Milligram per Kilogram
TOC:	Total Organic Carbon



NY Lab #11393/11840
FL Lab # E87600/E87936

Revision No. 8
Date: 11-17-08
Page 14 of 14

CO₂: Carbon Dioxide

mL: Milligram

MDL: Minimum Detection Limit

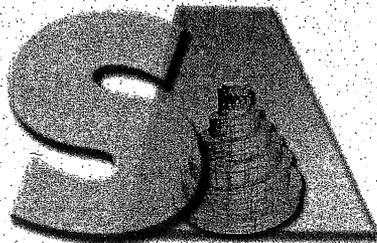
SRM: Standard Reference Material

QC: Quality Control

PPM: Parts per Million

ACCREDITED IN ACCORDANCE WITH

NY Lab # 11393/11840
FL Lab # E87600/E87936



**UNCONTROLLED
COPY**

SPECTRUM ANALYTICAL, INC
Featuring
Hanibal Technology
11 Almgren Drive
Agawam, MA 01001

Standard Operating Procedure
For
pH in Soil
SW 846 9045

Yurgen K. Gushytschenko
Prepared by

04/13/07
Date

Brian Daniels
Reviewed by

4/13/07
Date

[Signature]
Lab Director

4/14/07
Date



NY Lab #11393/11840
FL Lab # E87600/E87936

Revision No. 2
Date: 4/10/07
Page 2 of 10

TABLE OF CONTENTS

STANDARD OPERATING PROCEDURE for pH in Soil SW 846 9045

I.	SCOPE AND APPLICATION	3
II.	SUMMARY OF METHOD	3
III.	HEALTH AND SAFETY	3
IV.	INTERFERENCES	3
V.	REAGENTS	4
VI.	APPARATUS AND MATERIALS	4
VII.	SAMPLE COLLECTION, PRESERVATION AND HANDLING	4
VIII.	USING SEVENMULTI LINK AND ELEMENT DATA BASE	5
IX.	CALIBRATION	6
X.	PROCEDURE	7
XI.	QUALITY CONTROL	7
XII.	METHOD DETECTION LIMIT	8
XIII.	METHOD PERFORMANCE	8
XIV.	POLLUTION PREVENTION	8
XV.	WASTE MANAGEMENT	9
XVI.	REFERENCES	10
XVII.	ATTACHMENTS	10
XVIII.	GLOSSARY	10

I. SCOPE

- A. This method describes the electrometric measurement of the pH of soil samples.
- B. This method can be used for soils and wastes.

II. SUMMARY OF METHOD

- A. Soil samples are mixed with reagent water and the resultant pH is measured.
- B. Mettler-Toledo SevenMulti meter is used which automatically compensates for temperature.

III. HEALTH AND SAFETY

To maintain the application of OSHA regulations regarding the safe handling of the chemicals specified in this method, the laboratory must follow proper safety procedures:

- A. All chemical solvents should be transported on a cart when moved from room to room.
- B. All analytical operations, such as digestions, must be performed under a hood expressly designed for acid use.
- C. Safety glasses, gloves and protective clothing must be worn when preparing standards and digesting samples.
- D. The analyst must wear safety glasses and take extra care when opening the gas cylinders or checking for leaks in the gas lines. (See Spectrum's Chemical Hygiene Plan on using compressed gas cylinders.)
- E. The analyst must dispose of all unwanted chemicals and acids in properly marked containers inside the hood and chemical cabinets. (See Spectrum's Waste Disposal Plan.)

IV. INTERFERENCES

- A. Samples that have a true pH of <1 , or >10 may give false results. The range of the instrument will be exceeded and the results will come out to be either higher for <1 , or lower for >10 .



- B. A stable temperature is needed to avoid errors. Usually standard room temperature, 25° C, is the best temperature to read the pH of any sample.
- C. Oily samples may leave a coating on the electrode that will skew results. An oily electrode may be cleaned in a sonicator, or be washed with detergent a few times. After washing with detergent, the electrode should be rinsed several times with DI water placed in 1:10 HCl overnight and then thoroughly rinsed.

V. REAGENTS

- A. Reagent water = deionized water (ASTM Type I).
- B. Buffer solutions = pH 4, 7, and 10.

VI. APPARATUS AND MATERIALS

- A. Mettler-Toledo SevenMulti meter with temperature correction.
- B. InLab 413 probe (Zero point pH 7.00 +/- 0.25).
- C. Beakers = 30 or 50 mL and 250 mL.
- D. Analytical balance capable of accurately weighing 0.1 g.
- E. Magnetic stir plate.
- F. Teflon-coated stirring bars.
- G. Teflon stirring rods.

VII. SAMPLE COLLECTION, PRESERVATION AND HANDLING

- A. Samples should not be preserved. They should be refrigerated at 4° C.
- B. The samples should be analyzed as soon as possible.



VIII. USING SEVENMULTI LINK AND ELEMENT DATA BASE

- A. In Element go to Data Entry/Review under Laboratory Menu and create a data entry for your batch by selecting your batch from the box on the left side of the screen and click **“Create”** button.
- B. Export the data entry table by clicking **“Export”** button and double clicking **“Export”** file. Click **“Yes”** to save over it.
- C. Exit out of Element.
- D. On the desktop, double-click **“Export”** shortcut.
- E. Click the Bell icon at the top of the screen to format your logbook sheet for pH.
- F. Open File Menu and choose Save As. The Save As dialog box appears. Double-click on the Desktop folder shortcut, then open pH folder shortcut by doing something. In the File name box, key the number of your batch. Click **“Save”** button to save the file with the new name in the **“pH”** folder.
- G. Before measuring pH, double-click on the **LabX Direct-SevenMulti v.2.x** shortcut on the Desktop to establish a link between Computer and SevenMulti.
- H. Measure pH of the samples, duplicate, and SRM (pH 7) by clicking on the B2 cell (first cell in the **“Analyzed”** column) and press **“Read”** button on the SevenMulti. An instrument will automatically transfer data (date and time of the analysis, pH measurement, units of measurement) in the corresponding cells.
- I. After measuring pH of all the samples is finished click floppy disc icon to save the file. The first time you save the file. Answer **“Yes”** to prompt.
- J. Select the area of the spreadsheet that needs to be print out by clicking on the A1 cell at the top left corner and without releasing a button drag the mouse down to include all the samples and calibration data on the spreadsheet and to the right to include all the columns up to **“Analyte”** column. Release button. Go to File Menu, select **“Print Area”** command and click **“Set Print Area”**.
- K. Go to the Page Setup command on the File Menu. The Page Setup dialog box appears. Click the Page Tab (if it is not selected already). In the Orientation Section, click the Landscape button. Then click the Header/Footer Tab. Click the Custom Footer button, type in analyst’s initials and the date of preparation of analysis. Click **“OK”** button at the bottom of the dialog box.



NY Lab #11393/11840
FL Lab # E87600/E87936

Revision No. 2
Date: 4/10/07
Page 6 of 10

- L. Save changes made by clicking on the floppy disk icon and print a copy of the spreadsheet by clicking on the print icon. Exit out of Excel.
- M. In Element, go to Data Entry/Review and upload your data entry table. Select your batch and click "**Open**".
- N. Browse to **F:\Logbooks\Wet Chem\2007\pH** and select the Excel file whose filename is the batch number.
- O. Once results are uploaded right click "**Analyzed**" column and select **Analyzed=Prepared** command. Verify that all data is correct, and click "**Save**". "**Lock**" and "**Analyst Review**" results.
- P. All logbook spreadsheets are saved at **F:\Logbooks\Wet Chem\2007\pH** and are already formatted to print.

IX. CALIBRATION

- A. Prior to the calibration of the SevenMulti follow instructions of "**Using SevenMulti link and Element data base**" to create a logbook sheet in order to save calibration data.
- B. Obtain commercially manufactured buffer solutions, one each for pH 4, pH 7, and pH 10. Keep the bottles tightly closed and away from other standards and samples.
- C. Pour an aliquot of each, about 20 mL, into a small beaker along with a stir bar. These are kept by the pH meter and changed every day. The solution should be stirred while it is read.
- D. The SevenMulti features automatic calibration buffer recognition. This allows you to calibrate in order you like within a buffer group. Before you do calibration make sure that the Calibration Mode is set at **Segment Method** and that Standard Buffer group is set at # **7** (2.00, 4.01, 7.00, 10.00 @ 25.0 °C) in Calibration Setting Window. See Attachment (Operating Instruction: The pH/Ion and ISFET expansion units 6.1.2 Operation of the pH menu Pg.30-32).
- E. Calibration is done using new buffer solutions of pH 4, pH 7, and pH 10. Place pH 4 buffer solution on the stir plate and turn it on. Place pH probe on the electrode arm and lower it into the solution. Press **Calibration** button located on the Mettler Toledo Instrument. Once endpoint symbol (**A**) freezes and has curved line around it, instrument is ready to read next buffer solution. Repeat the procedure for buffer solutions with pH 7, and pH 10. Each time Calibration button is pressed it will be displayed as **CAL 1, 2, or 3** on the MettlerTolledo display. Once all three buffer solutions are used press "**End**" button located at the bottom of the Softkey Assignment Area. This will bring up

“Current Calibration Data pH” display showing: buffer solutions used, mV, offset point and slope in % units. The slopes of the curve should be between 90 and 105%. If not, the meter needs to be re-calibrated. Position cursor underneath the last entry on the spreadsheet. On the Softkey Assignment Area press second button from the bottom that says “**Save**”. This will save calibration settings into the SevenMulti system and will transfer calibration data to the computer. Keep only buffer solutions used, mV, offset point and slope in % units data, delete the rest.

X. PROCEDURE

A. Soils

1. For soil and waste samples, weigh out 20 grams into a small beaker. Add 20 mL of DI water and stir continuously with a Teflon-stirring rod for 5 minutes. Remove the stirring rod and let the sample sit for an hour.
2. Soils that are hydroscopic, and other soils with problematic matrices, may be further diluted. Mix 20 grams of soil to 40 mls of distilled water. Repeat, if necessary, with a larger aliquot of water
3. The samples may be filtered if needed to obtain a clear supernatant. If the supernatant is multiphasic, the oily layer is decanted off and the pH of just the aqueous layer is taken.
4. Let the suspension stand for one hour to allow most of the suspended solids to settle out. Analyze the supernatant for the pH.
5. Report the results “pH @ degrees Centigrade”.

XI. QUALITY CONTROL

A. The instrument is calibrated before each run using the following guidelines:

1. The electrode is checked to be sure that the solution is filled to the correct level.
2. A three-point calibration is performed using pH 4, pH 7, and pH 10 buffer solutions.
3. The slope of the line between the two points is calculated and can be displayed. This must be between 90% and 105%.

- B. Several steps are taken to ensure good quality while running the samples.
 - 1. The electrode is rinsed thoroughly between each sample.
- C. Electrode test

SevenMulti has a feature that allows you to check the drift, the slope, the offset and the response time of your pH electrode without performing a calibration. See Attachment (Operating Instruction: The pH/Ion and ISFET expansion units 6.1.2 Operation of the pH menu, 2.Electrode test Pg. 32).

XII. METHOD DETECTION LIMIT

- A. Spectrum is in full compliance with NELAC requirements, however, MDL studies will be performed on an annual basis in support of state and program requirements such as CAM, RCP, ASP, CLP-like deliverables and specific project quality assurance objectives.
- B. To determine the MDL for each analyte, analyze a sample aliquot at 3-5X the detection limit or as specified by the method. The calculated MDL **must be greater** than 10% of the standard used. If the MDL is less than 10%, repeat the analysis using a smaller concentration. The ideal MDL will be slightly greater than 10% of the standard used.
- C. The results of the MDL studies must be within 50-150% of true value.

XIII. METHOD PERFORMANCE

Refer to Spectrum's Laboratory Information Management System (LIMS) for quality control charts.

XIV. POLLUTION PREVENTION

- A. Never dispose of samples, reagents, chemicals, or waste waters by pouring them down the sink. Always use designated waste containers for disposal.
- B. Plan accordingly to limit waste accumulation. Make only the amount of reagent that can be used before the expiration date. Do not make in excess.
- C. Clients should provide a sufficient amount of the sample for the requested analysis. Excess amounts of the sample result in increased disposal fees for the laboratory.

XV. WASTE MANAGEMENT

Spectrum Analytical is dedicated to implementing ways to efficiently utilize resources along with complying with all environmental laws and regulations in order to reduce the accumulation of waste as defined in Spectrum's Chemical Hygiene Plan. All questions and/or problems should be referred to the Health and Safety Manager.

A. Aqueous Wastes:

1. All **solvent contaminated** water must be collected in lab satellite-containers then transferred to a waste drum in the hazardous waste staging area where they are monitored and ultimately disposed of by a hazardous waste disposal facility.
2. All **non-solvent contaminated** aqueous wastes (including preserved water, digestates, instrument effluents, and corrosive aqueous wastes) are accumulated in lab satellite-containers and transferred to a drum in Hazardous Waste staging area #2 where they will be disposed by a licensed hazardous waste facility.
3. COD vials are disposed in a designated drum.

B. Solids:

1. Expired soil samples in the storage area are emptied into a drum and a sample is collected. The method of disposal will be determined by the findings of the sample profile.
2. Expired PCB containing samples (marked with yellow tape) are segregated and collected in the waste staging area and packed for disposal by a licensed hazardous waste facility.
3. Objects containing high levels of mercury (samples, broken thermometers, etc.) are segregated and collected in the waste staging area and packed for disposal by a hazardous waste facility.

C. Sludge, Tars, Oils:

These samples are accumulated in the waste staging area and packed for disposal by a hazardous waste facility/transporter.

- ### D.
- Highly contaminated objects (reagents, chemicals, vials, samples) are segregated and collected by each dept. to avoid mixing of incompatible materials. It is then collected, and packed periodically throughout the year by hazardous waste disposal facilities.



NY Lab #11393/11840
FL Lab # E87600/E87936

Revision No. 2
Date: 4/10/07
Page 10 of 10

XVI. REFERENCES

SW 846 Method 9045A, Soil and Waste pH. Revision 1, November, 1990, U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268.

Operating Instruction: The pH/Ion and ISFET expansion units 6.1.2 Operation of the pH menu Pg.30-32.

Operating Instruction: The pH/Ion and ISFET expansion units 6.1.2 Operation of the pH menu, 2.Electrode test Pg. 32.

XVII. ATTACHMENTS

1. Mettler-Toledo Operating SevenMulti™ Instructions; The pH/Ion and ISFET expansion units

XVIII. GLOSSARY

pH	=	potential of Hydrogen
OSHA	=	Occupational Safety and Health Agency
°C	=	degrees Celsius
DI	=	de-ionized
mL	=	milliliters
g	=	grams

The pH/Ion and ISFET expansion units

The pH mode

1 Menu structure of the pH mode

1. Calibration Setting Page 30

1. Set Calibration Buffer
 1. Select a Standard Buffer Group
 2. Set a Customized Buffer Group
2. Select Calibration Mode
 1. Segment method
 2. Linear method
3. Set Calibration Reminder
 1. Off
 2. Remind by Interval Time

2. Electrode test Page 32

3. Select Resolution and Stability Criterion Page 32

1. Select Display Resolution
 1. X.X
 2. X.XX
 3. X.XXX
2. Select Stability Criterion
 1. Fast
 2. Normal
 3. Strict

4. Select Endpoint Formats Page 33

1. Auto
2. Manual
3. Timed

5. Set MTC Temperature Page 33

6. Set Alarm Limits Page 34

1. pH Max. Limit
2. pH Min. Limit
3. Temperature Max. Limit
4. Temperature Min. Limit
5. Calibration Offset Max. Limit
6. Calibration Offset Min. Limit
7. Calibration Slope Max. Limit
8. Calibration Slope Min. Limit

7. Timed Interval Readings Page 34

1. On
 1. Log to Memory
 2. Log to Interface
 3. Log to Memory and Interface
2. Off

8. Select Data Transfer Mode Page 34

1. Automatic Data Transfer
 1. Log to Memory
 2. Log to Interface
 3. Log to Memory and Interface
2. Manual Data Transfer to Memory

9. Activate Rondolino Sample Changer Page 35

1. Measurement
2. Calibration

10. pH Methods in Memory Page 36

1. Load a Stored pH Method from Memory
2. Save Current Settings as a Method

or each channel, other
method is the combinati

rel method.

g:
display).

1 channels.

as described in the c

idual channels.

6.1.2 Operation of the pH menu

- If two expansion units are attached, first ensure that the desired expansion unit is selected.
- Press **Mode** and press **pH** in the menu that appears to select the pH mode.
- Call up the pH menu with **Menu**.

1. Calibration Setting

1. Set Calibration Buffer

1. Select a Standard Buffer Group

- Select a predefined standard pH buffer group.

The following buffer groups are predefined.

Nr.	Buffer 1	Buffer 2	Buffer 3	Buffer 4	Buffer 5	Temp.	Designation
★ 1.	1.68	4.00	7.00	10.01	–	25 °C	METTLER TOLEDO US
2.	2.00	4.01	7.00	9.21	11.00	25 °C	METTLER TOLEDO Europe
3.	2.00	4.00	7.00	9.00	12.00	20 °C	Merck standard buffers
4.	1.680	4.008	6.865	9.184	12.454	25 °C	DIN (19266) / NIST
5.	1.09	4.65	6.79	9.23	12.75	25 °C	DIN (19267)
6.	1.680	4.003	6.864	9.182	12.460	25 °C	JJG 119
7.	2.00	4.01	7.00	10.00	–	25 °C	Technical buffers
8.	1.679	4.008	6.865	9.180	–	25 °C	JIS Z 8802

1. Auto buffer recognition On

The SevenMulti™ features automatic calibration-buffer recognition. This allows you to calibrate in the order you like within a buffer group.

Note: If the measured mV value for the first calibration point deviates by more than 60 mV (approx. ± 1 pH) from the theoretical value of the calibration buffer-point, the **Offset out of range** warning appears.

2. Auto buffer recognition Off

Switch off the automatic buffer recognition if you want to specify the order of the pH buffers yourself if the offset value deviates too much from the theoretical value (e.g. in readings using electrodes that contain a non-aqueous electrolyte).

- A table for selection of the pH buffers appears.
- Press **Change** to define the order of the pH buffers. Navigate to the next input field using \downarrow .
- Press **Save** to accept the list.

2. Set a Customized Buffer Group

This menu allows you to define your own set of pH buffers with up to 5 different temperatures for each buffer for calibrating SevenMulti™.

– Please note that the temperature difference between buffers must be at least 5 °C and the difference between the pH values must be at least 1.

Nr.	Temp.	Buffer 1	Buffer 2	Buffer 3	Buffer 4	Buffer 5
1.						
2.						
3.						
4.						
5.						

– Press **Change** to access the table.

– You can navigate within the table using the ↑ and ↓ keys and delete the value using ←.

– Press **End** to finish editing the table and **Save** to store the values.

1. Auto buffer recognition On

(see 1. Select a standard buffer group)

2. Auto buffer recognition Off

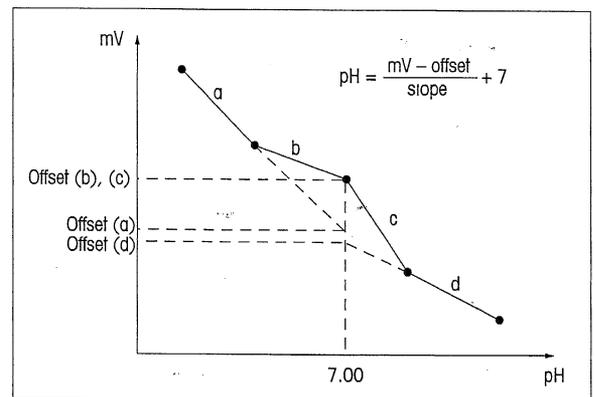
(see 1. Select a standard buffer group)

Select Calibration Mode

1. Segmented Method

The segmented method is the most modern method for precise pH readings. The calibration curve is made up of line segments joining the individual calibration points rather than a linear regression through them. This takes into account any non-linear behavior of the electrode over a large pH range. In the diagram, the segments a, b, c and d all have different slopes. The offset, defined as the potential at pH 7 is also different for segments a, b and d while that for segments b and c is the same. This is because they both share the pH 7 buffer, which is in fact the offset.

The segmented method is preferred for high-precision readings.



2. Linear Method

With this method, the calibration curve is determined via a linear regression line.

The linear method is preferred when samples with greatly varying pH values are to be compared.

3. Set Calibration Reminder

1. Off – no calibration reminder

2. Remind by Interval Time

If the calibration reminder is active, you are reminded to perform a new calibration after a specific time has passed. The reminder comes in the form of a message on the bottom line of the meter display.

Activating this item leads to an input window, into which you enter the time interval (1 to 1000

2. Electrode test

This menu allows you to check the drift, the slope, the offset and the response time of your pH electrode performing a calibration.

- Select two buffers from the current buffer group.
- Place the electrode in the first buffer solution and press Meas. When the measured value is stable, the measurement is automatically ended and the message Place electrode in buffer 2 appears on the display.
- Place the electrode in the second buffer solution and press Meas. The reading is automatically ended and the sensor ID, the results for the drift (mV/min), the slope (%), the offset (mV) and the response time (s) are displayed with the message OK/critical.

Measurement Criteria:

- The measurement will endpoint once the measurement signal changes less than 0.5 mV in 10 seconds.
- For calculation of the response time the time (sec.) is taken from the start of the second measurement until 98 % of the difference between the reading for the two buffers is reached. (i.e. $mV1 + 0.98 \cdot (mV2 - mV1)$)
- For the drift determination a measurement is taken after 60 seconds from the start of the measurement in the second buffer and again after a further 30 seconds. The drift is then the difference between the 2 readings divided by 90 seconds (mV/30s).

Limits:

- Drift is OK if less than 3 mV in 30 seconds.
- Slope is OK from 90 to 105 % of the theoretical slope.
- Offset is OK if in the range of ± 30 mV.
- Response time is OK if less than 60 seconds.

The limits within the meter apply to a test using pH 4 and 7 buffers or similar.

3. Select Resolution and Stability Criterion

1. Select Display Resolution

In this menu, you select the resolution to which the measurement display is to be shown:

- 1. X.X one decimal place
- 2. X.XX two decimal places
- 3. X.XXX three decimal places

APPENDIX 8
DEVIATION FORMS

THE JOHNSON COMPANY, INC.
100 State Street, Suite 600
Montpelier, Vermont 05602

FORM-JCO-QAU-005 6/90
Page of
JCO File #: 3-0700-11

Quality Assurance Unit Record of (Check One)

- A. *Deviation from Protocol or Standard Operating Procedure*
or
 B. *Notation, Correction and Documentation of Unforeseen Circumstances*

Ref: 40 CFR § 160.81, § 160.33 and § 160.35 and SOP-JCO-018

Date(s) of Occurrence: **10/15/2008 (documented on 12/11/08)**

Study Designation: **Supplemental Data Collection**

Study Location: **Kenilworth Park Landfill, Washington, DC**

Test substance: **TOC and pH of surface soil**

CAS No.: **N/A**

Study Sponsor: **National Park Service**

Study phase (or segment): **Supplemental Data Collection laboratory analysis**

Site of problem: **Laboratory**

Scientist, engineer or technician: **Daniel W. Smith**

Initials: **DWS** Date: **12/11/08**

Findings:

Weather: **N/A** °F; Sky: Clear, Partly Cloudy, Cloudy, Fair, Rain, Snow; Wind-

List: Personnel, Visitors, Contractors:
N/A

Equipment (e.g. Permeameter, Data Logger, Drill rig, Dozer):
N/A

Protocol title, date and section number: **QAPP – Worksheet #14**

Standard Operating Procedure title: **N/A**

SOP No: **N/A**

Type of deviation (inadvertent or planned): **Inadvertent**

Nature of deviation or unforeseen circumstance:

An alternate laboratory analyzed soil samples than the one named in the QAPP.

Observations: Spectrum Analytical of Agawam, Massachusetts analyzed the 26 surface soil samples collected during Supplemental Data Collection instead of Mitkem Laboratories (a subsidiary of Spectrum Analytical). The TOC analyses were performed using EPA Method 9060 instead of the Lloyd Kahn Method as specified in the QAPP.

The deviation occurred because the soil samples were shipped via commercial carrier to Spectrum, the parent company of Mitkem, instead of the intended subsidiary laboratory. Spectrum processed the samples by its standard method of TOC analysis (EPA 9060) because the chain-of-custody did not indicate that the samples were intended for Mitkem.

Problems: No changes to data usability will result from this deviation. Spectrum Analytical is an accredited laboratory capable of performing the analyses required for the investigation. EPA Method 9060 for the analysis of TOC in soil is analytically comparable to the Lloyd Kahn Method specified in the QAPP, so the results of the analysis are usable for this investigation (provided all QC parameters for precision and accuracy are within established ranges). Spectrum Analytical analyzed pH by the same method as specified in the QAPP (EPA 9045C).

APPENDIX B
PRG CALCULATIONS

**Table B-1
Human Health PRG Calculations
Kenilworth Park Landfill Site**

Carcinogenic Risk	RME EPC mg/kg	C-Risk I&D	C-Risk Inh	C-Risk	EPC PRG 10⁻⁶ mg/kg	EPC PRG 10⁻⁵ mg/kg	RBC mg/kg	Max Back- ground mg/kg
KPN Child/Adult Visitor								
Arsenic	4.03	5.20E-06	3E-09	0.000005203	0.774553	7.745531	0.43	12.4
Aroclor 1254	1.33	3.00E-06	1.3E-10	3.00013E-06	0.443314	4.433141	0.32	0.0795
Aroclor 1260	0.76	3.00E-06	7.5E-11	3.00008E-06	0.253327	2.53327	0.32	0.61
Dieldrin	0.234	3.90E-06	1.9E-10	3.90019E-06	0.059997	0.599971		0.0078
Benzo(a)anthracene	1.35	1.10E-06	4.9E-11	1.10005E-06	1.227218	12.27218	0.87	0.86
Benzo(a)pyrene	1.13	9.10E-06	4.1E-10	9.10041E-06	0.12417	1.241702	0.087	0.9
Dibenzo(a,h)anthracene	0.62	5.00E-06	2.2E-10	5.00022E-06	0.123995	1.239945	0.087	ND
KPS Child/Adult Visitor								
Arsenic	5.98	7.69E-06	7.49E-09	7.69749E-06	0.776877	7.768766	0.43	12.4
Aroclor 1254	1.15	2.60E-06	1.92E-10	2.60019E-06	0.442275	4.42275	0.32	0.0795
Aroclor 1260	0.784	1.77E-06	1.31E-10	1.77013E-06	0.442905	4.429051	0.32	0.61
Benzo(a)anthracene	0.925	7.46E-07	5.64E-11	7.46056E-07	1.239853	12.39853	0.87	0.86
Benzo(a)pyrene	0.996	8.03E-06	6.07E-10	8.03061E-06	0.124025	1.240255	0.087	0.9
Dibenzo(a,h)anthracene	0.43	3.47E-06	2.62E-10	3.47026E-06	0.12391	1.2391	0.087	ND

Non-carcinogenic Risk	RME EPC mg/kg	HI ingestion	HI dermal	HI inhalation	HI total	EPC HI=1 mg/kg	RBC mg/kg	Max Back- ground mg/kg
KPN Child								
Aluminium	7940	0.0507	0.142	0.00015	0.19285	41172	78000	11000
Antimony	9.01	0.144	0.0269	0	0.1709	53	31	1.2
Arsenic	4.03	0.0859	0.00721	0	0.09311	43	0.43	12.4
Iron	20850	0.444	1.24	0	1.684	12381	23000	54000
Mercury	6.14	0.131	0.0523	0	0.1833	33	23	2.7
Silver	66.7	0.0853	0.0597	0	0.145	460	390	2.7
Vanadium	42.8	0.273	0.295	0	0.568	75	550	60

pH > 3.3

**Table B-1
Human Health PRG Calculations
Kenilworth Park Landfill Site**

Non-carcinogenic Risk	RME EPC mg/kg	HI ingestion	HI dermal	HI inhalation	HI total	EPC HI=1 mg/kg	RBC mg/kg	Max Back- ground mg/kg
KPN Utility/Maintenance Worker								
Aluminium	8220	0.0277	0.083	0.000206	0.110906	74117	78000	11000
Antimony	14.6	0.123	0.0246	0	0.1476	99	31	1.2
Arsenic	4.24	0.0476	0.00428	0	0.05188	82		12.4
Iron	39146	0.439	1.32	0	1.759	22255	23000	54000
Manganese	488	0.0117	0.0088	0.00122	0.02172	22468		640
Vanadium	38.3	0.129	0.149	0	0.278	138	550	60
KPS Child								
Aluminium	8694	0.06	0.0016	0.0003	0.0619	140452		11000
Antimony	2.52	0.04	0.000752	0	0.040752	62		1.2
Arsenic	5.98	0.13	0.010704	0	0.140704	43		12.4
Iron	24527	0.52	0.014634	0	0.534634	45876	23000	54000
Mercury	1.43	0.03	0.001219	0	0.031219	46		2.7
Silver	6.86	0.01	0.000614	0	0.010614	646		2.7
Vanadium	62.5	0.4	0.043028	0	0.443028	141		60
KPS Utility/Maintenance Worker								
Aluminium	10028	0.049	0.003	0.066	0.118	84983		11000
Antimony	9.66	0.12	0.0049	0	0.1249	77		1.2
Arsenic	6.71	0.11	0.02	0	0.13	52	0.43	12.4
Iron	48856	0.801	0.049	0	0.85	57478	23000	54000
Manganese	531	0.019	0.0029	0.35	0.3719	1428	1600	640
Vanadium	64.2	0.31	0.075	0	0.385	167	550	60

pH > 3.3

**Table B-2
Ecological PRG Calculations
Kenilworth Park Landfill Site**

COPEC	EPC Soil mg/kg ¹	Meadow Vole		Short Tailed Shrew		American Robin		Red-tailed Hawk		Red Fox		Mean Soil KPN mg/kg	Mean Soil KPS ¹ mg/kg	Max Site Specific BKG mg/kg
		HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg			
Metals (KPS)														
Aluminum	26759	497	54	949	28	2.41	11103	17.7	1512	0.1	267590	6023.67	13356.67	11000
Antimony	41.56	25.2	2	48.2	1	NA	NA	NA	NA	0.1	416		10.6	1.1
Arsenic	5.26	1.14	4.61	2.17	2.42	1.46	4	0.108	49	0.627	8	3.22	4.59	12.4
Barium	267.82	0.793	338	1.52	176	6.35	42	0.466	575	0.428	626	126.4	161.74	285
Beryllium	0.81	0.546	1.48	1.04	0.78	NA	NA	NA	NA	0.0424	19			1.6
Cadmium	2.82	1.01	2.79	1.93	1	1.18	2	0.0862	33	0.102	28	1.26	2.31	4.3
Chromium	64.93	0.0307	2115	18.5	4	23.1	3	1.7	38	0.754	86	51.07	56.74	62.5
Cobalt	13	4.27	3	0.816	16	1.65	8	0.121	107	0.0494	263	8.62	10.98	29
Copper	496.85	11.8	42	22.5	22	7.95	62	0.585	849	1.18	421	80.21	293.71	43
Iron	85867.22	61.5	1396	118	728	84.8	1013	6.23	13783	47.9	1793	16561.33	37633.33	54000
Lead	968.01	69.4	14	133	7	493	2	36.2	27	5.74	169	95.95	243.19	189
Manganese	643.01	0.811	793	1.55	415	0.65	989	0.0468	13740	0.204	3152	242.47	465.33	640
Mercury	2.52	0.0684	36.84	0.131	19.24	2.77	0.91	0.203	12.41	0.00532	473.68	0.83	0.97	2.7
Nickel	136.96	0.619	221	1.17	117	1.26	109	0.0929	1474	0.0954	1436	18.82	54.73	27
Selenium	1.65	1.79	0.92	3.42	0.48	1.63	1.01	0.12	13.75	0.23	7.17	N/A	1.11	1.7
Silver	53.97	0.321	168.13	0.614	87.90	2.64	20.44	0.3	179.90	0.04	1349.25			2.7
Thallium	3.623	21.8	0.17	41.6	0.09	NA	NA	NA	NA	2.71	1.34	N/A	NA	ND
Vanadium	319.86	22.4	14	42.8	7	765	0.42	56.2	6	2.14	149	32.57	143.92	60
Zinc	1798.15	2.01	895	3.85	467	14.3	126	1.05	1713	0.313	5745	208.91	742.21	290
PCBs (KPS)														
Aroclor 1254	2.86	1.51	1.89	2.88	0.99	1.57	1.82	0.115	24.87	0.892	0.57	0.61	0.429	0.0795
Aroclor 1260	1.78	4.91	0.36	9.38	0.19	0.196	9	0.0144	124	0.496	0.50	0.34	0.386	0.61
Pesticides (KPN)														
4,4'-DDD	0.059	0.00529	11	0.0101	6	2.08	0.028	0.237	0.25	0.000658	90		NA	ND
4,4'-DDE	0.085	0.00762	11	0.0145	6	3	0.028	0.341	0.25	0.000948	90	0.01	NA	0.033
4,4'-DDT	0.251	0.0225	11	0.0043	58	8.86	0.028	1.01	0.25	0.0028	90	<0.00	NA	0.12
Dieldrin	0.209	0.375	1	0.715	0.29	2.68	0.08	0.305	0.69	0.0466	4	0.07	NA	0.0078
Endrin	0.089	0.0347	3	0.0457	2	0.879	0.10	0.0999	0.89	0.00431	21	0.02	NA	ND
Other Organics (KPN)														
Di-n-butylphthalate	1.484	0.00029	5117	0.000554	2679	1.33	1.12	0.151	10	0.0000361	41108	0.02		

**Table B-2
Ecological PRG Calculations
Kenilworth Park Landfill Site**

COPEC	EPC Soil mg/kg ¹	Meadow Vole		Short Tailed Shrew		American Robin		Red-tailed Hawk		Red Fox		Mean Soil KPN mg/kg	Mean Soil KPS ¹ mg/kg	Max Site Specific BKG mg/kg
		HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg	HQ LOAEL*	EPC HQ=1 mg/kg			
<i>PAHS (KPS)</i>														
Acenaphthene	8.15	1.12	7	2.15	4	0.0805	101	0.00591	1379	0.175	47	0.08	2.7	0.308
Anthracene	26	0.0896	290	0.171	152	0.00642	4050	0.000472	55085	0.0139	1871	0.05	0.614	0.2
Benzo(a)anthracene	29	0.136	213	0.312	93	0.0117	2479	0.000859	33760	0.0254	1142	0.31	0.967	0.86
Benzo(a)pyrene	3.1	0.789	4	0.212	15	NA		NA		0.0864	36	0.32	0.968	0.9
Benzo(b)fluoranthene	13	0.158	82	0.302	43	0.0113	1150	0.000833	15606	0.0246	528	0.48	0.834	0.82
Benzo(g,h,i)perylene	4.43	0.0755	59	0.144	31	0.00541	819	0.000398	11131	0.02117	209	0.2	0.395	0.46
Benzo(k)fluoranthene	21	0.138	152	0.263	80	0.00986	2130	0.000724	29006	0.0214	981	0.1	0.884	0.9
Chrysene	25	0.168	149	0.321	78	0.012	2083	0.00884	2828	0.0261	958	0.33	0.987	0.93
Fluoranthene	2.82	0.389	7	0.744	4	0.0279	101	0.00205	1376	0.0606	47	0.59	2.22	1.3
Fluorene	15	0.195	77	0.373	40	0.014	1071	0.00103	14563	0.0303	495	0.01	0.393	0.037
Indeno(1,2,3-c,d)pyrene	7.6	0.169	45	0.323	24	0.0121	628	0.000891	8530	0.0263	289	0.19	0.382	0.37
Phenanthrene	80	0.244	328	0.466	172	0.0175	4571	0.00129	62016	0.038	2105	0.27	1.1914	0.66
Pyrene	2.45	0.388	6	0.646	4	0.0242	101	0.00178	1376	0.526	5	0.47	2.117	1.7

Data in italics are HI based on NOAEL when no LOAEL data available

1. 95% UCL from E&E, 12/07 includes subsurface data

APPENDIX C

**REMEDIAL ALTERNATIVE COST ESTIMATING
SPREADSHEETS**

Table C-1
Preliminary Cost Estimate
Unit Costs
Kenilworth Park Landfill

Reference #	Item	Unit Cost			Reference - Means 2008 Cost Data unless noted
		Unit Cost	W/O.H.& P	Unit	
1	Bulk Soil Excavation load onto trucks	\$1.60	\$1.91	cy	31 23 16.42 0300 3 yd capacity = 260 yds/hr
2	Excavating Trench or Continuous Footing	\$3.04	\$3.96	cy	31 23 16.13 0510 1 yd capacity = 400 yds daily output for selective excavation
3	3.0 cy Front End Loader for loading excavated soil	\$0.53	\$0.71	cy	31 23 23.15 4070 3 yd bucket; 1575 yds daily output loading soils from selective exc.
4	Select Granular Fill - Spreading	\$15.59	\$17.25	cy	31 23 23.15 5000 3 cy bucket; 1980 yds output for placement of 1.5 foot soil cover
5	Finish Grading Large Area	\$0.55	\$0.72	sy	31 22 16.10 0100 daily output 2000 sy for grading KPS prior to cover soils
6	Topsoil or loam from stockpile	\$23.98	\$26.50	cy	31 23 23.15 7000 1 yd bucket; 840 yds daily output for 6" topsoil on cover soils
7	Mechanical Seeding, 215 lb/acre	\$912.00	\$1,075.00	Acre	32 92 19.13 0020 1.5 acres/day
8	Tidal Marsh Restoration		\$7,500.00	Acre	Engineer's estimate
9	Silt Fence	\$0.85	\$1.16	LF	31 25 13.10 1100 3' high , adverse conditions
10	Bituminous Roadway		\$59.00	LF	G2010 230 1050 24' wide w/o curbs and markings
11	Compacted 3/4 inch crushed stone - 12 " deep	\$50.63	\$56.50	cy	32 11 23.23 1513 parking lot fill
12	Hand seeding; 4.5 lbs/MSF	\$19.14	\$21.50	MSF	32 92 19.13 0080 alternative #2
13	Finish Grading Small Irregular Areas	\$1.76	\$2.30	SY	31 22 16.10 1050 For grading depressions at KPS
14	Riparian Buffer Restoration		\$50,000.00	Acre	Engineer's estimate
15	Common fill for selective excavations		\$21.56	cy	Engineer's estimate 25% increase over mass fill supply/placement
16	Topsoil for selective excavations		\$33.13	cy	Engineer's estimate 25% increase over mass topsoil supply/placement
17	Compaction - 6 inch lifts	\$1.08	\$1.31	ecy	31 223 23.23 6210 vibrating roller - 3 passes
18	Water truck	\$1.84	\$2.15	ecy	31 223 23.23 9000 3000 gallon truck - 3 mile haul
19	Biaxial Geogrid		\$3.50	SY	Engineer's estimate geogrid for subgrade reinforcement
Off-Site Disposal					
20	Disposal at Subtitle-D Landfill (within 10 miles)		\$90.00	ton	Engineer's estimate
21	Disposal as Landfill alternate daily cover (within 10 miles)		\$25.00	ton	Engineer's estimate
22	Transportation (Hauling) 20 yd trailer dump	\$10.54	\$13.00	cy	31 23 23.18 1255 20 mile RT

**Table C-2
Preliminary Cost Estimate
Crew Costs
Kenilworth Park Landfill**

Reference #	Description	Unit Rate	Unit	Quantity	Total
57	Project Management/Administration				
	<u>Personnel</u>				
	Project Manager	\$90 hr.		60	\$5,400
	Clerk	\$45 hr.		40	\$1,800
	<u>Equipment</u>				
	Office Trailer, Supplies, Misc.	\$375 week		1	\$375
	<u>Expenses</u>				
	Per Diem	\$175 man-day		12	\$2,100
	Weekly Rate for Project Management/Administration				\$9,680
58	Health and Safety				
	<u>Personnel</u>				
	Health & Safety Officer	\$85 hr.		60	\$5,100
	<u>Equipment</u>				
	Air Monitoring Equipment	\$500 week		1	\$500
	Site Truck	\$75 day		6	\$450
	PPE	\$50 man-day		6	\$300
	<u>Expenses</u>				
	Per Diem	\$175 man-day		6	\$1,050
	<u>Laboratory Services</u>				
	Organics/Particulates	\$500 each		1	\$500
	Weekly Rate for Health and Safety				\$7,900
59	Security				
	<u>Personnel</u>				
	Guard	\$50 hr.		60	\$3,000
	Weekly Rate for Security				\$3,000
60	Construction Dust/Erosion Control	\$1,000 week		1	\$1,000
61	Traffic Control	\$2,500 week		1	\$2,500

Table C-4
Feasibility Study
Preliminary Cost Estimate
Alternative 2: Minor Grading/Filling and Institutional Controls
Kenilworth Park Landfill

Reference #	Item	Unit Cost	Unit	Quantity	Cost	Cost Rounded to \$100	Note
	Contractor Mobilization/Demobilization	\$10,000.00	Lump Sum	1	\$10,000	\$10,000	
57	Project Management/Administration	\$9,680.00	Week	4	\$38,720	\$38,700	
59	Security	\$3,000.00	Week	4	\$12,000	\$12,000	
4	Common fill	\$17.25	cy	9841	\$169,763	\$169,800	
6	Topsoil	\$26.50	cy	6857	\$181,702	\$181,700	
11	Compacted crushed stone	\$56.50	cy	4679	\$264,345	\$264,300	re-grade parking area
12	Hand Seeding	\$21.50	MSF	370	\$7,961	\$8,000	
13	Grading Depressions at KPS	\$2.30	SY	11616	\$26,717	\$26,700	
	Subtotal Direct Capital Costs					\$711,200	
	Contingency (15%)					\$106,700	
	Total Direct Capital Costs (rounded to \$100)					\$818,000	
	Indirect Capital Costs						
	Legal Fees and License/Permit Costs (2%)					\$16,400	
	Engineering and Design (3%)					\$24,500	
	Contractor Reporting Requirements (2%)					\$16,400	
	Construction Oversight (4%)					\$32,700	
	Perimeter landfill gas Monitoring and 5 year review					\$119,600	
	Total Indirect Capital Costs (Rounded to \$100)					\$209,600	
Total Present Worth Cost for Alternative 2 (Rounded to \$1,000)						\$1,028,000	

Notes:
Areas and Volumes based on Figure 4-1 of the Feasibility Study

Table C-5
Feasibility Study
Preliminary Cost Estimate
Alternative 3a - 12" Soil Cap and Select Excavation/Backfill and Institutional Controls
Kenilworth Park Landfill

Reference #	Item	Unit Cost	Unit	Quantity	Cost	Cost Rounded to \$100	Note
	Contractor Mobilization/Demobilization	\$50,000.00	Lump Sum	1	\$50,000	\$50,000	
57	Project Management/Administration	\$9,680.00	Week	100	\$968,000	\$968,000	
58	Health and Safety	\$7,900.00	Week	100	\$790,000	\$790,000	
59	Security	\$3,000.00	Week	100	\$300,000	\$300,000	
60	Construction Dust/Erosion Control	\$1,000.00	Week	100	\$100,000	\$100,000	
61	Traffic Control	\$2,500.00	Week	100	\$250,000	\$250,000	
5	Sub Grade prep at KPS	\$0.72	sy	198246	\$142,737	\$142,700	
4	Common fill	\$17.25	cy	88316	\$1,523,457	\$1,523,500	
6	Topsoil	\$26.50	cy	88316	\$2,340,382	\$2,340,400	
7	Seeding	\$1,075.00	acre	109	\$117,694	\$117,700	
9	Silt Fence	\$1.16	LF	20400	\$23,664	\$23,700	
10	Replacement roadway/ P. Lots	\$59.00	LF	11217	\$661,783	\$661,800	
2	Selective excavation of cover soils	\$3.96	cy	13569	\$53,735	\$53,700	
3	4.0 cy Wheeled Front End Loader for loading excavated soil	\$0.71	cy	13569	\$9,634	\$9,600	
15	Common fill for selective excavations	\$21.56	cy	6785	\$146,295	\$146,300	
16	Topsoil for selective excavations	\$33.13	cy	6785	\$224,743	\$224,700	
12	Hand Seeding	\$21.50	MSF	366	\$7,869	\$7,900	
21	Disposal as ADC at Subtitle-D Landfill (within 10 miles)	\$25.00	ton	20354	\$508,853	\$508,900	use as cover soil
22	Transportation (Hauling)	\$13.00	cy	13569	\$176,402	\$176,400	
14	Riparian Corridor Restoration	\$50,000.00	acre	2.23	\$111,692	\$111,700	
	Subtotal Direct Capital Costs					\$8,507,000	
	Contingency (15%)					\$1,276,100	
	Total Direct Capital Costs (rounded to \$100)					\$9,783,000	
	Indirect Capital Costs						
	Legal Fees and License/Permit Costs (1%)					\$97,800	
	Engineering and Design (2%)					\$195,700	
	Contractor Reporting Requirements (2%)					\$195,700	
	Construction Oversight (4%)					\$391,300	
	Perimeter landfill gas Monitoring and 5 year review					\$131,400	
	Total Indirect Capital Costs (Rounded to \$100)					\$1,011,900	
	Total Present Worth Cost for Alternative 3a (Rounded to \$1,000)					\$10,795,000	

Notes:

Areas and Volume based on Figures 4-3 and 4-4 of the Feasibility Study

Table C-6
Feasibility Study
Preliminary Cost Estimate
Alternative 3b - 24" Soil Cap and Select Excavation/Backfill and Institutional Controls
Kenilworth Park Landfill

Reference #	Item	Unit Cost	Unit	Quantity	Cost	Cost Rounded to \$100	Note
	Contractor Mobilization/Demobilization	\$50,000.00	Lump Sum	1	\$50,000	\$50,000	
57	Project Management/Administration	\$9,680.00	Week	100	\$968,000	\$968,000	
58	Health and Safety	\$7,900.00	Week	100	\$790,000	\$790,000	
59	Security	\$3,000.00	Week	100	\$300,000	\$300,000	
60	Construction Dust/Erosion Control	\$1,000.00	Week	100	\$100,000	\$100,000	
61	Traffic Control	\$2,500.00	Week	100	\$250,000	\$250,000	
5	Sub Grade prep at KPS	\$0.72	sy	198246	\$142,737	\$142,700	
4	Common fill (volume increased by 15% for compaction)	\$17.25	cy	304691	\$5,255,925	\$5,255,900	
6	Topsoil	\$26.50	cy	88316	\$2,340,382	\$2,340,400	
7	Seeding	\$1,075.00	acre	109	\$117,694	\$117,700	
9	Silt Fence	\$1.16	LF	20400	\$23,664	\$23,700	
10	Replacement roadway/ P. Lots	\$59.00	LF	11217	\$661,783	\$661,800	
2	Selective excavation of cover soils	\$3.96	cy	27139	\$107,470	\$107,500	
3	4.0 cy Wheeled Front End Loader for loading excavated soil	\$0.71	cy	27139	\$19,269	\$19,300	
15	Common fill for selective excavations	\$21.56	cy	20354	\$438,886	\$438,900	
16	Topsoil for selective excavations	\$33.13	cy	6785	\$224,743	\$224,700	
12	Hand Seeding	\$21.50	MSF	366	\$7,869	\$7,900	
21	Disposal as ADC at Subtitle-D Landfill (within 10 miles)	\$25.00	ton	40708	\$1,017,706	\$1,017,700	use as cover soil
22	Transportation (Hauling)	\$13.00	cy	27139	\$352,805	\$352,800	
14	Riparian Corridor Restoration	\$50,000.00	acre	2.23	\$111,692	\$111,700	
17	Compaction - 6 inch lifts	\$1.31	ecy	264949	\$347,083	\$347,100	
18	Water Truck (assume 50% of fill requires water for compaction)	\$2.15	ecy	132474	\$284,820	\$284,800	
19	Biaxial geogrid for subgrade reinforcement under play fields	\$3.50	SY	40000	\$140,000	\$140,000	
	Subtotal Direct Capital Costs					\$14,052,600	
	Contingency (15%)					\$2,107,900	
	Total Direct Capital Costs (rounded to \$100)					\$16,161,000	
	Indirect Capital Costs						
	Legal Fees and License/Permit Costs (1%)					\$161,600	
	Engineering and Design (2%)					\$323,200	
	Contractor Reporting Requirements (2%)					\$323,200	
	Construction Oversight (4%)					\$646,400	
	Perimeter landfill gas Monitoring and 5 year review					\$131,400	
	Total Indirect Capital Costs (Rounded to \$100)					\$1,585,800	
	Total Present Worth Cost for Alternative 3b (Rounded to \$1,000)					\$17,747,000	

Notes:

Areas and Volume based on Figures 4-3 and 4-4 of the Feasibility Study

Table C-7
Feasibility Study
Preliminary Cost Estimate
Alternative 4: Removal of New Fill, Previous Soil Cover, Municipal Solid Waste and Ash, and Institutional Controls
Kenilworth Park Landfill

Reference #	Item	Unit Cost	Unit	Quantity	Cost	Cost Rounded to \$100	Note
	Contractor Mobilization/Demobilization	\$150,000.00	Lump Sum	1	\$150,000	\$150,000	
57	Project Management/Administration	\$9,680.00	Week	150	\$1,452,000	\$1,452,000	
58	Health and Safety	\$7,900.00	Week	150	\$1,185,000	\$1,185,000	
59	Security	\$3,000.00	Week	150	\$450,000	\$450,000	
60	Construction Dust/Erosion Control	\$1,000.00	Week	150	\$150,000	\$150,000	
61	Traffic Control	\$2,500.00	Week	150	\$375,000	\$375,000	
1	Bulk Cover Soil, New Fill and Waste Excavation	\$1.91	cy	4000000	\$7,639,999	\$7,640,000	
4	Common fill for slope	\$17.25	cy	37939	\$654,447	\$654,400	
6	Topsoil for slope	\$26.50	cy	5420	\$143,626	\$143,600	
7	Seeding slope	\$1,075.00	acre	7	\$7,223	\$7,200	
8	Tidal Marsh Restoration	\$7,500.00	acre	138	\$1,035,544	\$1,035,500	
9	Silt Fence	\$1.16	LF	18000	\$20,880	\$20,900	
19	Disposal as ADC at Subtitle-D Landfill (within 10 miles)	\$25.00	ton	1689936	\$42,248,392	\$42,248,400	use as cover soil
20	Disposal at Subtitle-D Landfill (within 10 miles)	\$90.00	ton	2552158	\$229,694,200	\$229,694,200	solid waste
21	Transportation (Hauling)	\$13.00	cy	4000000	\$51,999,994	\$52,000,000	
2	Selective excavation of cover soils	\$3.96	cy	26459	\$104,776	\$0	
3	4.0 cy Wheeled Front End Loader for loading excavated soil	\$0.71	cy	26459	\$18,786	\$18,800	
4	Common fill for cover soil	\$17.25	cy	19844	\$342,309	\$342,300	
6	Topsoil for cover soil	\$26.50	cy	6615	\$175,289	\$175,300	
12	Hand Seeding	\$21.50	MSF	357	\$7,680	\$7,700	
19	Disposal as ADC at Subtitle-D Landfill (within 10 miles)	\$25.00	ton	39688	\$992,200	\$992,200	use as cover soil
21	Transportation (Hauling)	\$13.00	cy	26459	\$343,963	\$344,000	
	Subtotal Direct Capital Costs					\$339,086,500	
	Contingency (15%)					\$50,863,000	
	Total Direct Capital Costs (rounded to \$100)					\$389,950,000	
	Indirect Capital Costs						
	Legal Fees and License/Permit Costs (1%)					\$3,899,500	
	Engineering and Design (2%)					\$7,799,000	
	Contractor Reporting Requirements (2%)					\$7,799,000	
	Construction Oversight (4%)					\$15,598,000	
	Total Indirect Capital Costs (Rounded to \$100)					\$35,095,500	
Total Present Worth Cost for Alternative 4 (Rounded to \$1,000,000)						\$425,000,000	

Notes: Volumes based on cross-sections from the Remedial Investigations prepared by E&E