

DRAFT ECOLOGICAL RISK ASSESSMENT – STEPS 3 TO 8 OF USEPA ECOLOGICAL RISK ASSESSMENT PROCESS VAN BUREN LANDFILL

Prepared for
RACER Trust

Prepared by
Anchor QEA, LLC
2950 S. State Street, Suite 380
Ann Arbor, Michigan 48104

July 2017

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Site Summary.....	1
Problem Formulation and Conceptual Site Model.....	1
Data Used and Exposure Analysis	2
Toxicological Effects Evaluation	3
Risk Characterization.....	3
Uncertainties Analysis	4
BERA Conclusions	4
1 INTRODUCTION	1
2 STEP 3: PROBLEM FORMULATION	3
2.1 Refining the COPEC List.....	3
2.2 Chemical Fate and Transport	3
2.3 Assessment Endpoints.....	4
2.4 Conceptual Site Model and Exposure Pathways	4
2.4.1.1 Risk Questions and Testable Hypotheses	6
3 STEP 4: STUDY DESIGN AND DQO PROCESS	8
3.1 Measurement Endpoints.....	8
3.2 Lines of Evidence	8
3.3 Data Gaps	8
4 STEP 5: VERIFICATION OF FIELD SAMPLING DESIGN.....	10
5 STEP 6: DATA ANALYSIS.....	11
5.1 Summary of Soil Site Investigation	11
5.2 Data Analysis.....	11
5.2.1 Surface Water Exposure.....	12
5.2.2 Soil Exposure.....	12
5.2.2.1 Receptors	14
5.3 Surface Water Toxicological Effects Evaluation.....	14
5.4 Soil Toxicological Effects Evaluation and Exposure Models	16
6 STEP 7: RISK CHARACTERIZATION	20

6.1	Surface Water Risk Characterization.....	20
6.2	Surficial Soil Risk Characterization.....	20
6.3	Calculation of Combined Zone Soil Risks and Comparison to Background Soil Risks..	22
6.4	Uncertainty Analysis.....	23
7	STEP 8: RISK MANAGEMENT	29
8	REFERENCES	31

List of Tables

Table 1	Key Receptor Foraging Ranges
Table 2	Sample Zone Locations and Types
Table 3	LOAEL TRVs
Table 4	Key Metal Bioaccumulation Models for Earthworms
Table 5	Bioavailability Assumptions for Chemicals
Table 6	Summary by Zone for Chemicals with HQ >1.0 for Avian, Mammals, Earthworm, and Plants using the LOAELs
Table 7a	LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, for Metals Only
Table 7b	LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, for Phthalates, HPAHs, and PCBs
Table 8a	Comparative Evaluation of LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, Metals Only
Table 8b	Comparative Evaluation of LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, for Phthalates, HPAHs, and PCBs
Table 9	Comparative Evaluation of Metal LOAELs for Avian and Mammalian Receptors
Table 10	Summary of Slag Presence in Sub-samples
Table 11	LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, Metals Only

List of Figures

- Figure 1 Eight-step Ecological Risk Assessment Process for Superfund
Figure 2 Conceptual Site Model
Figure 3 Sample Zones for the Landfill

List of Appendices

- Appendix A Surface Water, Surface Soil Data, and EPC Calculations
Appendix B Calculation Worksheets for Determining LOAEL-based Soil Exposure and Risk
Appendix C Hazard Quotient Results
Appendix D ProUCL Output

LIST OF ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
BAF	bioaccumulation factor
BERA	baseline ecological risk assessment
CaCl ₂	calcium chloride
COPEC	constituent of potential ecological concern
CSM	conceptual site model
DQO	data quality objective
DW	dry weight
Eco-SSL	ecological soil screening level
EPC	exposure point concentration
ERA	ecological risk assessment
FCV	final chronic value
GPS	global positioning system
HI	hazard index
HQ	hazard quotient
HPAH	high molecular weight polycyclic aromatic hydrocarbon
LOAEL	lowest observed adverse effects level
mg/kg	milligram per kilogram
NOAEL	no observed adverse effects level
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
Site	Van Buren Landfill
SL	screening level
SLERA	screening level ecological risk assessment
TRV	toxicity reference value

UCL	upper confidence limit
USEPA	U.S. Environmental Protection Agency

DRAFT

EXECUTIVE SUMMARY

Site Summary

The Van Buren Landfill Site (Site) is located at Michigan Avenue and Ecorse Road, Van Buren Township, Wayne County, Michigan. An ecological risk assessment (ERA) is being completed for the Site as part of a Resource Conservation and Recovery Act (RCRA) investigation of the Site. The ERA is following the U.S. Environmental Protection Agency's (USEPA) eight-step ERA process (USEPA 1997). Steps 1 and 2 of the ERA process for the Site were completed previously (Anchor QEA 2016). The objective of this report is to document the completion of Steps 3 through 8 of the ERA process for the Site.

Problem Formulation and Conceptual Site Model

The receptors evaluated for quantitative evaluation for the Site are based on best professional judgment and species that were observed during a Site visit. The following receptor groups and representative receptors were evaluated quantitatively in the baseline ecological risk assessment (BERA):

- Aquatic life.
- Terrestrial plants and soil invertebrates (i.e., earthworms).
- Avian receptors: invertivore (robin) and herbivore (mourning dove).
- Mammalian receptors: invertivore (shrew) and herbivore (vole).

Based on the conceptual site model, the following are complete and significant exposure pathways for the Site:

- Direct contact to surface water for the vernal pool (for aquatic life).
- Direct contact to soil (for plants and soil invertebrates).
- Indirect exposure to the soil via the consumption of soil invertebrates by avian and mammalian receptors.
- Direct exposure to the soil for avian and mammalian receptors by incidental soil consumption.

The assessment endpoints for the BERA are the survival, growth, and reproduction of all the receptors identified above.

Data Used and Exposure Analysis

Measurement endpoints guide the collection of data. The following are measurement endpoints at the Site:

- Constituent of potential ecological concern (COPEC) concentrations in surface water.
- COPEC concentrations in surface soils.
- Estimated COPEC concentrations in soil invertebrates.

Surface water COPECs measured in existing historical surface water data and new surface water data collected in 2016 are compared to less conservative screening levels (SLs), based on updated toxicity data for the COPECs. As noted in Steps 1 and 2 of the ERA (Anchor QEA 2016), Phase II and Phase III surficial soil bore data, collected in 2012 and 2013, were not adequate to evaluate potential exposure to soils throughout the Site. To fill this data gap, the Site was evaluated using soil data collected in 2015 in ten zones throughout the Site using an incremental soil sample collection approach (Anchor QEA 2016).

Exposure to contaminants in surficial soils is evaluated using exposure point concentrations (EPCs) that represent a conservative estimate of the average concentration of a contaminant in surficial soil that a receptor may be exposed to, either through direct contact, incidental ingestion of soil, and/or through dietary intake of food items that have become contaminated. The conservative estimate of the average exposure is typically defined as the 95% upper confidence limit on the mean (95% UCL). EPCs were calculated by zone and for the combination of Zones 1 to 9. The BERA utilizes bioaccumulation models to estimate the accumulation of COPECs from soil to earthworm and plant tissue. The Screening Level Ecological Risk Assessment (SLERA) identified cadmium, copper, and zinc as the most important metals of concern due to their high hazard quotients (HQs; Anchor QEA 2016). For cadmium, copper, and zinc, there are two bioaccumulation models identified in the literature that can be used to evaluate the uptake of each of these three metals by earthworms (Sample et al. 1998; Sample et al. 1999). For these three metals, the models presented in the ecological soil screening level (Eco-SSL) documents are used for Approach 1, and a second set of models for these three metals is used for Approach 2.

Toxicological Effects Evaluation

Surface water SLs for the aquatic receptors are based on ecological surface water SLs from the literature and USEPA sources. Wildlife, earthworm and plant toxicity reference values (TRVs) are based on the lowest observed adverse effects levels (LOAELs) for the identified COPECs, recognizing that the primary objective of a site-specific risk assessment is to evaluate risks to populations and communities at a site. The LOAELs for the avian and mammalian receptors were selected using two of the three options outlined by USEPA Region 5.

Risk Characterization

No risks were found for aquatic life in the surface water body at the Site (i.e., vernal pool).

For the surficial soil exposure pathway, because toxicity due to exposure to a number of metals and organic chemicals is expected to be additive, a hazard index (HI) is calculated for metals and organic chemicals separately to evaluate total exposure to all COPECs. The results of the risk characterization step for exposure to surficial soils at the Site are as follows:

- HIs for Zones 1 to 9 combined exposure to metals are greater than 1.0 for all receptors except for the vole. HIs for Zones 1 to 9 combined exposure to metals range from 0.8 to 7.7 for avian and mammalian receptors, with Approach 1, from 0.8 to 3.6 with Approach 2, and from 8.7 to 15 for earthworms and plants.
- HIs for Zones 1 to 9 combined exposures to phthalates, high molecular weight polycyclic aromatic hydrocarbon (HPAHs) and total PCBs are greater than 1.0 for the shrew and earthworms and less than one for all other receptors.
- To evaluate Site-wide exposure, the 95% UCL EPC for Zone 10 was calculated to represent exposure within the one-third of the Site where landfill activities did not occur and was combined with the EPCs from Zones 1 to 9 combined on an area-weighted basis to represent a Site-wide (Zones 1 to 10) EPC. The results of the Site-wide risk characterization are as follows:
 - HIs for receptors under Site-wide exposure are less than that for Zones 1 to 9 combined. HIs for Site-wide exposure to metals range from 0.6 to 4.9 for avian and mammalian receptors with Approach 1, from 0.6 to 2.7 with Approach 2, and 4.5 to 8.9 for earthworms and plants.

Uncertainties Analysis

Ecological risk assessments contain a number of uncertainties associated with the selection of receptors, exposure to contaminants at the site, and the potential adverse effects associated with these exposures. At the Site, one of the most important uncertainty factors to be considered is the presence of slag in the surficial soils at the Site, the bioavailability of the metals contained in the slag, and the degree to which total metals chemical analyses overestimate the bioavailable fraction in metals, regardless of the presence of slag. These uncertainties were evaluated by conservatively assuming that 50% of metals concentrations in surficial soils at the Site are not bioavailable to receptors due to the presence of slag, etc. in the soils for Zones 1 to 9 combined. HIs for receptors are as follows:

- Under Site-wide exposure with slag adjustment HIs are less than that for Zones 1 to 10 combined and range from 0.4 to 4.8 for all receptors.
- Background risks for exposure to metals for all receptors range from an HI of 0.38 to 3.1.

BERA Conclusions

The highest risk estimates are for earthworms and plants. The risk estimates for avian and mammalian receptors are lower than that for earthworms and plants but HIs still exceed 1.0 for some receptors and COPECs. When the presence of slag is taken into account, the HIs for metals for the earthworms and plants range between 2.4 to 4.8. Metals-only background risks for the plants and invertebrates range from an HI of 1.7 to 3.1. When the presence of slag is taken into account, the HIs for metals for the avian and mammalian receptors range from 0.4 to 3.1 for Approach 1 and 0.4 to 1.7 for Approach 2. Metals-only background risks for the avian and mammalian receptors range from an HI of 0.3 to 2.1 for Approach 1 and 0.3 to 1.4 for Approach 2. Based on the presence of slag in Site soils, the bioavailable fraction of metals in Site soils may be overestimated, and also, based on the level of background risks, potential risks to all receptors at the Site are considered low when considering the entire Site.

1 INTRODUCTION

The Van Buren Landfill Site (Site) is located at Michigan Avenue and Ecorse Road, Van Buren Township, Wayne County, Michigan. An ecological risk assessment (ERA) is being completed for the Site as part of a Resource Conservation and Recovery Act (RCRA) investigation of the Site. The ERA is following the U.S. Environmental Protection Agency's (USEPA) eight-step ERA process as depicted in Figure 1 (USEPA 1997). Steps 1 and 2 of the ERA process for the Site were completed previously (Anchor QEA 2016). The objective of this report is to document the completion of Steps 3 through 8 of the ERA process for the Site.

As outlined in Figure 1 and discussed in detail in USEPA's ERA guidance (USEPA 1997), Steps 3 through 8 of the ERA process comprise the following tasks:

- Step 3 – Problem Formulation:
 - Refining the constituent of potential ecological concern (COPEC) list
 - Chemical transport and fate
 - Ecological conceptual site model (CSM)
 - Assessment endpoints
- Step 4 – Study Design and Data Quality Objective Process:
 - Measurement endpoints
 - Lines of evidence
 - Data gaps
 - Work Plan and Sampling and Analysis Plan (SAP)
- Step 5: Verification of Field Sampling Design
 - Evaluate whether the SAP can be completed
 - Evaluate whether any changes in the SAP are needed
- Step 6: Data Analysis
 - Complete the Exposure Characterization
 - Complete the Toxicological Effects Evaluation
- Step 7: Risk Characterization

- Complete the Risk Characterization
 - Complete the Uncertainty Analysis
- Step 8: Risk Management

Essentially, Steps 3 through 8 of the ERA process comprise the steps necessary to complete a site-specific baseline ecological risk assessment (BERA). The following sections of this report document the completion of all steps of the BERA process at the Site.

2 STEP 3: PROBLEM FORMULATION

In Step 3 of the ERA process, a description of how the COPEC list can be refined is presented, the fate of chemicals at the Site are described, assessment endpoints are described, and risk questions are developed. Each of these steps is important for the development of the BERA.

2.1 Refining the COPEC List

The COPECs identified as a result of the Screening Level Ecological Risk Assessment (SLERA) completed during Step 2 (Anchor QEA 2016) can be refined by using less conservative SLs and by using updated assumptions for wildlife food consumption. Specifically, the refinement step includes the identification of less conservative SLs than were incorporated in the SLERA. The use of less conservative SLs in the BERA is consistent with the overall objective of the BERA, which is to identify potential risks to the health of populations and communities of ecological receptors, and not just potential risks to individual members of a population or community (see Section 2.3). These refined SLs are typically based on the lowest observed adverse effects levels (LOAELs), as opposed to no observed adverse effects levels (NOAELs). Toxicity data are available in the ecological soil screening levels (Eco-SSL) database to identify LOAEL-based SLs.

The wildlife SLs can also be updated by using alternative assumptions for food consumption. The SLs developed by USEPA in the Eco-SSL documents include a safety factor for the food uptake rate that ranges between 13 and 20%. By using this factor in the development of the SLs, USEPA assumes the receptor consumes up to 20% more food than the average reported in the literature. This safety factor can be removed in the development of the SLs for the receptors evaluated in the BERA.

2.2 Chemical Fate and Transport

Contaminants are likely present at the Site due to Site-related releases as well as other sources (see Section 2.4). A discussion regarding sources and the processes by which organisms become exposed to contaminants is discussed below in Section 2.4.

2.3 Assessment Endpoints

Assessment endpoints are “an explicit expression of the environmental values (e.g., ecological resources) that are to be protected” (USEPA 1997). The selection criteria for assessment endpoints include ecological relevance, susceptibility (exposure plus sensitivity), and relevance to management goals (USEPA 1997, 1998). The assessment endpoints provide the foundation for the BERA because they focus the assessment activities on the key environmental values such as survival, growth, and reproduction of the representative receptors.

The following factors need to be considered when selecting assessment endpoints (USEPA 2004):

- Contaminants that occur in environmental media and their concentrations
- Fate and effects of the contaminants to various groups of organisms
- Ecologically relevant receptor groups that are potentially sensitive to or highly exposed to the contaminant, based upon their natural history attributes
- Presence of potentially complete exposure pathways

As discussed in Step 2 (Anchor QEA 2016), a number of contaminants have been identified as COPECs for the Site. Receptors that come into direct contact with Site soil (e.g., shrew) are likely to be exposed to these COPECs, either through direct contact and/or through dietary uptake. The assessment endpoints for the BERA are the survival, growth, and reproduction of all the receptors previously identified under Step 1 and discussed in Section 2.4.

2.4 Conceptual Site Model and Exposure Pathways

The ecological CSM for the Site is presented in Figure 2. The CSM helps define the relationships between COPECs and assessment endpoints. The CSM provides a basis for predicting potential exposure and effects on ecological receptors and a template for generating risk questions and testable hypotheses (USEPA 2004). More specifically, the CSM describes the primary and secondary sources of contaminants, ecological receptors, and exposure pathways that link the sources to the receptors. This CSM presents the receptors that may be present at a site and the exposure pathways that are relevant for these receptors.

A CSM describes the relationships between the receptors (i.e., aquatic life and wildlife) that are potentially at risk at a site and how they may be exposed to COPECs. The potential exposures are evaluated through the identification of the primary and secondary sources at the Site. For example, surface soil and surface water are secondary sources at the Site and the former landfill is a primary source. Based on these sources, the exposure pathways are described for the receptors.

The receptors proposed for quantitative evaluation for the Site are based on best professional judgment and species that were observed during the Site visit. These receptors are directly exposed to contaminants in soils at the Site or are indirectly exposed via their diet, and are species for which quantitative evaluation of potential risk addresses potential risk for other species. The following receptor groups and representative receptors will be evaluated quantitatively in the BERA:

- Terrestrial plants
- Soil invertebrates (i.e., earthworms)
- Avian receptors
 - Invertivore (robin)
 - Herbivore (Mourning dove)
- Mammalian receptors
 - Invertivore (Shrew)
 - Herbivore (Vole)

Although many exposure pathways may exist in an ecosystem, not all are complete. For complete exposure pathways, some may be of greater relevance for potential risk than others (USEPA 1997). Exposure pathways are typically described in the following ways:

- Complete and significant: There is a link between the source and the receptor, and the pathway is considered a potentially important driver for risk. This pathway will be evaluated quantitatively.
- Complete and insignificant or significance unknown: There is a link between the source and the receptor; however, the significance of this pathway in terms of overall exposure is either minor relative to other exposure pathways or is unknown.

- Incomplete: There is no link between the source and the receptor. Further assessment of these pathways will not be performed.

Based on current understanding of the Site, Figure 2 presents the ecological CSM as it relates to the exposure pathways. The following are complete and significant exposure pathways for the Site:

- Direct contact to soil (for plants and soil invertebrates)
- Indirect exposure to the soil via the consumption of soil invertebrates by avian and mammalian receptors
- Direct exposure to the soil for avian and mammalian receptors by incidental soil consumption
- Direct contact to surface water for the vernal pool (for aquatic life)

The ecological CSM is based on information about the sources of the chemicals, the existing habitat, and the significance of the exposure pathways from the sources to the receptors. The home ranges for the avian and mammalian receptors are presented in Table 1. The shrew and a robin, were selected because they have the highest potential risks compared to the other two receptors, the dove and the vole, and their foraging ranges encompass the vole's (Table 1). The CSM also provides the basis for identifying assessment endpoints (see Section 2.3) and measurement endpoints (see Section 3.1) for representative receptors.

2.4.1.1 Risk Questions and Testable Hypotheses

Risk questions guide the analyses for a BERA. The questions describe testable hypotheses as to whether or not a potential risk to the assessment endpoint exists (USEPA 1997, 2004).

The risk questions for the Site are presented as follows:

- Are the levels of contaminants in surface water from the Site greater than risk-based thresholds for the survival, growth, or reproduction of aquatic life?
- Are the levels of contaminants in surface soil from the Site greater than risk-based thresholds for the survival, growth, or reproduction of terrestrial plants?
- Are the levels of contaminants in surface soil from the Site greater than risk-based thresholds for the survival, growth, or reproduction of soil invertebrates?

- Are the levels of contaminants in the diets of the bird receptors from the Site (including invertebrates and incidental soil consumption) sufficiently elevated to adversely affect the survival, growth, or reproduction of avian receptors?
- Are the levels of contaminants in the diets of the mammalian receptors from the Site (including invertebrates and incidental soil consumption) sufficiently elevated to adversely affect the survival, growth, or reproduction of mammalian receptors?

Several lines of evidence (measurement endpoints) are typically used to answer the risk questions.

3 STEP 4: STUDY DESIGN AND DQO PROCESS

In Step 4 of the ERA process, the measurement endpoints for the BERA are defined, lines of evidence for the risk assessment are described, any data gaps identified in earlier steps are described, and an approach to fill those data gaps are described with a sample collection plan.

3.1 Measurement Endpoints

According to USEPA (2004), “A measurement endpoint is defined as ‘a measurable ecological characteristic that is related to the valued characteristic that is selected as the assessment endpoint’ and it is a measure of biological effects (e.g., mortality, reproduction, growth; USEPA 1997).” Thus, measurement endpoints describe specific observations or analyses that can be performed in the field or in the laboratory to answer the risk questions and, therefore, to address the assessment endpoints. They guide the collection of data. The following are measurement endpoints at the Site:

- COPEC concentrations in surface water
- COPEC concentrations in surface soils
- Estimated COPEC concentrations in soil invertebrates

3.2 Lines of Evidence

The risk analyses for the Site will use a weight-of-evidence approach that includes calculating hazard quotients (HQs) for surface water and soil exposure, as well as comparison to background for soils. The calculations of HQs are used to answer the risk questions defined in Section 2.4. For example, the calculation of an HQ for avian receptors will be used to answer the question: are the levels of contaminants in the diets of the bird receptors from the Site sufficiently elevated to adversely affect the survival, growth, or reproduction of avian receptors? The data needed to support these lines of evidence for the Site are the measurement endpoints listed above.

3.3 Data Gaps

As noted in Steps 1 and 2 of the ERA (Anchor QEA 2016), Phase II and Phase III surficial soil bore data, collected in 2012 and 2013, were not adequate enough to evaluate potential exposure to soils throughout the Site. A second set of soil samples was collected in 2015 to

further characterize the Site. To complete this additional characterization, the Site was evaluated using ten different zones, which were sampled in an incremental soil sample collection effort (Anchor QEA 2016). A complete description of the incremental soil sample collection approach is presented in Steps 1 and 2 (Anchor QEA 2016).

An additional data gap was identified during completion of Steps 1 and 2 of the ERA related to the hardness of the surface water in the vernal pool. An additional sample was collected in 2016 and evaluated for hardness and hardness-dependent metals. These additional data were used to evaluate risks for metals in surface water for Steps 1 and 2 (Anchor QEA 2016).

4 STEP 5: VERIFICATION OF FIELD SAMPLING DESIGN

Step 5 of the ERA process is the Verification of Field Sampling Design for the BERA. The primary purpose of this step is to ensure that the samples to be collected in accordance with the SAP, developed in Step 4 of the ERA process (Anchor QEA 2014), can be successfully completed. This verification step may be needed if conditions have changed between the time the SAP was developed and when the samples are to be collected.

No revisions to the SAP for the collection of the additional soil or surface water data were needed other than to more accurately define the areas for each soil sampling zone for Global Positioning System (GPS) use. This correction was conducted by Mannik & Smith who completed the SAP (Anchor QEA 2014).

5 STEP 6: DATA ANALYSIS

Step 6 of the ERA process is the Site Investigation and Data Analysis. Specifically, in Step 6 the results of the Site investigation developed during Steps 4 and 5 are analyzed and integrated with historical data on the Site, if warranted.

5.1 Summary of Soil Site Investigation

The initial analyses completed during Steps 1 and 2 concluded that existing soil data were not adequate enough to complete a comprehensive evaluation of potential exposure by ecological receptors to contaminants in surficial soils throughout the Site (Anchor QEA 2016). Surficial soil data were most limited in the central area and southeastern portion of the Site (Table 2). To complete the BERA, it was necessary to fill significant data gaps in the surficial soil dataset. To fill this data gap, the Site was evaluated using ten different zones, which were sampled in an incremental soil sample collection effort (Anchor QEA 2016). Specifically, Figure 3 shows the locations of the new surficial soil sample locations (i.e., Zones 1 through 10). These additional sample locations are spatially distributed throughout the Site to evaluate exposure to constituents of potential ecological concern (COPECs) in surficial soils by receptors foraging in different areas throughout the Site. A complete description of the incremental soil sample collection approach is presented in Steps 1 and 2 (Anchor QEA 2016).

The Site investigation was completed in December 2014 and January 2015, in accordance with the sample design, and any revisions noted under Step 5 above, and met all data quality objectives (DQOs).

5.2 Data Analysis

The objective of the data analysis step is to adequately characterize exposure to COPECs in surficial soils and surface water by ecological receptors and to complete the toxicological effects evaluation consistent with the objective of the BERA. The SLERA completed during Step 2 of the ERA process identified COPECs by comparing surface water and surficial soil chemical data to conservative screening levels (SLs), based on NOAELs. For the surface water analysis, surface water COPECs measured in existing historical surface water data and new surface water data collected in 2016 are compared to less conservative SLs, based on

updated toxicity data for the COPECs. To complete the BERA for surface soil, soil COPECs measured in the recent soil data collected using the incremental soil sampling process are compared to less conservative SLs, based on low observed adverse effects levels (LOAELs), which are more consistent with the objective of a site-specific BERA: to protect populations and communities of receptors.

5.2.1 Surface Water Exposure

For aquatic receptors, surface water data from Mannik & Smith (2014a) and *RACER Van Buren Landfill Site – Phase III Site Investigation* (Mannik & Smith 2014b), along with a sample collected from the vernal pool in 2016, were used for the exposure assessment. Surface water data from these two reports and the 2016 sample event represent data for samples collected in 2013, 2014, and 2016. There are limited areas at the Site where surface water is present. In 2013 and 2014, two samples were collected from the temporary pool (SW-2) located in the south-central section of the Site (Appendix A, Table A-1). Surface water samples were analyzed for metals, volatile organic compounds, semi-volatile organic compounds, and polycyclic aromatic hydrocarbons (PAHs). In July 2016, a surface water sample was analyzed for hardness-dependent metals and hardness to fill a data gap on Site-specific hardness levels. Exposure to contaminants in surficial water is evaluated using exposure point concentrations (EPCs) that represent a conservative estimate of the concentration of a contaminant in surficial water that a receptor may be exposed to, either through direct contact or gill uptake. The conservative estimate of the EPC is based on the maximum EPC.

5.2.2 Soil Exposure

For the soil exposure assessment, the Site was evaluated using the ten different zones that were sampled (Figure 3), plus regional soil background data published by the State of Michigan (MDEQ 2015a). It is important to note that the Site is generally homogeneous from a habitat perspective and none of the ten zones were selected to evaluate a specific habitat condition and/or exposure conditions for a particular receptor. As such, each zone, a combination of zones, and/or the entire Site is assumed to be equally supportive of all of the receptors evaluated.

The chemical data generated as a result of the analysis of the soil samples from each of the ten zones are included in Appendix A, Tables A-2 and A-3. Soil samples were analyzed for metals, toluene, total xylenes, phthalates, high molecular weight PAHs (HPAHs), and PCBs. However, due to the level of effort needed to collect volatile samples, toluene and total xylenes were only analyzed in samples from Zones 1 and 4. These two zones were selected because they are the only two zones where these chemicals were detected in previous soil samples (Mannik & Smith 2014). Most metals were detected in soil from all zones and phthalates, HPAHs, and PCBs were detected in soil samples from several zones. Toluene and total xylenes were detected in only one soil sample of six evaluated from Zones 1 and 4. Therefore, these two chemicals were dropped from further consideration. For this analysis, all non-detects were assumed to be at method detection limit and for the chemicals that were qualified as J-values¹, the results were used as reported.

For terrestrial receptors (i.e., plants, soil invertebrates, and avian and mammalian wildlife), the new surficial soil data were used for the exposure estimates. Historical data were not included in the exposure assessment because the new dataset was more extensive and, in most cases, overlapped spatially with the historical sampling locations. The new data, therefore, are more comprehensive and more representative of existing conditions than the historical data.

Exposure to contaminants in surficial soils is evaluated using EPCs that represent a conservative estimate of the average concentration of a contaminant in surficial soil that a receptor may be exposed to, either through direct contact, incidental ingestion of soil, and/or through dietary intake of food items that have become contaminated. The conservative estimate of the average exposure is typically defined as the 95% upper confidence limit on the mean (95% UCL).

The 95% UCLs for each COPEC and zone were calculated using both the Student's-t and Chebyshev methods. These two methods are described in the Incremental Sampling Methodology as the appropriate statistics to use when evaluating samples collected using

¹ J-values are estimates of a detectable value between the method detection limit and reporting limit; therefore, they are a conservative estimate of a true chemical concentration in surface soil.

incremental collection methods (ITRC 2012). The Student's-t 95% UCL represents the lower bound estimate of the 95% UCL and Chebyshev 95% UCL represents the upper bound of the 95% UCL. Exposure estimates by zone and for the combination of Zones 1 to 9 are presented in Appendix A, Tables A-4a to A-9. The estimates for each zone are based on three replicates; for Zones 1 to 9, there are 27 replicates. The individual zone, Zones 1 to 9 combined, and Site-wide (Zones 1 to 10) 95% UCL EPC for each chemical was estimated using the mid-point of the Student's-t 95% UCL (represents the lower bound estimate of the 95% UCL) and the Chebyshev 95% UCL (represents the upper bound of the 95% UCL) (ITRC 2012; USEPA 2013) (Appendix A, Tables A-4a, to A-9).

5.2.2.1 Receptors

The SLs for exposure to surficial soils are based on the receptors found at a site. The ecological receptors for surficial soil exposure at the Site are those based on the CSM presented in Step 3 of the ERA process (Anchor QEA 2014). These receptors are the following:

- Terrestrial plants
- Soil invertebrates (i.e., earthworms)
- Avian receptors
 - Invertivore (robin)
 - Herbivore (mourning dove)
- Mammalian receptors
 - Invertivore (shrew)
 - Herbivore (vole)

5.3 Surface Water Toxicological Effects Evaluation

To complete the BERA, the surface water EPCs for each COPEC are compared to screening values that represent thresholds of potential effects to ecological receptors as a result of exposure to water-based contaminants. For this Site, surface water SLs for the aquatic receptors are based on ecological surface water screening levels from the literature and USEPA sources. In Step 2, the maximum detected concentration for the following chemicals

was greater than its respective SL (Anchor QEA 2016): fluoranthene; total manganese; and dissolved manganese. The HQs for these chemicals ranged from 1.7 to 4.9.

The manganese SL used in the Step 2 SLERA, 93 micrograms per liter (µg/L), was derived from the Region 4 guidance for surface water (Anchor QEA 2016). This SL is not a hardness-dependent SL. It is well recognized that manganese toxicity is hardness dependent and some states (Colorado, New Mexico, and Michigan) have adopted hardness-dependent manganese aquatic life criteria (Stubblefield et al. 1997; Windward Environmental 2014, MDEQ 2015b). In addition, potential toxicity of manganese should be evaluated based on its dissolved form (Stubblefield et al. 1997), not as total manganese.

The hardness relationship is as follows (Windward Environmental 2014):

$$\text{Chronic SL} = \text{exponential}(0.7424 \times (\text{natural log}(\text{hardness})) + 4.124)$$

For manganese, the above equation was adjusted using the results from a sample collected from the temporary pool in 2016; the hardness in that sample was 2,200 milligrams per liter (mg/L; Anchor QEA 2016). Because the studies on the relationship between hardness and metals are limited to a maximum of 400 mg/L and USEPA recommends setting the hardness to 400 mg/L when the measured hardness is higher (USEPA 2002), the hardness was set at 400 mg/L. Therefore, at 400 milligrams/L hardness, the chronic SL would be 5,282 µg/L. The SL selected for the BERA was well documented, and new manganese toxicity data were used to derive the SL (Windward Environmental 2014). Furthermore, the uncertainties related to the SL originally derived by Suter and Tsao 1996 were addressed. The data and approach from Suter and Tsao (1996) are similar to the approach used by Region 4 to derive the manganese SL used in Step 2 of the ERA.

The fluoranthene SL used in the Step 2 SLERA, 0.08 µg/L, was derived from the Region 4 guidance for surface water (Anchor QEA 2016). A second source of toxicity data, the USEPA report titled, “*Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks for the Protection of Benthic Organisms: PAH Mixtures*” (USEPA 2003a), was reviewed to further evaluate the toxicity of fluoranthene to aquatic life. The PAH-specific final chronic value (FCV) for fluoranthene derived by USEPA in this report is 7.1 µg /L.

This SL is more than 8 times higher than the SL from Region 4 (USEPA 2015). It is likely that the FCV from USEPA (2003a) for PAHs is protective for the chronic toxicity of fluoranthene to aquatic life because a more robust dataset was used in the derivation of the SL than that used by Region 4 and a fluoranthene-specific acute to chronic ratio was available.

5.4 Soil Toxicological Effects Evaluation and Exposure Models

To complete the BERA, the EPCs (based on using soil exposure models presented in Appendix B) for each COPEC are compared to toxicity reference values (TRVs) that represent thresholds of potential effects to ecological receptors as a result of exposure to soil-based contaminants. For this Site, surficial soil exposure TRVs for the receptors listed above are based on Eco-SSLs derived by USEPA as a set of risk-based SLs for many of the contaminants often found in soil that are of ecological concern for wildlife receptors, earthworms, and plants at hazardous waste sites (USEPA 2003b). Specifically, Eco-SSLs are available for several metals and polycyclic aromatic hydrocarbons (PAHs). PAHs are evaluated as either low molecular weight or high molecular weight PAHs and the PAH Eco-SSLs are only available for mammals. The USEPA's Eco-SSL documents (USEPA 2005a, 2005b, 2005c, 2005d, 2005e, 2006, 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2008) are the TRV source for antimony, barium, beryllium, arsenic, cadmium, cobalt, lead, vanadium, silver, copper, nickel, manganese, zinc, selenium, and chromium. For 1,1'-Biphenyl, carbazole, mercury, phthalates, PAHs (for birds), and total PCBs, separate sources were needed for the TRVs. The TRVs for 1,1'-Biphenyl, carbazole, mercury, phthalates, PAHs (for birds), and PCBs were derived from the literature (Rigdon and Neal 1963; Barsotti et al. 1976; Patton and Dieter 1980; Sample et al. 1996; Heinz 1979; Heinz and Hoffman 1998; Beall 2007; USEPA 2011; LANL 2012).

As noted above, for the Step 2 SLERA, the most conservative SLs were selected for each chemical. As directed by USEPA, the SLs used in the SLERA were from USEPA (2015). These conservative SLs protect any individual receptor that may be exposed to a chemical at a site and are based on the NOAEL for the chemical (USEPA 2015). The objective of the SLERA is to eliminate any chemicals that pose negligible risk. For the BERA, the TRVs are based on the LOAELs for the COPECs, recognizing that the primary objective of a site-

specific risk assessment is to evaluate risks to populations and communities at a site. The LOAELs were selected using two of the three options outlined by USEPA Region 5 (USEPA 2016), as follows:

- Option 1: Select the lowest bounded LOAEL value from the applicable test data listed in the Ecological Soil Screening Levels (Eco-SSLs) toxicological database.
- Option 2: Select only bounded studies from the categories of reproduction and growth for each COPEC from the studies available in the applicable EcoSSL documents. Any studies that have a LOAEL-NOAEL ratio greater than ten are removed from the list and the 20th percentile of the remaining studies is calculated. For those COPECs having an insufficient number of tests for a percentile calculation (fewer than four tests), the LOAEL was calculated by multiplying the LOAEL-NOAEL geometric means ratio by the NOAEL (Eco-SSL TRVs).

In most cases, the LOAEL TRVs used in the BERA are based on Option 2, the 20th percentile of LOAELs with matching NOAELs, presented for each metal in the Eco-SSL documents. For mercury, thallium, 1,1'-Biphenyl, carbazole, phthalates, PAHs (for birds), and total PCBs, the SL is based on a single LOAEL, which is less than the minimum for calculating a 20th percentile. The selected TRVs for the Site COPECs and receptors are included in Table 3 and Appendix B.

The LOAEL TRVs for invertebrate and plants also were updated for the BERA to include, where possible, those studies used in the development of the LOAEL TRVs that were conducted at a bioavailability level consistent with the soil types found at the Site, as described in the Eco-SSL documents. In general, for the Eco-SSLs, bioavailability = 2 are studies conducted when the pH of the soil was 4 to 5; and bioavailability = 1 are studies when the pH was 6 to 7. Studies conducted under bioavailability = 2 conditions are those more similar to a wetland, lower pH soil type (USEPA 2003b). The Study area is primarily a forested upland environment without wetlands. Therefore, in this case, bioavailability = 1 studies were used when available.

As noted above, for the BERA, LOAEL-based exposure models are derived in Appendix B and include the adjustments discussed below. The models used here estimate tissue concentrations in prey items for receptors and doses for the receptors. The USEPA's Eco-SSL

documents ((USEPA 2005a, 2005b, 2005c, 2005d, 2005e, 2006, 2007a, 2007b, 2007c, 2007d, 2007e, 2007f, 2008) are the primary source for the plant and earthworm bioaccumulation models for antimony, barium, beryllium, arsenic, cadmium, cobalt, lead, vanadium, silver, copper, nickel, manganese, zinc, selenium, and chromium. The plant and earthworm bioaccumulation models are used in the exposure models for the avian and mammalian receptors. For mercury, phthalates, and total PCBs, separate sources were needed for the exposure models. The bioaccumulation models for mercury, phthalates, and PCBs were derived from the literature (Bechtel-Jacobs Company LLC 1998; Sample et al. 1998; Sample et al. 1999; USEPA 2005f; Hu et al. 2005; LANL 2012).

As described above, the BERA utilizes bioaccumulation models to estimate the accumulation of COPECs from soil to earthworm tissue. The SLERA identified cadmium, copper, and zinc as the most important metals of concern due to their high HQs (Anchor QEA 2016). For cadmium, copper, and zinc, there are two bioaccumulation models identified in the literature that can be used to evaluate the uptake of each of these three metals by earthworms (Sample et al. 1998; Sample et al. 1999). As indicated in Table 4, for these three metals, the models presented in the Eco-SSL documents are used for Approach 1, and a second set of models for these three metals are used for Approach 2 (Table 4). For cadmium, Sample et al. (1998) recommended two regression models for cadmium uptake by earthworms—the model used in the Eco-SSL document and the model developed by Neuhauser et al. 1995 (Table 4). For copper, Sample et al. (1998) recommended a regression model; this model is used in Approach 2. A bioaccumulation factor (BAF) from Sample et al. (1998) is used in Approach 1. For zinc, Sample et al. (1998) recommended the same regression model that is used in the Eco-SSL document, which is used in Approach 1. In the report by Sample et al. (1998), a regression model from Neuhauser et al. (1995) was cited, and that model was used in Approach 2.

In the SLERA, all chemicals are assumed to be 100% bioavailable in the diet or in incidentally ingested soil. In the BERA, this assumption is relaxed if technically justified. When data are available (Sample et al. 2014), the bioavailability of metal COPECs from both the food item (earthworm and plant) and soil were adjusted for avian and mammalian receptors (Table 5). The Eco-SSLs assume that chemicals in soil and diet are 100%

bioavailable. However, the literature indicates that bioavailability is less than 100% (e.g., Koch and Reimer as cited by Sample et al. 2014). For metals with no data, the bioavailability was equal to the mean for all metals with data. For organic COPECs, it was assumed that the bioavailability was equal to the mean for all metals when the unknown metals were set at 100% and other metals at their known bioavailability. For the organic COPECs, this allowed a relatively conservative estimate of bioavailability.

6 STEP 7: RISK CHARACTERIZATION

In the risk characterization step, exposure estimates and toxicological effects information are combined to estimate risk, through the use of hazard quotients (HQs) for each COPEC and receptor. HQs are calculated by dividing EPCs by the TRVs for a particular contaminant or group of contaminants. An HQ of 1.0 based on a LOAEL TRV is considered the point of departure for identifying potentially unacceptable risks to a receptor (USEPA 1992, 1997). A LOAEL TRV is an exposure concentration at which an adverse effect has been observed; any exposure concentration equal to or greater than this value ($HQ \geq 1$) indicates calculated risk. The magnitude of the adverse response observed in the critical study, which the LOAEL TRV was derived from, should be used to interpret LOAEL HQs >1 . A discussion of the derivation of the LOAELs included in the BERA is included in the uncertainty section. This discussion also includes an interpretation of LOAEL HQs >1 . Total risks are also estimated for each receptor through the use of a hazard index (HI), which equals the sum of HQs for all COPECs. Finally, risks for Zones 1 to 9 combined and Site-wide (Zones 1 to 10) risks, defined as the HI for each receptor when all zones are combined, are also estimated, and these estimated Site-wide risks are compared to risks associated with exposure to background concentrations of COPECs.

6.1 Surface Water Risk Characterization

As described above in Section 5.3, the hardness-based SL for dissolved manganese is 5,282 $\mu\text{g/L}$, and the maximum dissolved manganese concentration in the vernal pool was 4 $\mu\text{g/L}$. On this basis, it is unlikely there are risks to aquatic life due to exposure to manganese in the surface water of the vernal pool. Similarly, the fluoranthene FCV from USEPA (2003a) is 7.1 $\mu\text{g/L}$. The maximum fluoranthene concentration in the vernal pool was 1.3 $\mu\text{g/L}$. On this basis, it is unlikely there are risks to aquatic life due to exposure to fluoranthene in the surface water of the vernal pool.

6.2 Surficial Soil Risk Characterization

The HQs calculated based on exposure to soil-based chemicals at the Site are all based on two statistics: an EPC based on the mid-point (geometric mean) between the Student's-t 95% UCL and the Chebyshev 95% UCL and a LOAEL TRV.

HQs for many COPEC/receptor pairs in the ten zones described in Section 5.1 are less than 1.0. Appendix C includes calculations of all HQs. A summary by zone of the chemicals with HQs >1.0 for all receptors is presented in Table 6. The table does not include all COPECs with HQs <1.0 for all receptors (see Appendix C, Table C-1 for a complete list). This table also includes the EPC (i.e., 95% UCL) for the chemicals in each zone where the HQ is greater than 1.0 for one or more receptors. Cadmium, copper, manganese, zinc, HPAHs, and total PCBs are the primary chemicals with HQs >1.0 when the LOAEL TRV is compared to the mid-point estimate of the 95% UCL. As described above and included in Table 4, two bioaccumulation models were included for cadmium, copper, and zinc. For these three metals, several of the HQs are greater than one for more than one zone and receptor using modeling Approach 1, the HQs for the same zones, metals, and receptors are less than 1 using Approach 2 (Table 6). This suggests there is uncertainty in the risk estimates for these metals. There are still HQs greater than one for cadmium in Zones 7 and 8 for at least one receptor, and for copper in Zone 7 for the robin (Table 6).

Because toxicity due to exposure to a number of metals and organic chemicals is expected to be additive, an HI is calculated for metals and organic chemicals separately to evaluate total exposure to all COPECs. In general, an HI is defined as the sum of the HQs for all the chemicals at a site that exhibit the same mode of toxicity to a receptor. The organic chemicals will not have the same mode of action as the metals; therefore, they are evaluated separately for this analysis. To evaluate the exposures of all metals and organic chemicals together for the Site, a chemical HI was calculated for each zone. The HIs for each receptor in each of the ten zones are included in Tables 7a (metals) and 7b (organics). The HIs are highest for earthworms and plants, and Zones 7 and 8 have the highest risks with HIs greater than 10 for more than one receptor (Tables 7a and 7b). For the shrew, robin, and woodcock, the HIs are lower using Approach 2 as compared to Approach 1 (Table 7a). For some zones, the HIs with Approach 2 are more than 50% lower than risks estimated with Approach 1 (Table 7a).

6.3 Calculation of Combined Zone Soil Risks and Comparison to Background Soil Risks

Risks were estimated for the Site by combining the COPEC concentrations for Zones 1 through 9, and calculating a 95% UCL EPC for these combined data. This combined EPC was assumed to represent exposure within the portion of the Site where historical landfilling activities occurred. This area represents approximately two-thirds of the area of the Site. There were two different ways to calculate the 95% UCL EPC and risk estimations for Zones 1 through 9 combined. Risks were first calculated, including all data for Zones 1 through 9 combined, using a 95% UCL EPC for each chemical that was estimated using the mid-point of the Student's-t 95% UCL (that represents the lower bound estimate of the 95% UCL), and the Chebyshev 95% UCL (that represents the upper bound of the 95% UCL) (ITRC 2012; USEPA 2013) (Tables 8a and 8b). As with the risk calculations for each individual zone, metals and organics were evaluated separately. Metal HIs were highest for plants, earthworms, and shrews and organic HIs were highest for the shrew. For Zones 1 through 9 combined, the overall HIs for the shrew, robin, and woodcock are more than 50% lower when evaluated with Approach 2 as compared to Approach 1 (Table 8a).

For the second estimate, a statistical evaluation of outliers was first conducted using ProUCL software (USEPA 2013). The outliers detected by ProUCL are presented in Appendix C and the ProUCL output is presented in Appendix D. The identified outliers were then removed from the database for the 95% UCL EPC calculation. For the second risk estimate, the 95% UCL EPC for each chemical was again estimated using the mid-point of the Student's-t 95% UCL and Chebyshev 95% UCL (USEPA 2013) (Tables 8a and 8b). Overall the HI's are lower without the outliers; metal HIs were highest for plants, earthworms and shrews and organic HIs were highest for the shrew. For Zones 1 through 9, combined without outliers, the HIs are slightly less than 50% lower using Approach 2 as compared to Approach 1 (Table 8a). In addition, as a result of using the Approach 2 models for cadmium, copper, and zinc, except for lead, all of the individual metal HQs are <1 for the shrew, robin, and woodcock (Appendix C, Table C-2b).

As a sensitivity analysis, the 95% UCL EPC for Zone 10 was assumed to represent exposure within the remaining one-third of the Site where landfill activities did not occur. These two EPCs were combined on an area-weighted basis to represent a Site-wide (Zones 1 to 10) EPC.

The calculation of Site-wide risks assumes that any one receptor, as part of a larger population or community, may utilize more than one zone and/or that multiple populations or communities of receptors will, on average, experience Site-wide exposure. Because the habitats within each zone are similar, it is not expected that any receptor would select one zone over another. The results of the Site-wide risk calculations are included in (Tables 8a and 8b). For Zones 1 through 10, combined without outliers, the HIs are almost 50% lower for the metals than when cadmium, copper, and zinc are modeled with Approach 2 as compared to Approach 1 (Table 8a). Again, as a result of using the Approach 2 models for cadmium, copper, zinc, all the individual metal HQs are <1 for the shrew, robin, and woodcock (Appendix C, Table C-2e). Tables 8a and 8b also includes risk calculations assuming that State of Michigan published background COPEC concentrations (MDEQ 2015a) are equal to 95% UCL EPCs. Note that for total PCBs, there is no Michigan State background level. Total PCBs were assumed to be the highest detection limit for Aroclor 1254 for Zone 10.

6.4 Uncertainty Analysis

There are a number of uncertainties associated with the estimation of risk at the Site that range from incomplete knowledge regarding use of the Site by the receptors evaluated in the BERA and the degree of exposure by these receptors to Site-related COPECs, uncertainty in the derivation of the TRVs for each COPEC, and incomplete knowledge about the true distribution of COPECs at the Site. Following is a discussion of these uncertainties:

- CSM-related uncertainties:
 - The description of the likely exposure pathways, COPECs, and exposed receptors require professional judgment and assumptions, which may result in uncertainty in the CSM.
- Uncertainties in the derivation of TRVs and the importance of HQs (and HIs) >1:
 - Many of the LOAEL TRVs for avian and mammalian receptors were derived as the 20th percentile of the distribution of bounded LOAELs for the COPECs included in the BERA (Table 3). These LOAELs were derived from studies that evaluated chronic endpoints such as growth and reproduction. Although these LOAELs were not derived as the most conservative LOAELs, selecting the LOAEL value at

the 20th percentile of the distribution is conservative, particularly given the fact that the LOAELs were derived based on chronic endpoints, as opposed to survival. It is instructive to evaluate how much more conservative the lowest bounded LOAEL is compared to the 20th percentile value, as well as to look at the magnitude of response relative to the control response in those studies that the 20th percentile values are based on, in order to get a sense of the magnitude of response and ecological importance of HQs >1. As shown in Table 9, most of the selected LOAEL TRVs based on the 20th percentile of the LOAEL value distribution are within a factor of 3 or less from the lowest bounded LOAEL in the Eco-SSL reports. On this basis, the selected LOAELs would appear to be conservative, particularly because they are based on chronic endpoints. In addition, to further evaluate how protective the selected LOAEL TRVs are, it is important to evaluate the percent response compared to the control for the reported growth and reproduction LOAELs that are near the selected LOAEL. For the LOAEL TRVs cited in the Eco-SSL documents that bound the 20th percentile of the distribution, the studies on which the LOAELs are based were reviewed to estimate the percent response in the growth or reproduction endpoint compared to the control. A summary of this analysis for the most important COPECs is as follows:

- For cadmium and avian receptors, the percent response at the reported growth or reproduction LOAEL was 9.8 to 39% (Leach et al. 1979; Hill 1979)
 - For copper and mammalian receptors, the percent response at the reported growth or reproduction LOAEL was 15 to 30% (Aulerich et al. 1982; Edmonds and Baker 1986; Suttle and Mills 1966)
 - For copper and avian receptors, the percent response at the reported growth or reproduction LOAEL was 9.6 to 33% (Jackson and Stevenson 1981; Chiou et al. 1998; Chiou et al. 1999)
 - For lead and avian receptors, the percent response at the reported growth or reproduction LOAEL was 2 to 28% (Edens and Garlich 1983; Meluzzi et al. 1996)
- For these metals, the percent response compared to the control is relatively low (i.e., a range of 2% to 39% reduction in growth or reproduction). Although these

effects may result in adverse effects to individuals, it is likely that the effects on a population of receptors would be low and likely not ecologically significant, even if the LOAEL HQs are greater than 1, which is not frequently the case at the Site (see Appendix C, Table C-2b)

- For HPAHs, there also is uncertainty in the mammalian TRV. The lowest bounded LOAEL is based on a survival endpoint (i.e., 3.05 mg/kg body weight (BW)-day) and represents a 50% response (Culp et al. 1998). Conversely, the 20th percentile of LOAELs for growth and reproduction is 25 mg/kg BW-day (USEPA 2007e). A LOAEL based on a chronic endpoint that is 8 times higher than a LOAEL based on mortality demonstrates the overall high level of uncertainty and conservativeness associated with these TRVs.
- The TRVs for earthworms and plants likely have the highest level of uncertainty because they are generally based on more limited data as compared to the avian and mammalian receptors. This more limited dataset also appears to have a great deal of variability, which leads to greater uncertainty when attempting to predict effects. Specifically, for plants, growth toxicity values for alfalfa (*Medicago sativa*) exposed to copper range from 32 to 1,253² milligrams per kilogram dry weight (mg/kg DW) as an effect concentration for 10% or 20% of the test population (EC10 or EC20) (USEPA 2007a). For zinc, growth toxicity values for oats (*Avena sp.*) range from 95 to 361 mg/kg DW as a maximum allowable toxicant concentration (USEPA 2007b). In addition, many of the effects concentrations reported in the databases for TRV development are significantly less than soil concentrations measured at the Site, indicating that there should be widespread effects on plants due to exposure to COPECs. However, the Site appears to support a robust and complex plant community in all zones, consisting of grasses, shrubs, forbs, and trees. For example, for copper, 25% of the effects concentrations in the database are lower than the Site-wide EPC, and for zinc, 100% of the effects concentrations in the database are lower than the Site-wide EPC.

² Range based on all data presented in USEPA Eco-SSL database.

- In addition, the bioavailability of the chemicals that earthworms and plants are exposed to is uncertain, and is a function soil type and other abiotic variables (e.g., pH).
- Uncertainties related to natural variation:
 - Ecosystems include variable abiotic (e.g., soil type) and biotic (e.g., terrestrial community) components.
 - At any point in time, only a fraction of the abiotic and biotic conditions can be sampled and evaluated; therefore, there is uncertainty concerning the true distribution of conditions.
- Modeling uncertainty:
 - There is uncertainty over how well a model estimates exposure relationships for a receptor compared to actual conditions at the Site.
 - One important modeling uncertainty is related to the presence of slag in the soil at the Site and the degree to which a total metals chemical analysis approximates the bioavailable fraction of metals in the soil available for uptake by plants and soil invertebrates. Metals uptake by earthworms is through both dermal and gut absorption (Saxe et al. 2001; McGeer et al. 2004). The bioavailability of metals for earthworms is related to how soluble the metals are in the soil (Spurgeon and Hopkin 1996; Saxe et al. 2001). The metals in solution are available for dermal and gut absorption where gut absorption is regulated by gut pH (Saxe et al. 2001). There is no single appropriate soil extractant to predict metal bioavailability in soil (Saxe et al. 2001); however, total metal concentrations are not appropriate (Saxe et al. 2001; McGeer et al. 2004). Metals in solution are also relevant for plants, and total metals do not necessarily represent the metals that are in solution (Rieuwerts et al. 1998).

The presence of slag in Site soil will likely overestimate the levels of bioavailable metals in the soil. The overestimation will occur because metals in the slag will be detected in the chemical analysis of the soil samples through the use of an acid extraction step, however, the metals in the slag are not bioavailable to earthworm and plant receptors because the slag particles are not in a soluble form, and

therefore, not available for uptake by plant roots or ingestion/absorption by earthworms.

Although the water-soluble fraction of metals is a more accurate estimate of the bioavailable form of metals, there is no strong consensus on the best approach to measure the water-soluble fraction in soil (Spurgeon and Hopkin 1996). In some studies, 0.01 molar calcium chloride (CaCl_2) is used to extract the metals from soil to measure the soluble form (Rieuwerts et al. 1998; Saxe et al. 2001; Giska et al. 2014). The concentrations derived from CaCl_2 extraction are lower. In the Giska et al. (2014) study, the CaCl_2 concentrations were at most 27% of the acid soluble form. Another approach to evaluate the water-soluble form of metal is to extract the metals using deionized water, shake for 24 hours, followed by a centrifuge and the extraction of the supernatant (Saxe et al. 2001). In this case, the concentration in the water-soluble fraction is less than 1% of the total metal concentration (Saxe et al. 2001).

In addition to the fact that total metals concentrations in soil overestimates the bioavailable fraction, regardless of the presence of slag, the presence of slag particles in soil also will contribute to an overestimate of metals bioavailability because metals in slag are not readily water soluble (Proctor et al. 2000). In a study of water solubility of metals in iron slag, water extraction of the metals in slag was found to be very low, with partition coefficient (K_d) values greater than 1,000 liters per kilogram for nearly all metals evaluated (Proctor et al. 2000). Metals can be extracted from slag through acid extraction (e.g., method SW3050B) (Proctor et al. 2000). However, the exact percentage of metal that is extracted from slag is not known.

There are, therefore, two potential ways the bioavailabilities of the metals in the soil are overestimated, as follows:

- Metals are extracted from generally non-water-soluble slag during the standard acid extraction used for metals analysis in soil.
- Total metal measurements of metal (even with no slag) will likely overestimate the bioavailable form of the metal in the soil.

To evaluate the importance of slag presence in soil samples, the presence of slag in sub-samples from Zones 1, 4, and 7 were evaluated (Appendix A, Table A-8). These zones were selected for analysis because the metals-related HQs in these zones are the highest at the Site. For these three zones, slag is present in soil samples at a frequency ranging between 53 to 100% of the sub-samples evaluated (Table 10). Using the same evaluation approach presented in Section 6.2, the importance of the slag in the soil samples is illustrated by comparing the metals only HIs for each receptor to the known and unknown presence of slag in the samples (Table 11). The zones with the highest plant and earthworm HIs also have a high frequency of slag present in the soil sub-samples. It is probable that slag is also present in the soils of the other zones at the Site, with the exception of Zone 10, and that slag in these zones also is not bioavailable to earthworms and plants. To further evaluate this uncertainty, an estimate of risk was done assuming there is 50% (lowest percentage from Table 10) slag in all Zone 1 through 9 samples. Therefore, it was assumed that 50% of the metals (metals concentrations at 50%) in the soil are not bioavailable to the earthworms and plants in the food web. The HIs are almost 50% lower than when all of the metals are assumed to be bioavailable (Tables 7a, 8a and 11). In fact, most of the individual HQs are <1 for nearly all metals and receptors (Appendix C, Table C-2f). A HQ is >1 only for plants exposed to zinc. Based on this evaluation, it is likely the risks to plant and earthworm receptors are overestimated for Zones 1 through 10. This overestimation also reduces potential risks to avian and mammalian receptors given the food chain used to estimate risks to these receptors, as described in Appendix B.

7 STEP 8: RISK MANAGEMENT

A BERA has been completed for the Site in accordance with the 8-step USEPA ERA process. The BERA included the development of a CSM to identify receptors of concern and potentially complete exposure pathways; a screening level risk assessment to identify COPECs; identification of data gaps and the development of a SAP to fill the data gaps; and a risk characterization and uncertainty analysis. The risk characterization step included an evaluation of background risks based upon State of Michigan published background values of soil-based COPECs.

Within the area of the Site where historical landfill activities occurred (Zones 1 through 9), potential risks to avian and mammalian wildlife receptors, soil invertebrates, and plants varied by zone, as follows:

- **Avian receptors** – Within Zones 1 through 9, HIs for the robin, woodcock, and dove due to exposure to metals range between <0.01 and 23 with Approach 1 and <0.01 and 6.7 with Approach 2 (Tables 7a and 7b). HIs due to exposure to organics are almost entirely <1.0. Potential risks are highest in Zones 1, 7, and 8, and in particular, Zone 7. Because avian receptors tend to forage over large areas relative to the size of an individual zone, evaluating potential risks within the entire historical landfill area and within the entire Site (i.e., including Zone 10) is appropriate. HIs for this evaluation are included in Tables 8a and 8b and range from 0.01 to 4.9 for Approach 1 and 0.01 to 2.7 for Approach 2. When the presence of slag is taken into account with the risk estimates for metals, the HIs for the robin, woodcock, and dove range between 0.74 and 3.1 with Approach 1 and from 0.74 to 1.7 with Approach 2 (Table 11). Finally, background risks for avian receptors (also see Tables 8a and 8b) range from an HI of 0.38 to 1.85 for Approach 1 and 0.38 to 1.2 for Approach 2. On balance, potential risks to avian receptors at the Site are at levels that do not require the implementation of risk management activities.
- **Mammalian receptors** – Within Zones 1 through 9, HIs for the shrew and vole due to exposure to metals or organics range between <0.01 and 32 for Approach 1 and from <0.01 to 32 with Approach 2, as well as the highest HI is for organics (Tables 7a and 7b). HIs for the vole are all less than 1.5. For the shrew, potential risks are highest in Zones 1, 5, 7, and 8. When the presence of slag is taken into account with the risk

estimates for metals, the HIs for the shrew and vole range between 0.39 and 3.1 for Approach 1 and from 0.39 to 1.7 for Approach 2 (Table 11). Potential risks throughout the historical landfill area are considered low, given the uncertainty regarding bioavailability of metal COPECs as discussed in the previous section, and are also considered low when considering the entire Site as a whole.

- **Plants and soil invertebrates** – Within Zones 1 through 9, HIs for plants and earthworms due to exposure to metals range from 1.9 to 45 and are highest in Zones 1, 4, and 7. HIs for plants and earthworms due to exposure to organics range from <0.1 to 14.8, although the HIs is all zones for both receptors are <1.0, except for earthworms in Zones 1, 5, 6, 7, and 9. As described in detail in the preceding uncertainty analysis, potential risks to these receptors have the greatest degree of uncertainty, given the influence that Site-specific abiotic factors (e.g., pH, organic matter, and moisture content) may have on bioavailability of COPECs to specific plant species and invertebrates; the wide range of “effects” concentrations for plants exposed to metals; and the presence of slag in soil samples (particularly in Zones 1, 4, and 7) that may overestimate actual exposure concentrations to plants and invertebrates. Given the presence of what appears to be a robust vegetative community at the Site and the noted presence of earthworms during the site visit, potential risks appear to be overstated for these receptors. When the presence of slag is taken into account with the risk estimates for metals, the HIs for the earthworms and plants range between 2.4 to 4.8 (Table 11). Background risks for the plants and invertebrates range from an HI of 1.7 to 3.1. Based on the presence of slag in the Site soils, the bioavailable fraction of metals in Site soils may be overestimated, and also based on the level of background risks, potential risks to plants and invertebrates at the Site are considered low when considering the entire Site.
- **Overall assessment for all receptors** – Based on the presence of slag in Site soils, the bioavailable fraction of metals in Site soils may be overestimated, and also based on the level of background risks, potential risks to all receptors at the Site are considered low when considering the entire Site.

8 REFERENCES

- Anchor QEA (Anchor QEA, LLC), 2014. Draft Ecological Risk Assessment – Steps 1 to 4 of USEPA Ecological Risk Assessment Process Van Buren Landfill. Prepared for RACER Trust and USEPA. August 2014.
- Anchor QEA, 2016. *Draft Ecological Risk Assessment – Steps 1 and 2 of USEPA Ecological Risk Assessment Process Van Buren Landfill*. August 2016.
- Aulerich, R. J., R.K. Ringer, M.R. Bleavins, A. and Napolitano, 1982. Effects of supplemental dietary copper on growth, reproductive performance and kit survival of standard dark mink and the acute toxicity of copper to mink. *Journal of Animal Science* 55(2):337-343.
- Barsotti et al. (Barsotti, D.A., R.J. Marlar, and J.R. Allen), 1976. Reproductive Dysfunction in Rhesus Monkeys Exposed to Low Levels of Polychlorinated Biphenyls (Aroclor 1248). *Food and Cosmetics Toxicology* 14(2): 99-103.
- Beall, B.N., 2007. Acute, Sub-Acute, and Sub-Chronic Effects of Polycyclic Aromatic Hydrocarbons in Northern Bobwhite Quail (*Colinus virginianus*). Thesis, M.S.: Environmental Toxicology, Texas Tech University, Texas. Available from: http://etd.lib.ttu.edu/theses/available/etd-10282007-160801/unrestricted/Beall_Blake_Thesis.pdf.
- Bechtel-Jacobs Company LLC, 1998. *Empirical models for the uptake of inorganic chemicals from soil by plants*. BJC/OR-133. Oak Ridge National Laboratory, Oak Ridge, Tennessee, USA.
- California Wildlife Habitat Relationships System, 1990. *Life history accounts for species in the California Wildlife Habitat Relationships (CWHR) System*. Originally published in: Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988-1990. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California. Updates are noted in accounts that have been added or edited since original publication.
- Chiou Wen-Shyg, P., K.L. Chen, and B. Yu, 1998. Effect of dietary organic arsenicals and cupric sulfate on copper toxicity, liver accumulation and residue in eggs and excreta of laying hens. *Animal Feed Science and Technology*. 73(1-2).

- Chiou Wen-Shyg, P., C.L. Chen, K. L., Chen, and C.P. Wu, 1999. Effect of high dietary copper on the morphology of gastro-intestinal tract in broiler chickens. *Asian-Australasian Journal of Animal Sciences* 12(4): 548-553.
- Culp, S. J., D.W. Gaylor, W.G. Sheldon, L.S. Goldstein, and F.A. Beland, 1998. A comparison of the tumors induced by coal tar and benzo(a)pyrene in a 2-year bioassay. *Carcinogenesis*. 19(1): 117-124.
- Edens, F. W. and J.D. Garlich, 1983. Lead-induced Egg Production Decrease in Leghorn and Japanese Quail Hens. *Poultry Science* 62(9): 1757-1763.
- Edmonds, M. S. and D.H. Baker, 1986. Toxic effects of supplemental copper and roxarsone when fed alone or in combination to young pigs. *Journal of Animal Science*. 63(2):533-537.
- Giska, I., C.A.M. Van Gestel, B. Skip, and R. Laskowski, 2014. Toxicokinetics of metals in the earthworm *Lumbricus rubellus* exposed to natural polluted soils e relevance of laboratory tests to the field situation. *Environmental Pollution*, 190: 123-132.
- Heinz, G.H. and D.J. Hoffman, 1998. Methylmercury Chloride and Selenomethionine Interactions on Health and Reproduction in Mallards. *Environmental Toxicology and Chemistry* 17:139-145.
- Heinz, G.H., 1979. Methylmercury: Reproductive and Behavioral Effects on Three Generations of Mallard Ducks. *Journal of Wildlife Management* 43(2):394-401.
- Hill, C. H., 1979. The effect of dietary protein levels on mineral toxicity in chicks. *Journal of Nutrition* 109(3):501-7.
- Hu, X., B. Wen, S. Zhang, and X. Shan, 2005. Bioavailability of phthalate congeners to earthworms (*Eisenia fetida*) in artificially contaminated soils. *Ecotoxicology and Environmental Safety*, 62 (2005) 26–34.
- ITRC (Interstate Technology & Regulatory Council), 2012. *Incremental Sampling Methodology*. ISM-1. Washington, D.C.: Interstate Technology & Regulatory Council, Incremental Sampling Methodology Team. Available from: www.itrcweb.org.

- Jackson, N. and M.H. Stevenson, 1981. A study of the effects of dietary added cupric oxide on the laying, domestic fowl and a comparison with the effects of hydrated copper sulphate. *British Journal of Nutrition* 45(1): 99-110.
- Koch I and Reimer K. 2012. Bioaccessibility extractions for contaminant risk assessments. In Pawliszyn J, Le XC, Li XF, Lee HK, editors. *Comprehensive Sampling and Sample Preparation*, Volume 3. Elsevier, Academic Press, Oxford, UK, pp 487–507.
- LANL (Los Alamos National Laboratory), 2012. ECORISK Database Release 3.2. Environmental Programs, Engineering and Technology Division. September 2013. Available from: <http://www.lanl.gov/community-environment/environmental-stewardship/protection/eco-risk-assessment.php>.
- Leach, R. M. Jr, K.W. Wang, and D. E. Baker, 1979. Cadmium and the food chain: the effect of dietary cadmium on tissue composition in chicks and laying hens. *Journal of Nutrition* 109(3):437-43.
- Mannik & Smith, 2014a. *Phase II Site Investigation*. RACER Trust Van Buren Township Landfill Site. Van Buren Township, Michigan. March 2014.
- Mannik & Smith, 2014b. *Phase III Site Investigation*. RACER Trust Van Buren Township Landfill Site. Van Buren Township, Michigan. August 2014.
- McGeer, J., G. Henningsen, R. Lanno, N. Fisher, K. Sappington, and J. Drexler, 2004. *Issue Paper on the Bioavailability and Bioaccumulation of Metals*. Submitted to U.S. Environmental Protection Agency, Risk Assessment Forum. August 2004.
- Meluzzi, A., F. Simoncini, F. Sirri, L. Vandi, and G. Giordani, 1996. Feeding Hens Diets Supplemented with Heavy Metals (Chromium, Nickel and Lead). *Archiv Fuer Gefluegelkunde* 60(3):119-125.
- MDEQ (Michigan Department of Environmental Quality), 2015a. Department of Environmental Quality, Remediation and Redevelopment Division, Environmental Contamination Response Activity, Cleanup Criteria Requirements for Response Activity. Cited: March 2015. Available from: http://www7.dleg.state.mi.us/orr/Files/AdminCode/1232_2013-056EQ_AdminCode.pdf.

- MDEQ, 2015b. Chemical Update Worksheet for Manganese. RRD Toxicology Unit, Michigan Department of Environmental Quality. December, 2015. Available from: http://www.michigan.gov/documents/deq/deq-rrd-chem-ManganeseDatasheet_527860_7.pdf.
- Neuhauser, E. F., Z. V. Cukic, M. R. Malecki, R. C. Loehr, and P. R. Durkin, 1995. Bioconcentration and biokinetics of heavy metals in the earthworm. *Environmental Pollution* 89:293-301.
- Patton, J.F. and M.P. Dieter, 1980. Effects of Petroleum Hydrocarbons on Hepatic Function in the Duck. *Comparative Biochemistry and Physiology Part C: Comp. Pharmac.* 65(1):33-36.
- Proctor, D.M., K.A. Fehling, E.C. Shay, J.L. Wittenborn, J.J. Green, C. Avent, R.D. Bigham, M. Connolly, B. Lee, T.O. Shepker, and M.A. Zak, 2000. Physical and Chemical Characteristics of Blast Furnace, Basic Oxygen Furnace, and Electric Arc Furnace Steel Industry Slags. *Environmental Science and Technology*, 34: 1576-1582.
- Rieuwerts, J.S., I. Thornton, M.E. Farago, and M.R. Ashmore, 1998. Factors influencing metal bioavailability in soils: preliminary investigations for the development of a critical loads approach for metals. *Chemical Speciation and Bioavailability*, 10(2):61-75.
- Rigdon, R.H. and J. Neal, 1963. Fluorescence of chickens and eggs following the feeding of benzpyrene crystals. *Texas Reports on Biology and Medicine* 21(4):558-566.
- Sample, B.E., D.M. Opresko, and G.W. Suter II, 1996. *Toxicological Benchmarks for Wildlife: 1996 Revision*. Oak Ridge National Laboratory, Oak Ridge, Tennessee. ES/ER/TM-86/R3.
- Sample B.E., J.J. Beauchamp, R. Efroymsen, G.W. Suter II, and T. Ashwood, 1998. *Development and Validation of Bioaccumulation Models for Earthworms*. ES/ER/TM-220. Oak Ridge National Laboratory, Oak Ridge, TN, USA.
- Sample, B.E., G.W. Suter II, J.J. Beauchamp, and R.A. Efroymsen, 1999. Literature-Derived Bioaccumulation Models for Earthworms: Development and Validation. *Environmental Toxicology and Chemistry* 18(9):2,110-2,120.

- Sample, B.E., A. Fairbrother, A. Kaiser, S. Law, and B. Adams, 2014. Sensitivity of Ecological Soil-Screening Levels for Metals to Exposure Model Parameterization and Toxicity Reference Values. *Environmental Toxicology and Chemistry* 33:2386–2398.
- Saxe, J., C.A. Impellitteri, W. Peijnenburg, and H.E. Allen, 2001. Novel Model Describing Trace Metal Concentrations in the Earthworm, *Eisenia Andrei*. *Environmental Science and Technology* 35: 4522-4529.
- Spurgeon, D.J. and S.P. Hopkin, 1996. Effects of variations of the organic matter content and pH of soils on the availability and toxicity of zinc to the earthworm *Eisenia fetida*. *Pedobiologia*, 40: 80-96.
- Stubblefield W.A., S.F. Brinkman, P.H. Davies, T.D. Garrison, J.R. Hockett, and M.W. McIntyre, 1997. Effects of water hardness on the toxicity of manganese to developing brown trout (*Salmo trutta*). *Environmental Toxicology and Chemistry* 16(10):2082-2089.
- Suter, G.W. and C.L. Tsao, 1996. *Toxicological benchmarks for screening potential contaminants of concern for effects on aquatic biota: 1996 revision*. Prepared for U.S. Department of Energy Office of Environmental Management. Risk Assessment Program, Health Sciences Research Division.
- Suttle, N. F. and C.F. Mills, 1966. Studies of the toxicity of copper to pigs. 2. effect of protein source and other dietary components on the response to high and moderate intakes of copper. *British Journal of Nutrition* 20(2):149-161.
- USEPA (U.S. Environmental Protection Agency), 1992. Framework for Ecological Risk Assessment. EPA/630/R-92/001. Risk Assessment Forum, USEPA, Washington, DC.
- USEPA (U.S. Environmental Protection Agency), 1993. *Wildlife Exposure Factors Handbook*. Volume I of II. EPA/600/R-93/187. Office of Research and Development, Washington, D.C. December 1993.
- USEPA, 1997. *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final*. Solid Waste and Emergency Response. EPA-540/R-97-006. OSWER 9285.7-25. June 1997.

- USEPA, 2002. National Recommended Water Quality Criteria: 2002. Office of Water, Office of Science and Technology, U.S. Environmental Protection Agency (4304T). EPA 822-R-02-047. November 2002.
- USEPA, 2003a. *Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures*. Office of Research and Development. USEPA 600-R-02-013. January 2005.
- USEPA, 2003b. Guidance for Developing Ecological Soil Screening Levels. OSWER Directive 92857-55. Office of Solid Waste and Emergency Response, Washington, DC. November 2003.
- USEPA, 2005a. *Ecological Soil Screening Levels for Antimony*. OSWER Directive 9285.7-61. Office of Solid Waste and Emergency Response, Washington, DC. February 2005.
- USEPA, 2005b. *Ecological Soil Screening Levels for Barium*. OSWER Directive 9285.7-63. Office of Solid Waste and Emergency Response, Washington, DC. February 2005.
- USEPA, 2005c. *Ecological Soil Screening Levels for Cadmium*. OSWER Directive 9285.7-65. Office of Solid Waste and Emergency Response, Washington, D.C. March 2005.
- USEPA, 2005d. *Ecological Soil Screening Levels for Lead*. OSWER Directive 9285.7-70. Office of Solid Waste and Emergency Response, Washington, D.C. March 2005.
- USEPA, 2005e. *Ecological Soil Screening Levels for Vanadium*. OSWER Directive 9285.7-75. Office of Solid Waste and Emergency Response, Washington, D.C. April 2005.
- USEPA, 2005f. *Guidance for developing ecological soil screening levels*. OSWER Directive 9285. Office of Solid Waste and Emergency Response, Washington, DC, 7-55.
- USEPA, 2006. *Ecological Soil Screening Levels for Silver*. OSWER Directive 9285.7-77. Office of Solid Waste and Emergency Response, Washington, D.C. September 2006.
- USEPA, 2007a. *Ecological Soil Screening Levels for Copper*. OSWER Directive 9285.7-68. Office of Solid Waste and Emergency Response. Washington, D.C. February 2007.
- USEPA, 2007b. *Ecological Soil Screening Levels for Nickel*. OSWER Directive 9285.7-76. Office of Solid Waste and Emergency Response. Washington, D.C. March 2007.

- USEPA, 2007c. *Ecological Soil Screening Levels for Manganese*. OSWER Directive 9285.7-71. Office of Solid Waste and Emergency Response. Washington, D.C. April 2007.
- USEPA, 2007d. *Ecological Soil Screening Levels for Zinc*. OSWER Directive 9285.7-73. Office of Solid Waste and Emergency Response. Washington, D.C. June 2007.
- USEPA, 2007e. *Ecological Soil Screening Levels for Polycyclic Aromatic Hydrocarbons (PAHs)*. OSWER Directive 9285.7-78. Office of Solid Waste and Emergency Response, Washington, D.C. June 2007.
- USEPA, 2007f. *Ecological Soil Screening Levels for Selenium: Interim Final*. OSWER Directive 9285.7-72. Office of Solid Waste and Emergency Response, Washington, D.C. July 2007.
- USEPA, 2008. *Ecological Soil Screening Levels for Chromium*. OSWER Directive 9285.7-66. Office of Solid Waste and Emergency Response, Washington, DC. June 2008.
- USEPA, 2011. Integrated Risk Information System, 1,1-Biphenyl; CASRN 92-52-4. Updated: March 07, 2011. Available from: <http://www.epa.gov/iris/subst/0013.htm>.
- USEPA, 2013. *ProUCL Version 5.0 Technical Guide*. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. Office of Research and Development. EPA 600/R-07/041. September 2013.
- USEPA, 2015. *Region 4 Ecological Risk Assessment Supplemental Guidance Interim Draft*. Scientific Support Section, Superfund Division, EPA Region 4.
- USEPA, 2016. *Options for the development of Lowest Observable Adverse Effect Level (LOAEL)-based toxicity reference values (TRVs)*. Technical memorandum from Jennifer Dodds USEPA Region 5 to Brandon Pursel, USEPA Region 5. August 2016.
- Windward Environmental, 2014. *Derivation of Final Manganese PRG to Replace the Suter and Tsao (1996) Tier II Value in the Portland Harbor Feasibility Study*. Memorandum to Lower Willamette Group from Windward Environmental, LLC. November, 2014.

TABLES

DRAFT

Table 1
Key Receptor Foraging Ranges

Receptor	Foraging Range (hectare) ^{1,2}	Foraging Range (square feet)
American robin	0.81 ± 0.13 SE	87,187
Mourning dove	100	10,800,000
Least shrew	0.36 ± 0.036	38,750
Meadow vole	0.083 ± 0.037	8,934

Notes:

1 = Robin, shrew, and vole, derived from the U.S. Environmental Protection Agency (1993).

2 = Mourning dove derived from California Wildlife Habitat Relationships System (1990).

SE = standard error

Table 2
Sample Zone Locations and Types

Sample Zone	Nearest Soil Bore or Test Pit	Zone Type
1	SB-1	Some data
2	SB-5	Some data
3	SB-7	Some data
4	SB-6A and SB-12	Some data
5	TP-7	No Data
6	Northeast of TP-3	No Data
7	TP-11, TP-12	No Data
8	TP-20	No Data
9	TP-26, TP-30	No Data
10	South of SB-4	No Data

Table 3
LOAEL TRVs

Target Chemicals of Concern	Shrew and Vole (mg/kg-BW day)	Robin, Woodcock and Dove (mg/kg-BW day)	Earthworm (µg/kg DW)	Plants (µg/kg DW)
Metals				
Antimony	0.59	NA	78,000	NA
Barium	167.2	735	330,000	NA
Cadmium	2.008	2.388	140,000	32,000
Chromium (total)	9.62	8.315	NA	NA
Copper	31.22	28	151,000	175,605
Lead	28.68	13.288	1,700,000	245,000
Manganese	71	348	450,000	220,000
Mercury	0.16	0.37	NA	NA
Nickel	5.92	11.5	280,000	98,292
Selenium	0.442	0.4256	4,100	1,442
Silver	60.20	65.5	NA	560,000
Vanadium	6.85	0.6682	NA	NA
Zinc	90.28	105	477,000	165,810
Organics				
1,1'-Biphenyl	500	NA	NA	NA
Butyl benzyl phthalate	1,590	11	NA	338,290
Carbazole	228	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA

Target Chemicals of Concern	Shrew and Vole (mg/kg-BW day)	Robin, Woodcock and Dove (mg/kg-BW day)	Earthworm (µg/kg DW)	Plants (µg/kg DW)
Di-n-butyl phthalate	3,175	1.4	NA	338,290
Di-n-octyl phthalate	651	11	NA	NA
High molecular weight PAHs	3.07	330	18,000	NA
PCB, total	0.68	4.10	NA	282,010
Toluene	520	407	NA	NA
Xylene	350	407	NA	NA

Notes:

1 = Benchmarks for the shrew, vole, robin, woodcock, dove, earthworm, and plants are based on Eco-SSL documents and are detailed in Appendix B.

µg/kg DW = micrograms per kilogram dry weight

Eco-SSL = ecological soil screening level

LOAEL = lowest observed adverse effects level

mg/kg-BW day = milligrams per kilogram per body weight day

NA = no benchmark available

PAH = polycyclic aromatic hydrocarbon

PCB = polychlorinated biphenyl

TRV = toxicity reference value

Table 4
Key Metal Bioaccumulation Models for Earthworms

Chemical	Literature-Derived Bioaccumulation Models for Earthworms		
	Intercept	Slope	BAF
Approach 1, cadmium ¹	2.114	0.795	
Approach 1, copper ²			0.515
Approach 1, zinc ³	4.449	0.328	
Approach 2, cadmium ⁴	1.21	0.66	
Approach 2, copper ⁵	1.675	0.264	
Approach 2, zinc ⁵	2.09	0.27	

Notes:

1 = Eco-SSL for cadmium (USEPA 2005c)

2 = Eco-SSL for copper (USEPA 2007a)

3= Eco-SSL for zinc (USEPA 2007d)

4 = Neuhauser et al. 1995, as cited by Sample et al. 1998

5 = Sample et al. 1998

BAF = bioaccumulation factor

HPAH = high-molecular-weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effects level

Michigan background = Michigan background concentrations, when available, otherwise average Zone 10 concentration

PCB = polychlorinated biphenyl

Table 5
Bioavailability Assumptions for Chemicals

Chemical	Bioavailability	
	Plant and Earthworm Tissue (percent)	Soil (percent)
Antimony	64	15
Barium	64	33
Cadmium	71	55
Chromium (total)	64	5
Copper	79	47
Lead	46	43
Manganese	79	36
Mercury	64	31
Nickel	64	16
Selenium	62	52
Silver	17	31
Vanadium	64	7
Zinc	69	33
All phthalates	80	39
All HPAHs	80	39
Total PCBs	80	39

Notes:

HPAH = high-molecular-weight polycyclic aromatic hydrocarbon

PCB = polychlorinated biphenyl

Table 6
Summary by Zone for Chemicals with HQ >1.0 for Avian, Mammals, Earthworm, and Plants using the LOELs

Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, Low Bioavailability Class, HQ	Plants, EC10 and MATC, Low Bioavailability Class, HQ
1	Barium	408,520	0.03	0.03	<0.01	<0.01	0.02	1.2	NC
1	Cadmium ¹	10,776	3.3, 1.0	0.1	3.2, 1.0	2.3, 0.7	0.2	0.1	0.3
1	Copper ¹	578,470	1.3, 0.2	0.1	1.8, 0.3	1.3, 0.2	0.3	3.8	3.3
1	HPAHs	20,052	2.3	0.1	0.02	0.02	<0.01	1.1	NC
1	Lead	919,942	0.6	0.1	1.7	1.3	0.7	0.5	3.8
1	Manganese	878,503	0.1	0.1	0.03	0.02	0.04	2	4
1	Nickel	80,174	1.6	0.04	0.9	0.7	0.1	0.3	0.8
1	PCBs, Total	5,141	7.5	0.1	1.4	1.1	<0.01	NC	<0.01
1	Selenium	1,616	0.3	0.2	0.4	0.3	0.3	0.4	1.1
1	Zinc ¹	1,142,686	1.1, 0.1	0.2	1.1, 0.1	0.8, 0.1	0.4	2.4	6.9
2	Cadmium ¹	9,359	2.9, 0.9	0.1	2.8, 0.9	2.1, 0.6	0.2	0.1	0.3
2	Copper ¹	279,392	0.6, 0.2	0.1	0.9, 0.2	0.6, 0.1	0.2	1.9	1.6
2	Lead	530,295	0.4	0.04	1.1	0.8	0.4	0.3	2.2
2	Manganese	450,365	0.1	0.04	0.02	0.01	0.02	1	2.1
2	Nickel	62,175	1.2	0.03	0.7	0.5	0.04	0.2	0.6
2	Zinc ¹	902,777	1, 0.08	0.2	1, 0.1	0.8, 0.08	0.3	1.9	5.4
3	Manganese	227,519	0.04	0.02	0.01	<0.01	0.01	0.5	1
3	Zinc ¹	195,418	0.6, 0.1	0.1	0.6, 0.1	0.5, 0.04	0.1	0.4	1.2

Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, Low Bioavailability Class, HQ	Plants, EC10 and MATC, Low Bioavailability Class, HQ
4	Cadmium ¹	6,553	2.2, 0.7	0.1	2.1, 0.7	1.6, 0.5	0.1	0.1	0.2
4	Copper ¹	439,549	1, 0.2	0.1	1.3, 0.3	1, 0.2	0.3	2.9	2.5
4	Lead	478,214	0.4	0.04	1	0.7	0.4	0.3	2
4	Manganese	511,725	0.1	0.1	0.02	0.02	0.03	1.1	2.3
4	Mercury	3,763	1.2	0.4	0.6	0.5	0.3	NC	NC
4	Nickel	58,197	1.1	0.03	0.7	0.5	0.04	0.2	0.6
4	Zinc ¹	2,253,510	1.4, 0.1	0.3	1.5, 0.2	1.1, 0.1	0.6	4.7	13.6
5	Barium	575,572	0.04	0.04	0.01	<0.01	0.02	1.7	NC
5	Cadmium ¹	10,517	3.2, 1.0	0.1	3.1, 0.9	2.3, 0.7	0.2	0.1	0.3
5	Copper ¹	380,373	0.9, 0.1	0.1	1.2, 0.2	0.9, 0.2	0.2	2.5	2.2
5	HPAHs	265,540	30.3	1	0.3	0.2	0.02	14.8	NC
5	Lead	861,164	0.6	0.1	1.7	1.2	0.7	0.5	3.5
5	Manganese	916,497	0.1	0.1	0.03	0.02	0.1	2	4.2
5	PCBs, Total	1,976	2	<0.01	0.4	0.3	<0.01	NC	<0.01
5	Zinc ¹	1,129,678	1.1, 0.1	0.2	1.1, 0.1	0.8, 0.1	0.4	2.4	6.8
6	Cadmium ¹	7,321	2.4, 0.8	0.1	2.3, 0.7	1.7, 0.5	0.1	0.1	0.2
6	Copper ¹	337,188	0.8, 0.1	0.1	1, 0.2	0.8, 0.2	0.2	2.2	1.9
6	HPAHs	46,241	5.3	0.2	0.1	0.04	<0.01	2.6	NC
6	Lead	465,530	0.3	0.04	1	0.7	0.4	0.3	1.9
6	Manganese	421,943	0.1	0.04	0.02	0.01	0.02	0.9	1.9

Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, Low Bioavailability Class, HQ	Plants, EC10 and MATC, Low Bioavailability Class, HQ
6	PCBs, Total	1,464	1.4	<0.01	0.3	0.2	<0.01	NC	<0.01
6	Zinc ¹	845,979	1, 0.1	0.2	1, 0.1	0.8, 0.1	0.3	1.8	5.1
7	Barium	353,752	0.02	0.03	<0.01	<0.01	0.01	1.1	NC
7	Cadmium ¹	18,343	5, 1.4	0.1	4.8, 1.4	3.6, 1	0.3	0.1	0.6
7	Copper ¹	4,227,758	9.6, 0.5	0.3	12.9, 1.3	9.5, 0.9	1.6	28	24.1
7	HPAHs	84,645	9.6	0.3	0.1	0.1	<0.01	4.7	NC
7	Lead	1,255,225	0.8	0.1	2.3	1.7	0.9	0.7	5.1
7	Manganese	547,100	0.1	0.1	0.02	0.02	0.03	1.2	2.5
7	Nickel	59,101	1.1	0.03	0.7	0.5	0.04	0.2	0.6
7	Selenium	1,491	0.3	0.1	0.4	0.3	0.3	0.4	1
7	Zinc ¹	1,771,947	1.3, 0.1	0.3	1.3, 0.2	1, 0.1	0.5	3.7	10.7
8	Barium	539,052	0.04	0.04	0.01	<0.01	0.02	1.6	NC
8	Cadmium ¹	22,662	5.9, 1.6	0.1	5.7, 1.6	4.2, 1.2	0.3	0.2	0.7
8	Copper ¹	270,989	0.6, 0.1	0.1	0.8, 0.2	0.6, 0.1	0.2	1.8	1.5
8	Lead	1,299,971	0.8	0.1	2.3	1.7	1	0.8	5.3
8	Manganese	516,268	0.1	0.1	0.02	0.02	0.03	1.2	2.4
8	Selenium	1,847	0.4	0.2	0.4	0.3	0.4	0.5	1.3
8	Zinc ¹	962,055	1.1, 0.1	0.2	1.1, 0.1	0.8, 0.1	0.3	2	5.8
9	Barium	599,561	0.04	0.1	0.01	<0.01	0.02	1.8	NC
9	Cadmium ¹	3,110	1.2, 0.4	0.1	1.2, 0.4	0.9, 0.3	0.1	0.02	0.1

Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, Low Bioavailability Class, HQ	Plants, EC10 and MATC, Low Bioavailability Class, HQ
9	Copper ¹	277,704	0.6, 0.1	0.1	0.9, 0.2	0.6, 0.1	0.2	1.8	1.6
9	HPAHs	22,549	2.6	0.1	0.03	0.02	<0.01	1.3	NC
9	Lead	250,978	0.2	0.02	0.6	0.4	0.2	0.2	1
9	Manganese	331,921	0.1	0.03	0.01	0.01	0.02	0.7	1.5
9	Zinc ¹	466,338	0.8, 0.1	0.1	0.8, 0.1	0.6, 0.1	0.2	1	2.8

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake models presented in Table 4, and the second, Approach 2, is based on the alternative models presented in Table 4.

µg/kg = micrograms per kilogram

EC = effective concentration

HPAH = high-molecular-weight polycyclic aromatic hydrocarbon

HQ = hazard quotient

LOAEL = lowest observed adverse effects level

MATC = Maximum Acceptable Toxicant Concentration

NC = not calculated as no TRV available

PCB = polychlorinated biphenyl

TRV = toxicity reference value

UCL = upper confidence limit

Table 7a
LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, for Metals Only

Surface Soil Zone ¹	Shrew	Vole	Robin	Woodcock	Dove	Earthworms	Plants
1	9.5, 5.0	1	10, 5.2	7.3, 3.9	2.2	11	20
2	7.7, 4.2	0.8	7.6, 4.0	5.6, 3.0	1.7	6.6	13
3	2.9, 1.7	0.3	3, 1.8	2.2, 1.3	0.7	1.9	4.1
4	7.9, 4.3	1.1	7.8, 4.0	5.8, 3.0	2	10	22
5	8.2, 4.2	0.9	8.7, 4.6	6.4, 3.4	2	9.9	18
6	6.5, 3.3	0.7	6.6, 3.3	4.9, 2.4	1.5	6.6	12
7	19, 5.3	1.2	23, 6.7	17, 4.9	3.8	36	45
8	11, 5.1	1	12, 5.7	8.4, 4.2	2.3	8.5	17
9	4.8, 2.8	0.6	4.8, 2.6	3.5, 1.9	1.2	6.1	8.3
10	1.4, 0.9	0.2	1.4, 0.9	1, 0.7	0.4	1	2

Notes:

1 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches (see Table 4).

HI = hazard index

LOAEL = lowest observed adverse effects level

Table 7b
LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, for Phthalates, HPAHs, and PCBs

Surface Soil Zone	Shrew	Vole	Robin	Woodcock	Dove	Earthworms	Plants
1	9.8	0.2	1.5	1.1	0.04	1.1	0.02
2	0.7	0.02	0.04	0.03	<0.01	0.3	<0.01
3	1	0.03	0.1	0.04	<0.01	0.4	<0.01
4	1.3	0.04	0.1	0.1	<0.01	0.4	<0.01
5	32	1.01	0.8	0.6	0.1	14.8	<0.01
6	6.6	0.2	0.3	0.2	0.01	2.6	0.02
7	10	0.4	0.2	0.2	0.01	4.7	0.01
8	0.7	0.02	<0.01	<0.01	<0.01	0.3	<0.01
9	2.8	0.1	0.1	0.1	0.01	1.3	<0.01
10	0.1	<0.01	<0.01	<0.01	<0.01	0.04	0.1

Notes:

HPAH = high-molecular-weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effects level

PCB = polychlorinated biphenyl

Table 8a
Comparative Evaluation of LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices for Metals

Surface Soil Area ¹	Shrew	Vole	Robin	Woodcock	Dove	Earthworms	Plants
Zones 1 to 9 Combined with Outliers	7.3, 3.5	0.8	7.7, 3.6	5.7, 2.7	1.6	8.7	15
Zones 1 to 9 Combined without Outliers	6.3, 3.4	0.7	6.4, 3.4	4.7, 2.5	1.5	6.4	12
Zone 10	1.4, 0.9	0.2	1.4, 0.9	1, 0.7	0.4	1	2
Site-Wide, Zones 1 to 10 with area-weighted averaging	4.8, 2.7	0.6	4.9, 2.7	3.6, 2.0	1.2	4.5	8.9
Michigan background or Zone 10 background	2.1, 1.4	0.3	1.9, 1.2	1.4, 0.9	0.4	1.7	3.1

Notes:

1 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches (see Table 4).

HI = hazard index

LOAEL = lowest observed adverse effects level

Table 8b
Comparative Evaluation of LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, for Phthalates, HPAHs, and PCBs

Surface Soil Area	Shrew	Vole	Robin	Woodcock	Dove	Earthworms	Plants
Zones 1 to 9 Combined with Outliers	6.3	0.2	0.2	0.2	0.02	2.7	0.02
Zones 1 to 9 Combined without Outliers	4.2	0.2	0.1	0.1	0.02	1.9	0.01
Zone 10	0.1	<0.01	<0.01	<0.01	<0.01	0.04	0.1
Site-Wide, Zones 1 to 10 with area-weighted averaging	2.8	0.1	0.1	0.1	0.01	1.2	<0.01
Michigan background or Zone 10 background	0.1	<0.01	<0.01	<0.01	<0.01	0.03	<0.01

Notes:

HPAH = high-molecular-weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effects level

Michigan background = Michigan background concentrations when available otherwise average Zone 10 concentration

PCB = polychlorinated biphenyl

Table 9
Comparative Evaluation of Metal LOAELs for Avian and Mammalian Receptors

Target Chemicals of Concern	Shrew and Vole, Ratio of Selected LOAEL to Lowest Bounded LOAEL	Robin, Woodcock and Dove, Ratio of Selected LOAEL to Lowest Bounded LOAEL
Antimony	1.0	NA
Barium	1.4	NA
Cadmium	2.2	1.01
Chromium (total)	1.0	3.0
Copper	4.6	6.0
Lead	5.7	6.9
Manganese	1.1	1.0
Mercury	NA	NA
Nickel	2.2	1.0
Selenium	3.1	1.2
Silver	1.0	3.2
Vanadium	1.3	1.6
Zinc	1.2	1.6

Notes:

LOAEL = lowest observed adverse effects level

NA = not applicable

Table 10
Summary of Slag Presence in Sub-samples

Zone	Borings	ISM Sample ID ¹	Count, Presence of Slag	Number of Sub-samples	Presence of Slag, Percent of Sub-samples
1	SB-721 – SB-750	ISM-22-Z1	20	30	67
1	SB-751 – SB-780	ISM-23-Z1	26	30	87
1	SB-781 – SB-810	ISM-24-Z1	28	30	93
4	SB-811 – SB-840	ISM-28-Z4	19	30	63
4	SB-841 – SB-870	ISM-29-Z4	19	30	63
4	SB-871 – SB-900	ISM-30-Z4	16	30	53
7	SB-271 – SB-300	ISM-10-Z7	30	30	100
7	SB-301 – SB-330	ISM-11-Z7	29	30	97
7	SB-331 – SB-360	ISM-12-Z7	30	30	100

Note:

1 = Incremental Sampling Methodology (ISM) samples collected in accordance with Interstate Technology Regulatory Council guidance document.

Table 11
LOAEL-based Wildlife, Earthworm, and Plant Hazard Indices, Metals Only

Surface Soil Zone ^{1,2}	Shrew	Vole	Robin	Woodcock	Dove	Earthworms	Plants	Presence of Slag, Average Percent of Sub-samples ³	Presence of Slag, Range in Percent of Sub-samples ³
7	10.5, 3.1	0.7	12.5, 3.6	9.2, 2.8	2.1	17.8	22.3	99	96.7 – 100.0
4	4.9, 2.7	0.7	4.7, 2.3	3.5, 1.8	1.2	5.2	10.9	60	53.3 – 63.3
1	5.5, 2.9	0.6	5.7, 3.7	4.2, 2.2	1.2	5.5	10.1	82	66.7 – 93.3
5	4.9, 2.5	0.5	5.1, 2.6	3.8, 2.0	1.1	4.9	9.1	NE	NE
8	6.4, 3.0	0.6	6.7, 3.2	4.9, 2.5	1.3	4.2	8.7	NE	NE
2	4.6, 2.6	0.5	4.5, 2.3	3.3, 1.8	1	3.3	6.6	NE	NE
6	3.9, 2.0	0.4	3.9, 1.8	2.9, 1.4	0.8	3.3	6.1	NE	NE
9	3, 1.7	0.4	2.9, 1.5	2.1, 1.2	0.7	3	4.2	NE	NE
3	1.9, 1.1	0.2	1.8, 1.0	1.4, 0.8	0.4	1	2.1	NE	NE
10	0.9, 0.6	0.1	0.9, 0.5	0.7, 0.4	0.2	0.5	1	NE	NE
Site-Wide, Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	3.10, 1.72	0.39	3.11, 1.72	2.29, 1.26	0.74	2.42	4.76	50	50

Notes:

1 = Sorted on plant hazard indices, high to low.

2 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches (see Table 4).

3 = Regardless of the percent slag in samples, the HIs are based on an assumption of 50% slag in all samples.

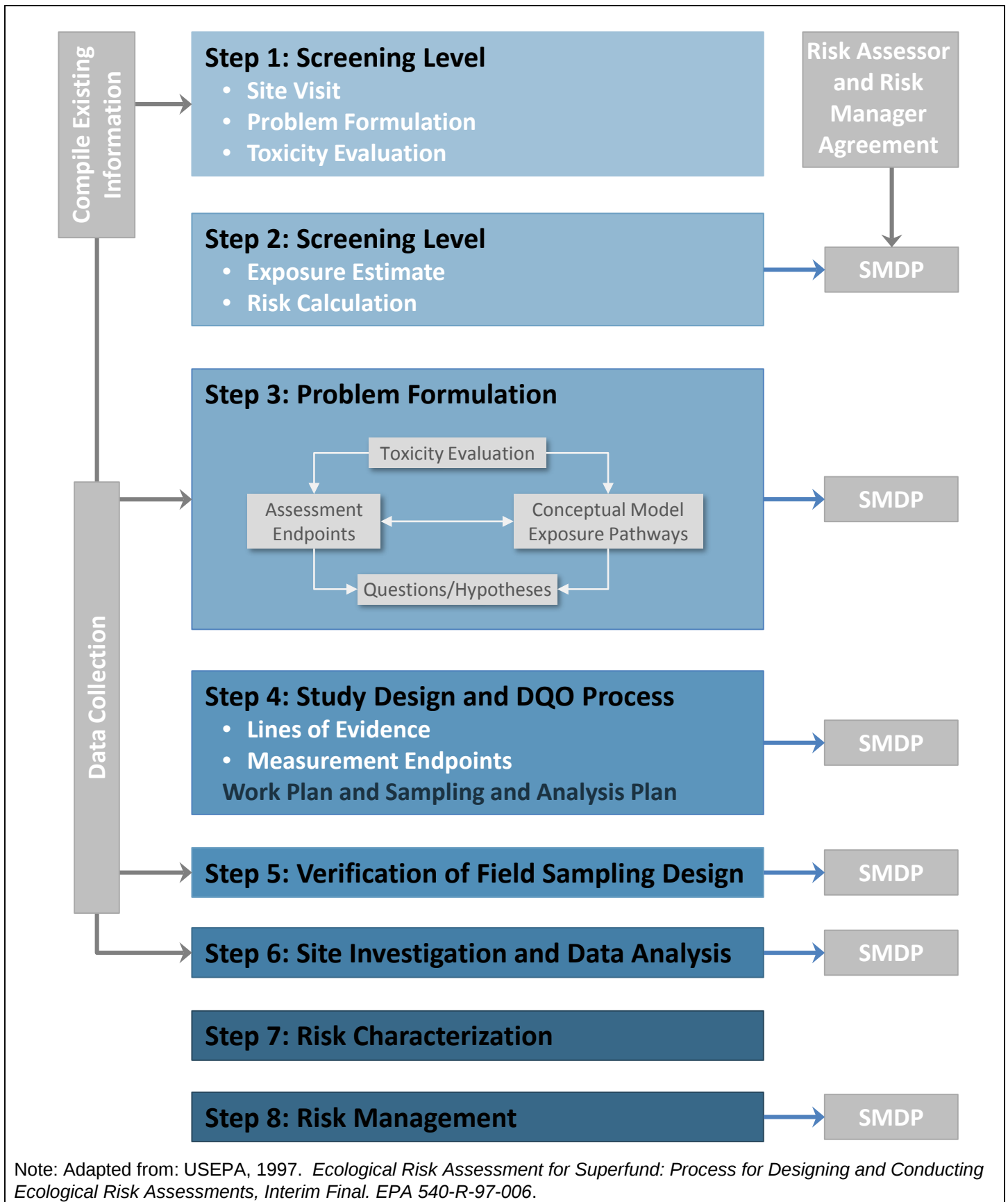
HI = hazard index

LOAEL = lowest observed adverse effects level

NE = not evaluated

FIGURES

DRAFT



Draft



Figure 1
Eight-step Ecological Risk Assessment Process for Superfund
Draft Ecological Risk Assessment – Steps 3 to 8 of USEPA Ecological
Risk Assessment Process
Van Buren Landfill

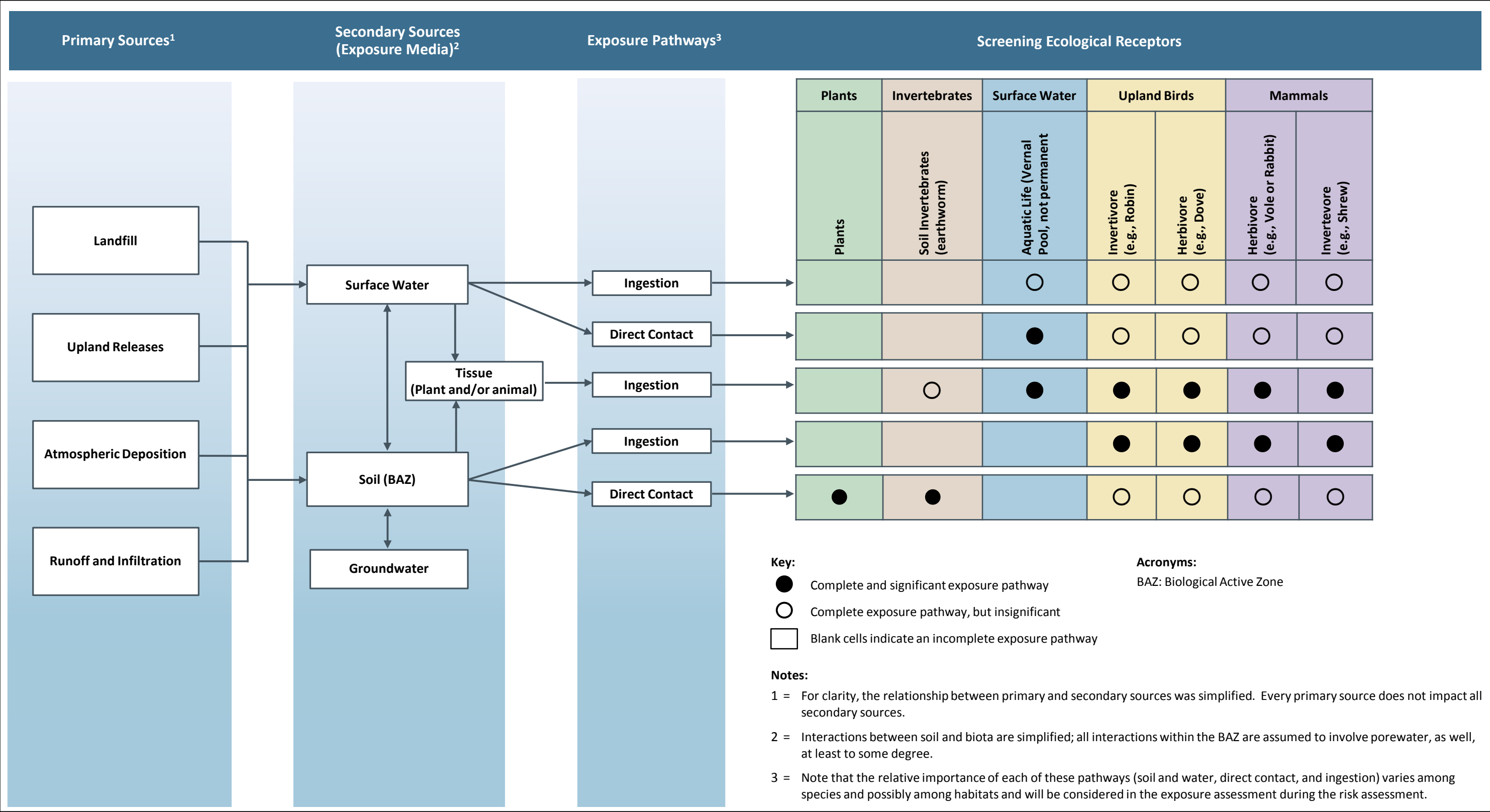
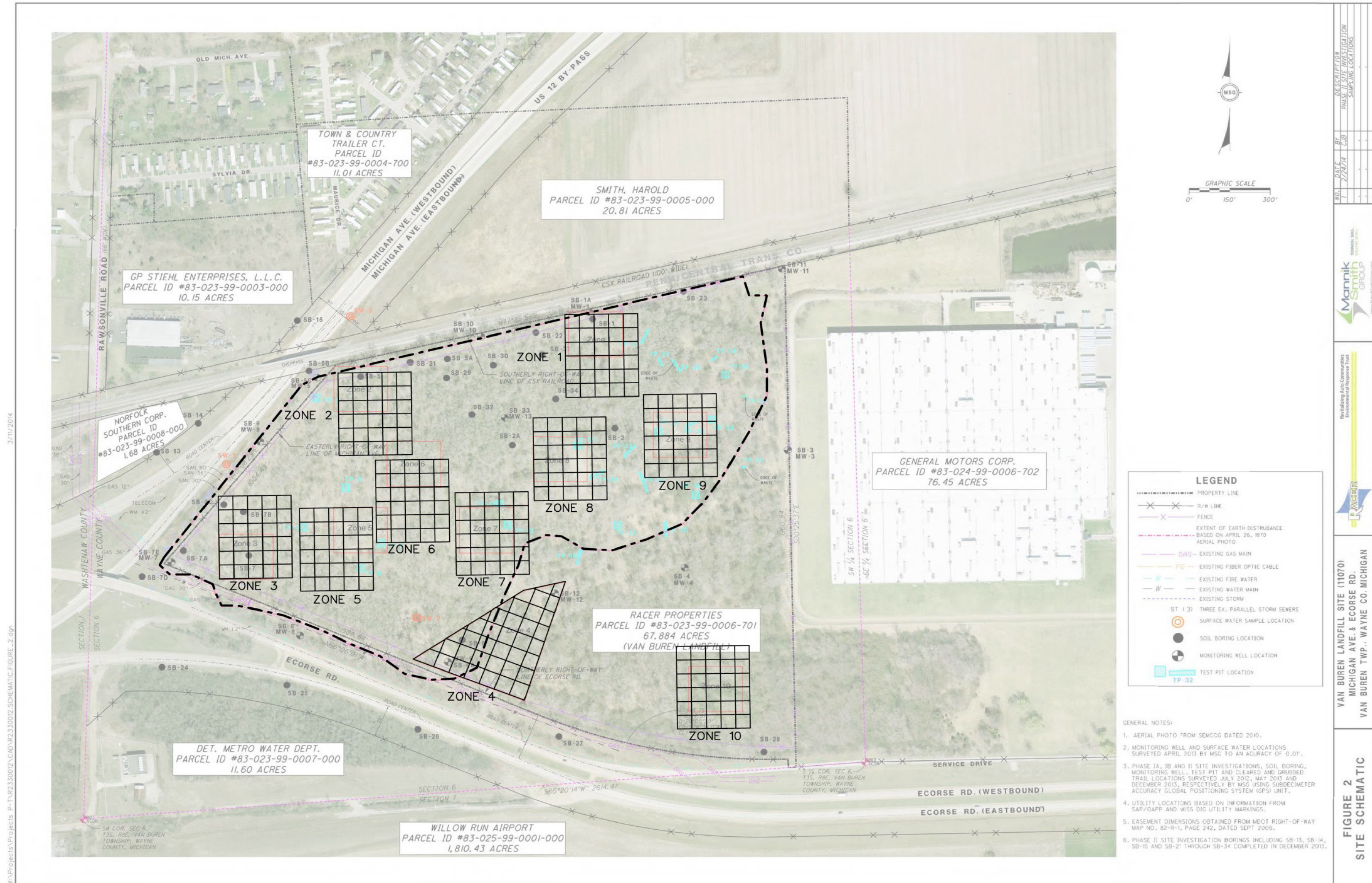


Figure 2
Conceptual Site Model
Draft Ecological Risk Assessment – Steps 3 to 8 of USEPA Ecological Risk Assessment Process
Van Buren Landfill



Note: Adapted from: Mannik & Smith Group, Inc., 2013. *Phase IB Site Investigation*. RACER Van Buren Landfill Site. October 2013.

Draft



Figure 3
Sample Zones for the Landfill
Draft Ecological Risk Assessment – Steps 3 to 8 of USEPA Ecological Risk Assessment Process
Van Buren Landfill

APPENDIX A SURFACE WATER, SURFACE SOIL DATA, AND EPC CALCULATIONS

DRAFT

Table A-1
All Compounds Data for Vernal Pool and Seeps

Client Sample ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qualifier	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Monitoring Point	Type
W-R2330012-041514-ACN-018	14041218-02	15-Apr-14	Water	Volatile Organic Compounds	Vinyl chloride	--	U	U	0.15	1.0	µg/L	1	25-Apr-14	SW-3	Seep
W-R2330012-041514-ACN-019	14041218-03	15-Apr-14	Water	Volatile Organic Compounds	Vinyl chloride	--	U	U	0.15	1.0	µg/L	1	26-Apr-14	SW-2	Pool
W-R2330009-050313-MJF-014	1305208-14	03-May-13	Water	Volatile Organic Compounds	Xylenes, Total	--	U	U	0.29	3.0	µg/L	1	11-May-13	SW-2	Pool
W-R2330009-050313-MJF-015	1305208-15	03-May-13	Water	Volatile Organic Compounds	Xylenes, Total	--	U	U	0.29	3.0	µg/L	1	11-May-13	SW-1	Seep
W-R2330012-041514-ACN-017	14041218-01	15-Apr-14	Water	Volatile Organic Compounds	Xylenes, Total	--	U	U	0.3	3.0	µg/L	1	25-Apr-14	SW-1	Seep
W-R2330012-041514-ACN-018	14041218-02	15-Apr-14	Water	Volatile Organic Compounds	Xylenes, Total	--	U	U	0.3	3.0	µg/L	1	25-Apr-14	SW-3	Seep
W-R2330012-041514-ACN-019	14041218-03	15-Apr-14	Water	Volatile Organic Compounds	Xylenes, Total	--	U	U	0.3	3.0	µg/L	1	26-Apr-14	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS	Cadmium	0.0056	0.0056		0.00005	0.001	mg/L	1	7/21/2016 14:35	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS	Chromium	0.048	0.048		0.00065	0.01	mg/L	1	7/21/2016 14:35	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS	Copper	0.25	0.25		0.00028	0.004	mg/L	1	7/21/2016 14:35	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS	Hardness (Calculation)	2200	2200		0.24	2	mg/L	1	7/21/2016 14:35	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS	Lead	0.34	0.34		0.00033	0.003	mg/L	1	7/21/2016 14:35	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS	Nickel	0.1	0.1		0.00041	0.02	mg/L	1	7/21/2016 14:35	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS	Zinc	1.2	1.2		0.0014	0.05	mg/L	1	7/21/2016 14:35	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS (dissolved)	Cadmium, dissolved	--	U	U	0.00005	0.001	mg/L	1	7/21/2016 14:42	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS (dissolved)	Chromium, dissolved	--	U	U	0.00065	0.01	mg/L	1	7/21/2016 14:42	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS (dissolved)	Copper, dissolved	--	U	U	0.00028	0.004	mg/L	1	7/21/2016 14:42	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS (dissolved)	Lead, dissolved	0.00039	0.00039	J	0.00033	0.003	mg/L	1	7/21/2016 14:42	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS (dissolved)	Nickel, dissolved	0.0075	0.0075	J	0.00041	0.02	mg/L	1	7/21/2016 14:42	SW-2	Pool
W-R2330012-071816-SW-02	1607976-01	18-Jul-16	Water	Metals by ICP-MS (dissolved)	Zinc, dissolved	0.0022	0.0022	J	0.0014	0.05	mg/L	1	7/21/2016 14:42	SW-2	Pool

Notes:
mg/L = milligrams per liter
µg/L = micrograms per liter

Qualifier Notes:
H = Analyzed outside of Holding Time
J = Analyte is present at an estimated concentration between MDL and Report Limit
ND = Not Detected at the Reporting Limit
U = Analyzed but not detected above MDL

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	520	520	J	50	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	25	25	J	4.8	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	23	23	J	5.3	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	22	22	J	4.9	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	16	16	J	4.8	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	49	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	49	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	50	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	24	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	25	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	5.4	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	5	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.8	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.8	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	54	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	4.9	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	54	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	5	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	49	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	49	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	49	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	48	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	1,1`-Biphenyl	--	U	U	48	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	82	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	81	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	83	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	41	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.2	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.2	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	41	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.1	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.9	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.3	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	9	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.2	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.3	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.1	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.1	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.2	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.2	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.1	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.2	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.1	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	90	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.2	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	90	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	8.3	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	81	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	83	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	82	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	82	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	81	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,5-Trichlorophenol	--	U	U	81	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	55	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	55	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	56	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	27	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.6	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	28	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	8.6	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.6	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	8.8	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.6	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.6	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.4	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.5	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	88	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.6	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	88	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	5.6	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	55	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	56	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	55	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	55	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	55	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4,6-Trichlorophenol	--	U	U	55	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	96	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	95	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	97	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	48	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.6	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.6	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	48	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	6.8	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.7	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	7	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.6	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.7	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.4	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.4	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.6	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.4	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	69	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.6	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	70	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	9.7	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	95	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	97	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	96	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	96	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	95	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dichlorophenol	--	U	U	95	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	530	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	520	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	530	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	260	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	260	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	52	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	6.6	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	6.8	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	54	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	52	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	52	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	52	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	52	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	52	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	67	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	68	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	53	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	520	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	530	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	530	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	530	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	520	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dimethylphenol	--	U	U	520	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	300	6,500	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	290	6,500	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	300	6,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	150	3,200	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	650	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	650	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	150	3,300	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	29	640	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	18	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	660	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	18	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	650	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	660	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	29	650	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	29	640	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	650	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	29	650	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	29	640	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	650	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	29	640	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	180	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	650	µg/Kg-dry	1	13-Jan-15	2	Z3	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	180	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	30	660	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	290	6,500	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	300	6,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	300	6,500	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	300	6,500	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	290	6,400	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrophenol	--	U	U	290	6,400	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	100	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	52	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	53	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	8.5	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	8.6	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	86	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	86	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,4-Dinitrotoluene	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	85	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	85	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	5.4	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	5.5	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	54	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	55	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	17	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2,6-Dinitrotoluene	--	U	U	170	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	15	790	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	15	780	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	16	800	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	7.7	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.6	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	7.8	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	4.5	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.6	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	4.6	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.6	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.6	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.6	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.5	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	46	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.6	79	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	46	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	1.6	80	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	15	780	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	16	800	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	15	790	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	15	790	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	15	780	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chloronaphthalene	--	U	U	15	780	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	99	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	98	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	49	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.9	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.9	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	50	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.8	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	10	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	10	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.9	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.8	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.7	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.9	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.8	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.8	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.9	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.8	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	100	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	9.9	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	100	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	10	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	98	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	99	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	99	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	98	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Chlorophenol	--	U	U	98	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	850	850	--	28	800	µg/Kg-dry	10	12-Jan-15	5	Z5	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	590	590	J	28	800	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	380	380	J	27	790	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	330	330	J	27	790	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	200	200	J	27	780	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	130	130	J	27	780	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	100	100	J	27	790	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	87	87	--	2.7	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	80	80	--	2.7	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	75	75	J	27	780	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	60	60	J	34	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	53	53	--	2.7	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	49	49	J	34	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	45	45	--	2.7	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	41	41	--	14	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	39	39	--	2.7	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	38	38	--	2.7	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	36	36	--	14	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	35	35	--	3.3	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	34	34	J	2.8	80	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	18	18	--	2.7	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	13	13	--	3.4	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	12	12	--	2.8	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	8.2	8.2	--	2.7	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	7.6	7.6	--	2.8	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	7.2	7.2	--	2.7	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	6.9	6.9	--	2.7	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	6.8	6.8	--	2.7	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	5.9	5.9	J	2.7	79	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylnaphthalene	--	U	U	27	780	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	130	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	130	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	66	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	67	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	8.8	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	14	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	9	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	14	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	89	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	13	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	90	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	14	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	130	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	130	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	130	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	130	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Methylphenol	--	U	U	130	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,500	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,500	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	63	3,200	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	64	3,300	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	640	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	7.4	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	660	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	7.6	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	660	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	640	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	640	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	640	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	76	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	650	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	76	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	13	660	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,500	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,500	µg/Kg-dry	10	12-Jan-15	6	Z5	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,500	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,400	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitroaniline	--	U	U	130	6,400	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	55	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	56	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	9.3	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	9.4	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	94	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	94	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	2-Nitrophenol	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	61	61	J	16	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	52	52	--	6.5	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	28	28	J	16	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	25	25	J	16	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	18	18	J	16	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	17	17	J	16	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	17	17	J	16	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	12	Z7	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	78	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	79	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	6.7	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	66	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	--	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	67	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	16	--	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3&4-Methylphenol	--	U	U	160	--	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,100	6,500	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,000	6,500	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,100	6,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	2,000	3,200	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	650	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	650	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	2,000	3,300	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	400	640	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4.8	160	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	660	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4.9	170	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	650	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	660	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	400	650	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	400	640	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	650	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	400	650	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	400	640	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	650	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	400	640	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	49	1,700	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	650	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	49	1,700	µg/Kg-dry	10	09-Feb-15	30	Z4	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	410	660	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,000	6,500	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,100	6,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,100	6,500	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,100	6,500	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,000	6,400	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3,3'-Dichlorobenzidine	--	U	U	4,000	6,400	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,500	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,500	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	55	3,200	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	56	3,300	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	640	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	7.4	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	660	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	7.6	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	660	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	640	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	640	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	640	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	76	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	650	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	76	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	11	660	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,500	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,500	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,500	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,400	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	3-Nitroaniline	--	U	U	110	6,400	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	270	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	270	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	280	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	140	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	140	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	8.2	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	28	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	8.3	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	28	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	83	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	27	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	83	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	28	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	270	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	280	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	270	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	270	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	270	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4,6-Dinitro-2-methylphenol	--	U	U	270	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	89	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	88	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	90	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	44	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.9	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.9	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	45	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.8	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.7	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	9	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.9	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.9	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	9	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.8	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.8	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.9	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.8	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.8	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.9	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.8	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	89	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	8.9	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	89	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	9	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	88	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	90	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	89	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	89	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	88	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Bromophenyl phenyl ether	--	U	U	88	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	76	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	75	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	77	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	38	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	38	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.5	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	9.3	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.7	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	9.4	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.7	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.5	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.5	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.5	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	94	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.6	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	94	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	7.7	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	75	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	77	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	76	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	76	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	75	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloro-3-methylphenol	--	U	U	75	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	370	370	J	52	660	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	360	360	J	52	670	µg/Kg-dry	10	09-Feb-15	30	Z4	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	98	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	97	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	99	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	49	3,200	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.8	650	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.8	650	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	49	3,300	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.7	640	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	5.1	65	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.9	660	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	5.2	67	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.8	650	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	10	660	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.7	650	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.6	640	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.8	650	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.7	650	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.7	640	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.8	650	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.7	640	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.8	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	9.9	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	97	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	99	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	98	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	98	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	97	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chloroaniline	--	U	U	97	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	96	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	96	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	98	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	48	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.6	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.7	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	48	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.7	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.2	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.7	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.8	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.6	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.6	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.6	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.7	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.5	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	91	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.7	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	92	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	9.8	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	96	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	97	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	96	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	96	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	95	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Chlorophenyl phenyl ether	--	U	U	95	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	91	6,500	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	90	6,500	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	92	6,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	45	3,200	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.1	650	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.1	650	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	46	3,300	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9	640	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	50	160	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.2	660	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	51	170	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.1	650	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.2	660	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9	650	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	8.9	640	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.1	650	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9	650	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9	640	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.1	650	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9	640	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	510	1,700	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.1	650	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	510	1,700	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	9.2	660	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	90	6,500	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	92	6,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	91	6,500	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	91	6,500	µg/Kg-dry	10	12-Jan-15	7	Z6	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	90	6,400	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitroaniline	--	U	U	90	6,400	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	560	560	--	290	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	550	550	--	300	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	65	6,500	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	65	6,500	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	66	6,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	32	3,200	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	33	3,300	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.4	640	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	29	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.6	660	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	30	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.6	660	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.4	640	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.4	640	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.4	640	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.5	650	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	6.6	660	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	65	6,500	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	66	6,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	65	6,500	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	65	6,500	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	64	6,400	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	4-Nitrophenol	--	U	U	64	6,400	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	940	940	--	10	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	720	720	--	9.8	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	700	700	--	10	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	680	680	--	9.8	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	440	440	--	9.7	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	370	370	--	9.8	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	230	230	J	9.8	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	200	200	J	9.8	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	46	46	J	9.7	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	39	39	--	0.97	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	35	35	--	0.97	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	33	33	--	4.7	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	32	32	--	0.98	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	31	31	--	0.98	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	13	13	J	0.99	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	12	12	--	0.97	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	11	11	--	4.8	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	10	10	J	1	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	4.6	4.6	J	0.99	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	4.3	4.3	J	0.99	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	4.9	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	0.98	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	4.9	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	0.99	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	1	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	0.98	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	0.97	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	0.99	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	48	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthene	--	U	U	48	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	270	270	J	12	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	210	210	J	12	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	210	210	J	12	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	190	190	J	12	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	180	180	J	12	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	140	140	J	12	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	86	86	--	1.2	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	82	82	J	12	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	61	61	--	1.2	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	59	59	--	1.2	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	59	59	J	12	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	46	46	J	12	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	45	45	--	1.2	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	27	27	--	1.2	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	15	15	--	1.2	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	15	15	--	5.6	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	10	10	J	1.2	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	9.2	9.2	--	1.2	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	6.9	6.9	J	1.2	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	6.3	6.3	J	1.2	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	6.2	6.2	J	1.2	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	5	5.0	J	1.2	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	5.9	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	1.2	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	6	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	5.7	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	1.2	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	1.2	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	57	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acenaphthylene	--	U	U	57	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	230	230	J	49	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	86	86	--	5.1	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	47	47	J	4.9	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	44	44	J	5	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	49	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	49	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	50	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	24	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	25	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	5.2	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	5	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.8	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	52	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	4.9	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	52	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	5	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	49	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	50	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	49	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	49	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Acetophenone	--	U	U	49	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	4,400	4,400	--	13	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	2,500	2,500	--	13	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	2,400	2,400	--	13	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	2,200	2,200	--	13	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	2,100	2,100	--	13	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	2,000	2,000	--	13	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	1,500	1,500	--	13	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	990	990	--	13	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	500	500	--	13	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	400	400	--	4.6	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	300	300	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	220	220	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	160	160	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	150	150	--	1.3	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	130	130	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	120	120	--	6.5	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	110	110	--	47	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	100	100	--	1.3	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	99	99	--	46	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	83	83	--	1.3	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	71	71	--	4.7	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	32	32	--	1.3	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	28	28	J	6.4	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	27	27	--	1.3	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	16	16	--	1.3	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	16	16	--	1.3	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	13	13	--	1.3	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	8.5	8.5	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	6.5	6.5	J	1.3	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Anthracene	5.6	5.6	J	1.3	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	100	490	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	99	490	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	100	500	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	49	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	50	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	9.9	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	5.1	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	5.2	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	9.9	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	9.8	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	9.9	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	9.9	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	9.8	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	9.8	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	52	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	50	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	52	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	10	50	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	99	490	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	100	500	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	100	490	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	100	490	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	99	490	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Atrazine	--	U	U	99	490	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	570	570	J	120	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	490	490	J	120	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	450	450	J	130	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	420	420	J	130	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	410	410	J	130	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	400	400	J	130	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	340	340	J	120	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	280	280	--	50	65	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	270	270	J	13	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	240	240	J	12	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	170	170	J	62	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	160	160	J	12	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	150	150	J	12	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	140	140	J	13	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	120	120	J	12	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	110	110	J	12	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	99	99	J	13	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	89	89	J	12	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	85	85	J	13	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	120	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	63	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	51	67	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	13	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	13	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	12	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	510	660	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	13	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	510	670	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	13	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzaldehyde	--	U	U	130	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	15,000	15,000	--	13	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	7,400	7,400	--	13	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	6,700	6,700	--	13	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	5,900	5,900	--	13	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	5,000	5,000	--	13	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	4,800	4,800	--	13	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	3,500	3,500	--	13	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	1,900	1,900	--	13	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	1,800	1,800	--	13	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	1,600	1,600	--	5.6	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	1,300	1,300	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	1,100	1,100	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	600	600	--	6.5	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	580	580	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	530	530	--	57	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	490	490	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	480	480	--	1.3	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	450	450	--	57	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	380	380	--	1.3	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	340	340	--	1.3	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	320	320	--	6.4	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	300	300	--	1.3	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	160	160	--	5.7	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	160	160	--	1.3	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	99	99	--	1.3	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	98	98	--	1.3	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	66	66	--	1.3	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	48	48	--	1.3	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	43	43	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)anthracene	31	31	--	1.3	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	12,000	12,000	--	22	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	5,800	5,800	--	21	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	5,400	5,400	--	21	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	4,500	4,500	--	21	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	4,000	4,000	--	22	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	3,600	3,600	--	21	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	3,000	3,000	--	21	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	1,700	1,700	--	21	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	1,600	1,600	--	21	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	1,300	1,300	--	4	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	1,100	1,100	--	2.1	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	940	940	--	2.1	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	710	710	--	40	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	650	650	--	41	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	610	610	--	2.1	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	570	570	--	11	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	440	440	--	2.1	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	410	410	--	2.1	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	390	390	--	2.2	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	380	380	--	11	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	300	300	--	2.2	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	220	220	--	2.1	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	170	170	--	2.2	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	150	150	--	4.1	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	120	120	--	2.2	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	110	110	--	2.1	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	85	85	--	2.1	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	72	72	--	2.1	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	64	64	--	2.1	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(a)pyrene	58	58	--	2.1	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	16,000	16,000	--	20	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	7,600	7,600	--	19	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	7,400	7,400	--	19	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	6,800	6,800	--	19	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	5,400	5,400	--	19	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	5,300	5,300	--	20	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	4,000	4,000	--	19	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	2,500	2,500	--	19	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	2,300	2,300	--	19	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	1,900	1,900	--	4.8	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	1,800	1,800	--	1.9	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	1,400	1,400	--	1.9	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	1,000	1,000	--	49	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	940	940	--	49	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	910	910	--	1.9	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	880	880	--	9.7	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	670	670	--	1.9	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	660	660	--	2	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	650	650	--	1.9	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	540	540	--	9.6	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	510	510	--	1.9	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	360	360	--	1.9	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	270	270	--	2	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	230	230	--	4.9	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	170	170	--	1.9	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	160	160	--	1.9	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	120	120	--	1.9	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	97	97	--	1.9	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	86	86	--	1.9	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(b)fluoranthene	83	83	--	1.9	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	8,400	8,400	--	26	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	4,200	4,200	--	26	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	4,100	4,100	--	26	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	3,600	3,600	--	26	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	3,000	3,000	--	26	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	2,900	2,900	--	26	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	2,300	2,300	--	26	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	1,400	1,400	--	26	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	1,300	1,300	--	26	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	1,000	1,000	--	5	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	860	860	--	2.5	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	710	710	--	2.6	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	670	670	--	51	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	600	600	--	51	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	560	560	--	2.6	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	530	530	--	13	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	450	450	--	2.6	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	350	350	--	2.6	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	340	340	--	13	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	300	300	--	2.6	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	250	250	--	2.6	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	210	210	--	2.6	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	160	160	--	2.6	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	150	150	--	5.1	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	110	110	--	2.6	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	110	110	--	2.6	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	82	82	--	2.6	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	71	71	--	2.5	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	62	62	--	2.6	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(g,h,i)perylene	56	56	--	2.6	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	6,900	6,900	--	14	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	3,200	3,200	--	14	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	3,100	3,100	--	14	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	3,100	3,100	--	14	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	2,200	2,200	--	14	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	2,100	2,100	--	14	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	1,700	1,700	--	14	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	1,000	1,000	--	50	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	1,000	1,000	--	14	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	950	950	--	14	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	860	860	--	50	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	730	730	--	4.9	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	580	580	--	1.4	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	480	480	--	1.4	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	380	380	--	7	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	330	330	--	1.4	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	250	250	--	6.9	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	230	230	--	1.4	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	230	230	--	1.4	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	230	230	--	1.4	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	190	190	--	1.4	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	140	140	--	1.4	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	100	100	--	1.4	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	90	90	--	5	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	70	70	--	1.4	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	69	69	--	1.4	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	53	53	--	1.4	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	53	53	--	1.4	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	44	44	--	1.4	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Benzo(k)fluoranthene	43	43	--	1.4	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	51	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	52	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	3.1	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	3.2	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	32	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	32	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	10	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethoxy)methane	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	51	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	52	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	9.2	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	9.4	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	93	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	94	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	10	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroethyl)ether	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	68	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	69	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	7.6	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	7.8	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	77	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	78	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	14	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-chloroisopropyl)ether	--	U	U	140	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	14,000	14,000	--	110	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	6,100	6,100	--	110	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	5,200	5,200	--	57	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	4,400	4,400	--	110	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	4,000	4,000	--	110	3,300	µg/Kg-dry	10	06-Feb-15	21	Z2	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	3,600	3,600	--	57	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	2,600	2,600	--	54	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	1,900	1,900	--	53	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	1,900	1,900	--	11	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	1,500	1,500	--	11	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	1,500	1,500	J	110	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	1,300	1,300	J	110	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	760	760	--	11	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	730	730	J	110	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	680	680	--	5.6	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	620	620	--	11	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	590	590	--	11	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	450	450	--	11	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	420	420	--	11	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	360	360	--	11	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	300	300	J	11	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	240	240	J	11	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	140	140	J	11	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	96	96	J	11	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	95	95	--	5.7	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	87	87	J	11	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Bis(2-ethylhexyl)phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	2,800	2,800	--	120	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	1,500	1,500	J	120	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	1,000	1,000	--	56	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	850	850	--	12	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	750	750	--	56	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	320	320	--	12	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	310	310	--	12	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	270	270	--	12	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	240	240	--	12	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	140	140	--	5.5	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	110	110	J	12	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	97	97	J	12	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	87	87	J	12	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	70	70	J	12	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	120	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	120	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	61	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	62	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	12	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	5.6	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	13	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	12	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	12	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	12	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	12	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	120	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	120	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	120	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	120	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Butyl benzyl phthalate	--	U	U	120	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	270	270	J	110	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	260	260	J	110	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	140	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	140	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	150	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	71	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	72	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	11	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	11	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	15	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	14	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	15	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	140	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	150	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	140	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	140	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	140	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Caprolactam	--	U	U	140	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	4,900	4,900	--	99	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	1,900	1,900	--	97	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	1,800	1,800	--	97	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	1,500	1,500	J	98	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	1,300	1,300	J	98	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	1,200	1,200	J	99	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	850	850	J	97	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	580	580	J	98	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	340	340	--	3.5	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	180	180	J	97	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	160	160	J	9.7	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	140	140	J	9.6	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	89	89	J	9.7	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	72	72	J	9.8	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	58	58	J	9.8	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	48	48	J	9.7	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	45	45	J	9.9	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	27	27	J	9.9	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	25	25	J	9.9	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	19	19	J	9.8	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	49	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	9.8	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	49	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	3.6	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	9.8	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	9.7	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	9.7	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	9.8	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	36	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Carbazole	--	U	U	36	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	17,000	17,000	--	16	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	7,300	7,300	--	16	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	7,100	7,100	--	16	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	6,400	6,400	--	16	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	5,900	5,900	--	16	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	4,800	4,800	--	16	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	3,700	3,700	--	15	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	2,200	2,200	--	15	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	2,000	2,000	--	16	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	1,600	1,600	--	5.3	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	1,500	1,500	--	1.5	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	1,100	1,100	--	1.5	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	730	730	--	7.8	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	690	690	--	1.5	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	650	650	--	1.6	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	600	600	--	1.6	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	590	590	--	1.6	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	530	530	--	53	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	490	490	--	54	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	390	390	--	1.6	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	360	360	--	7.8	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	360	360	--	1.6	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	250	250	--	1.6	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	200	200	--	5.4	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	120	120	--	1.6	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	120	120	--	1.6	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	87	87	--	1.6	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	61	61	--	1.6	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	46	46	--	1.6	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Chrysene	44	44	--	1.5	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	2,200	2,200	--	25	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	1,300	1,300	--	24	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	1,100	1,100	--	24	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	1,100	1,100	--	24	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	890	890	--	25	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	880	880	--	25	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	700	700	--	24	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	530	530	--	24	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	270	270	--	3.5	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	220	220	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	180	180	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	170	170	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	150	150	--	36	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	140	140	--	12	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	130	130	--	2.5	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	120	120	--	36	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	84	84	--	2.4	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	79	79	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	78	78	--	12	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	73	73	--	2.5	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	69	69	--	2.5	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	52	52	--	3.6	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	33	33	--	2.5	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	28	28	--	2.5	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	26	26	--	2.4	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	25	25	--	2.5	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	23	23	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	19	19	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	11	11	--	2.5	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzo(a,h)anthracene	--	U	U	25	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	4,700	4,700	--	100	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	1,800	1,800	--	100	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	1,600	1,600	J	100	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	1,500	1,500	J	100	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	1,200	1,200	J	100	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	1,200	1,200	J	100	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	650	650	J	100	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	620	620	J	100	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	180	180	--	4.8	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	92	92	J	10	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	76	76	J	10	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	72	72	J	10	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	58	58	J	10	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	49	49	J	10	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	45	45	J	10	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	26	26	J	4.9	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	17	17	J	10	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	51	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	51	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	10	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	48	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	49	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dibenzofuran	--	U	U	100	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	95	95	J	10	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	100	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	52	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	52	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	5	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	5.1	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	50	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	10	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	51	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	100	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	100	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Diethyl phthalate	--	U	U	100	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	55	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	55	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	6.3	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	6.5	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	64	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	65	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	11	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Dimethyl phthalate	--	U	U	110	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	1,500	1,500	J	24	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	900	900	J	24	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	850	850	--	4.8	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	220	220	J	4.7	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	210	210	J	4.7	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	160	160	--	5.9	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	66	66	J	4.7	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	48	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	47	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	48	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.7	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.8	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	6.1	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.8	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.8	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.7	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.7	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.7	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.7	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.8	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	60	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.8	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	61	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	4.8	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	47	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	48	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	48	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	48	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	47	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-butyl phthalate	--	U	U	47	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	730	730	J	110	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	53	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	53	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	6.2	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	6.4	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	10	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	63	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	64	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Di-n-octyl phthalate	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	66,000	66,000	E	23	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	21,000	21,000	E	23	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	20,000	20,000	E	23	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	19,000	19,000	--	23	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	15,000	15,000	--	23	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	13,000	13,000	--	23	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	8,700	8,700	--	23	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	5,200	5,200	--	23	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	5,100	5,100	E	3.1	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	4,300	4,300	E	2.3	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	3,900	3,900	--	23	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	2,600	2,600	E	2.3	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	1,500	1,500	--	12	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	1,400	1,400	--	2.3	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	870	870	--	2.3	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	860	860	--	2.3	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	800	800	--	2.3	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	780	780	--	2.3	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	780	780	--	32	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	750	750	--	11	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	670	670	--	2.3	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	670	670	--	32	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	430	430	--	2.3	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	310	310	--	3.2	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	200	200	--	2.3	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	180	180	--	2.3	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	140	140	--	2.3	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	110	110	--	2.3	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	81	81	--	2.3	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluoranthene	76	76	--	2.3	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	720	720	--	22	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	670	670	--	22	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	570	570	--	22	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	530	530	--	22	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	360	360	--	22	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	330	330	--	22	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	330	330	--	22	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	260	260	J	22	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	58	58	--	4.7	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	52	52	J	22	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	49	49	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	43	43	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	34	34	--	2.2	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	27	27	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	27	27	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	26	26	J	11	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	21	21	J	2.2	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	17	17	J	2.2	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	16	16	--	4.8	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	8.4	8.4	--	2.2	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	4.9	4.9	J	2.2	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	4	4.0	J	2.2	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	3.9	3.9	J	2.2	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	--	U	U	11	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	--	U	U	2.2	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	--	U	U	2.2	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	--	U	U	2.2	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	--	U	U	2.2	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	--	U	U	48	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Fluorene	--	U	U	48	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	92	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	91	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	93	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	46	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.2	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.2	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	46	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.1	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.5	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.3	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.6	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.2	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.4	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.1	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.1	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.2	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.1	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.1	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.2	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.1	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	96	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.2	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	96	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	9.3	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	91	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	93	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	92	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	92	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	91	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobenzene	--	U	U	91	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	490	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	490	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	500	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	55	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	55	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	18	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	18	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	180	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	50	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	180	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	11	50	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	490	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	500	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	490	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	490	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	490	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorobutadiene	--	U	U	110	490	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,200	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	51	1,600	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	330	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	52	1,600	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	11	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	11	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	330	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	11	330	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	330	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	320	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	110	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	330	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	110	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	10	330	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,200	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,200	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachlorocyclopentadiene	--	U	U	100	3,200	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	160	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	76	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	77	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	13	32	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	14	33	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	16	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	140	330	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	15	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	140	330	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	16	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Hexachloroethane	--	U	U	150	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	7-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	198100	--	--	--	--	µg/Kg-dry	--	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	7-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	76700	--	--	--	--	µg/Kg-dry	--	12-Jan-15	6	Z5	2015
ISM-11-Z7	1501301-11	8-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	73300	--	--	--	--	µg/Kg-dry	--	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	6-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	67500	--	--	--	--	µg/Kg-dry	--	12-Jan-15	4	Z5	2015
ISM-10-Z7	1501301-10	8-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	56280	--	--	--	--	µg/Kg-dry	--	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	8-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	50790	--	--	--	--	µg/Kg-dry	--	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	7-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	37100	--	--	--	--	µg/Kg-dry	--	12-Jan-15	9	Z6	2015
ISM-7-Z6	1501301-07	7-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	20275	--	--	--	--	µg/Kg-dry	--	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	7-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	19830	--	--	--	--	µg/Kg-dry	--	12-Jan-15	8	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	17200	--	--	--	--	µg/Kg-dry	--	4-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	14810	--	--	--	--	µg/Kg-dry	--	6-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	11000	--	--	--	--	µg/Kg-dry	--	6-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	6810	--	--	--	--	µg/Kg-dry	--	6-Feb-15	16	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	6620	--	--	--	--	µg/Kg-dry	--	9-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	6560	--	--	--	--	µg/Kg-dry	--	9-Feb-15	30	Z4	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	5830	--	--	--	--	µg/Kg-dry	--	6-Feb-15	28	Z4	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	5449	--	--	--	--	µg/Kg-dry	--	6-Feb-15	22	Z1	2015
ISM-3-Z3	1501301-03	6-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	4700	--	--	--	--	µg/Kg-dry	--	13-Jan-15	3	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	4604	--	--	--	--	µg/Kg-dry	--	6-Feb-15	24	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	3898	--	--	--	--	µg/Kg-dry	--	6-Feb-15	13	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	3503	--	--	--	--	µg/Kg-dry	--	5-Feb-15	19	Z2	2015
ISM-2-Z3	1501301-02	6-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	3199	--	--	--	--	µg/Kg-dry	--	13-Jan-15	2	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	2053	--	--	--	--	µg/Kg-dry	--	5-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	6-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	1782	--	--	--	--	µg/Kg-dry	--	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	1206	--	--	--	--	µg/Kg-dry	--	6-Feb-15	20	Z2	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	1164	--	--	--	--	µg/Kg-dry	--	5-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	859	--	--	--	--	µg/Kg-dry	--	6-Feb-15	15	Z8	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	666	--	--	--	--	µg/Kg-dry	--	6-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	583	--	--	--	--	µg/Kg-dry	--	5-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	High Molecular Weight PAHs	550	--	--	--	--	µg/Kg-dry	--	6-Feb-15	26	Z10	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	9,600	9,600	--	22	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	4,700	4,700	--	22	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	4,600	4,600	--	22	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	4,100	4,100	--	22	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	3,400	3,400	--	22	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	3,300	3,300	--	22	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	2,600	2,600	--	22	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	1,700	1,700	--	22	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	1,500	1,500	--	22	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	1,100	1,100	--	4.5	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	950	950	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	800	800	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	780	780	--	46	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	700	700	--	46	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	620	620	--	11	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	590	590	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	470	470	--	2.2	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	410	410	--	11	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	390	390	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	340	340	--	2.2	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	270	270	--	2.2	6.6	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	220	220	--	2.2	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	170	170	--	2.2	6.7	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	150	150	--	4.6	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	120	120	--	2.2	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	120	120	--	2.2	6.6	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	91	91	--	2.2	6.6	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	78	78	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	75	75	--	2.2	6.5	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Indeno(1,2,3-cd)pyrene	68	68	--	2.2	6.6	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	55	780	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	55	790	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	6.3	160	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	19	Z2	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	6.5	170	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	64	1,700	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	65	1,700	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	11	160	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Isophorone	--	U	U	110	1,600	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	3,200	3,200	--	24	300	µg/Kg-dry	10	12-Jan-15	5	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	1,800	1,800	--	25	300	µg/Kg-dry	10	12-Jan-15	12	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	1,300	1,300	--	24	300	µg/Kg-dry	10	12-Jan-15	6	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	1,100	1,100	--	24	300	µg/Kg-dry	10	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	780	780	--	24	290	µg/Kg-dry	10	13-Jan-15	11	Z7	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	750	750	--	24	300	µg/Kg-dry	10	12-Jan-15	7	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	700	700	--	24	290	µg/Kg-dry	10	12-Jan-15	4	Z5	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	470	470	--	24	290	µg/Kg-dry	10	12-Jan-15	9	Z6	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	240	240	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	240	240	--	2.4	6.6	µg/Kg-dry	1	06-Feb-15	24	Z1	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	170	170	--	42	66	µg/Kg-dry	10	09-Feb-15	30	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	140	140	--	42	66	µg/Kg-dry	10	09-Feb-15	29	Z4	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	140	140	J	24	290	µg/Kg-dry	10	12-Jan-15	8	Z6	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	130	130	--	12	33	µg/Kg-dry	5	06-Feb-15	16	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	110	110	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	28	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	110	110	--	2.5	30	µg/Kg-dry	1	13-Jan-15	3	Z3	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	88	88	--	4.2	6.5	µg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	69	69	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	22	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	64	64	--	2.4	6.5	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	42	42	--	12	33	µg/Kg-dry	5	06-Feb-15	13	Z8	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	42	42	--	2.4	30	µg/Kg-dry	1	13-Jan-15	2	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	31	31	--	4.2	6.6	µg/Kg-dry	1	13-Jan-15	1	Z3	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Semi-Volatile Organic Compounds	Naphthalene	22	22	--	2.4	6.6	µg/Kg-dry	1	05-Feb-15	14	Z8	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Methyl acetate	--	U	U	79	260	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Methyl acetate	--	U	U	79	260	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Methyl acetate	--	U	U	79	260	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Methyl tert-butyl ether	--	U	U	12	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Methyl tert-butyl ether	--	U	U	12	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Methyl tert-butyl ether	--	U	U	12	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Methyl tert-butyl ether	--	U	U	13	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Methyl tert-butyl ether	--	U	U	13	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Methyl tert-butyl ether	--	U	U	13	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Methylcyclohexane	160	160	--	17	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Methylcyclohexane	--	U	U	17	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Methylcyclohexane	--	U	U	17	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Methylcyclohexane	--	U	U	17	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Methylcyclohexane	--	U	U	17	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Methylcyclohexane	--	U	U	17	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Methylene chloride	--	U	U	18	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Methylene chloride	--	U	U	18	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Methylene chloride	--	U	U	18	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Methylene chloride	--	U	U	18	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Methylene chloride	--	U	U	18	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Methylene chloride	--	U	U	18	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Styrene	--	U	U	27	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Styrene	--	U	U	27	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Styrene	--	U	U	27	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Styrene	--	U	U	27	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Styrene	--	U	U	27	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Styrene	--	U	U	27	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Tetrachloroethene	--	U	U	19	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Tetrachloroethene	--	U	U	19	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Tetrachloroethene	--	U	U	19	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Tetrachloroethene	--	U	U	19	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Tetrachloroethene	--	U	U	19	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Tetrachloroethene	--	U	U	19	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Toluene	350	350	--	13	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Toluene	--	U	U	13	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Toluene	--	U	U	13	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Toluene	--	U	U	13	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Toluene	--	U	U	13	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Toluene	--	U	U	13	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	trans-1,2-Dichloroethene	--	U	U	11	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	trans-1,2-Dichloroethene	--	U	U	11	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	trans-1,2-Dichloroethene	--	U	U	11	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	trans-1,2-Dichloroethene	--	U	U	11	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015

Table A-2
Volatile and Semivolatile Organic Compound Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	Rlimit	Runits	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	trans-1,2-Dichloroethene	--	U	U	11	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	trans-1,2-Dichloroethene	--	U	U	11	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	trans-1,3-Dichloropropene	--	U	U	6.9	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	trans-1,3-Dichloropropene	--	U	U	6.9	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	trans-1,3-Dichloropropene	--	U	U	6.9	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	trans-1,3-Dichloropropene	--	U	U	6.9	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	trans-1,3-Dichloropropene	--	U	U	6.9	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	trans-1,3-Dichloropropene	--	U	U	6.9	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Trichloroethene	--	U	U	10	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Trichloroethene	--	U	U	10	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Trichloroethene	--	U	U	10	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Trichloroethene	--	U	U	10	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Trichloroethene	--	U	U	10	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Trichloroethene	--	U	U	10	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Trichlorofluoromethane	--	U	U	7.4	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Trichlorofluoromethane	--	U	U	7.4	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Trichlorofluoromethane	--	U	U	7.4	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Trichlorofluoromethane	--	U	U	7.4	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Trichlorofluoromethane	--	U	U	7.4	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Trichlorofluoromethane	--	U	U	7.4	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Vinyl chloride	--	U	U	12	38	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Vinyl chloride	--	U	U	12	38	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Vinyl chloride	--	U	U	12	38	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Vinyl chloride	--	U	U	12	39	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Vinyl chloride	--	U	U	12	39	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Vinyl chloride	--	U	U	12	39	µg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Volatile Organic Compounds	Xylenes, Total	1,100	1,100	--	30	120	µg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Volatile Organic Compounds	Xylenes, Total	31	31	J	30	120	µg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Volatile Organic Compounds	Xylenes, Total	--	U	U	30	120	µg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Volatile Organic Compounds	Xylenes, Total	--	U	U	30	120	µg/Kg-dry	1	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Volatile Organic Compounds	Xylenes, Total	--	U	U	30	120	µg/Kg-dry	1	04-Feb-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Volatile Organic Compounds	Xylenes, Total	--	U	U	30	120	µg/Kg-dry	1	04-Feb-15	30	Z4	2015

Notes:
µg/Kg-dry = micrograms per kilogram-dry weight
CVAA = cold vapor atomic absorption
ICP-MS = Inductively Coupled Plasma-Mass Spectrometry
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
RMDL = Recommended Method Detection Limit
SL = screening level

Qualifier Notes:
H = Analyzed outside of Holding Time
J = Analyte is present at an estimated concentration between MDL and Report Limit
ND = Not Detected at the Reporting Limit
U = Analyzed but not detected above MDL

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Mercury by CVAA	Mercury	0.032	0.032	--	0.00074	0.012	mg/Kg-dry	1	04-Feb-15	26	Z10	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Mercury by CVAA	Mercury	0.035	0.035	--	0.00089	0.015	mg/Kg-dry	1	12-Jan-15	2	Z3	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Mercury by CVAA	Mercury	0.039	0.039	--	0.00089	0.015	mg/Kg-dry	1	04-Feb-15	27	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Mercury by CVAA	Mercury	0.049	0.049	--	0.0008	0.013	mg/Kg-dry	1	12-Jan-15	1	Z3	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Mercury by CVAA	Mercury	0.054	0.054	--	0.00086	0.014	mg/Kg-dry	1	04-Feb-15	25	Z10	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Mercury by CVAA	Mercury	0.063	0.063	--	0.00074	0.012	mg/Kg-dry	1	04-Feb-15	22	Z1	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.067	0.067	--	0.0008	0.013	mg/Kg-dry	1	04-Feb-15	14	Z8	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Mercury by CVAA	Mercury	0.076	0.076	--	0.00074	0.012	mg/Kg-dry	1	12-Jan-15	3	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Mercury by CVAA	Mercury	0.088	0.088	--	0.00095	0.016	mg/Kg-dry	1	04-Feb-15	24	Z1	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.1	0.10	--	0.00099	0.016	mg/Kg-dry	1	04-Feb-15	19	Z2	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.11	0.11	--	0.00087	0.014	mg/Kg-dry	1	04-Feb-15	15	Z8	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Mercury by CVAA	Mercury	0.11	0.11	--	0.0008	0.013	mg/Kg-dry	1	04-Feb-15	28	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Mercury by CVAA	Mercury	0.11	0.11	--	0.00075	0.012	mg/Kg-dry	1	04-Feb-15	30	Z4	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.12	0.12	--	0.00081	0.013	mg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.12	0.12	--	0.00085	0.014	mg/Kg-dry	1	04-Feb-15	20	Z2	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Mercury by CVAA	Mercury	0.12	0.12	--	0.00079	0.013	mg/Kg-dry	1	12-Jan-15	4	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Mercury by CVAA	Mercury	0.12	0.12	--	0.00074	0.012	mg/Kg-dry	1	12-Jan-15	7	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.13	0.13	--	0.00087	0.014	mg/Kg-dry	1	04-Feb-15	17	Z9	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Mercury by CVAA	Mercury	0.14	0.14	--	0.00082	0.014	mg/Kg-dry	1	12-Jan-15	9	Z6	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.16	0.16	--	0.00073	0.012	mg/Kg-dry	1	04-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Mercury by CVAA	Mercury	0.16	0.16	--	0.00077	0.013	mg/Kg-dry	1	04-Feb-15	23	Z1	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Mercury by CVAA	Mercury	0.17	0.17	--	0.00078	0.013	mg/Kg-dry	1	12-Jan-15	10	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Mercury by CVAA	Mercury	0.19	0.19	--	0.00087	0.014	mg/Kg-dry	1	12-Jan-15	5	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Mercury by CVAA	Mercury	0.2	0.20	--	0.00078	0.013	mg/Kg-dry	1	12-Jan-15	12	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Mercury by CVAA	Mercury	0.21	0.21	--	0.00077	0.013	mg/Kg-dry	1	12-Jan-15	11	Z7	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Mercury by CVAA	Mercury	0.25	0.25	--	0.0017	0.028	mg/Kg-dry	2	12-Jan-15	8	Z6	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Mercury by CVAA	Mercury	0.31	0.31	--	0.0037	0.061	mg/Kg-dry	5	12-Jan-15	6	Z5	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.37	0.37	--	0.0045	0.074	mg/Kg-dry	5	05-Feb-15	16	Z9	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Mercury by CVAA	Mercury	0.83	0.83	--	0.0086	0.14	mg/Kg-dry	10	05-Feb-15	21	Z2	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Mercury by CVAA	Mercury	2.5	2.5	--	0.037	0.61	mg/Kg-dry	50	05-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Aluminum	2,900	2,900	--	1	2.9	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Aluminum	3,400	3,400	--	1.1	3.2	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Aluminum	3,600	3,600	--	0.9	2.6	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Aluminum	3,900	3,900	--	2.6	7.5	mg/Kg-dry	10	13-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Aluminum	4,500	4,500	--	2.4	7	mg/Kg-dry	10	13-Feb-15	26	Z10	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Aluminum	4,600	4,600	--	0.98	2.9	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Aluminum	4,600	4,600	--	2.4	7.1	mg/Kg-dry	10	13-Feb-15	25	Z10	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	4,700	4,700	--	1.1	3.1	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Aluminum	4,700	4,700	--	0.97	2.8	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	4,800	4,800	--	0.89	2.6	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Aluminum	4,800	4,800	--	0.95	2.8	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	5,000	5,000	--	0.89	2.6	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Aluminum	5,200	5,200	--	0.99	2.9	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Aluminum	5,200	5,200	--	0.99	2.9	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Aluminum	5,500	5,500	--	0.89	2.6	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Aluminum	5,500	5,500	--	0.99	2.9	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	5,800	5,800	--	0.88	2.6	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	5,900	5,900	--	0.87	2.5	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Aluminum	6,500	6,500	--	1	3	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Aluminum	6,600	6,600	--	0.96	2.8	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Aluminum	6,700	6,700	--	1.1	3.2	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Aluminum	6,800	6,800	--	1	3	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Aluminum	6,900	6,900	--	0.92	2.7	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	7,100	7,100	--	2.8	8.1	mg/Kg-dry	10	13-Feb-15	20	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	7,300	7,300	--	1.1	3.2	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Aluminum	7,500	7,500	--	1.1	3.2	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Aluminum	7,600	7,600	--	0.99	2.9	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	7,700	7,700	--	2.8	8.1	mg/Kg-dry	10	13-Feb-15	19	Z2	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Aluminum	7,700	7,700	--	1.1	3.1	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Aluminum	8,100	8,100	--	2.7	7.9	mg/Kg-dry	10	13-Feb-15	21	Z2	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Antimony	--	U	U	0.38	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Antimony	--	U	U	0.37	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Antimony	--	U	U	0.4	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Antimony	1.4	1.4	J	0.43	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Antimony	2.1	2.1	--	0.38	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Antimony	2.1	2.1	--	0.35	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Antimony	2.7	2.7	--	0.38	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Antimony	3.1	3.1	--	0.34	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Antimony	5.1	5.1	--	0.38	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Antimony	5.4	5.4	--	0.41	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Antimony	6	6.0	--	0.34	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Antimony	6.3	6.3	--	0.35	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Antimony	6.4	6.4	--	0.37	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Antimony	6.7	6.7	--	0.43	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Antimony	6.8	6.8	--	0.4	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Antimony	6.8	6.8	--	0.41	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Antimony	6.9	6.9	--	0.38	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Antimony	8.2	8.2	--	0.38	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Antimony	8.5	8.5	--	0.43	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Antimony	8.7	8.7	--	0.42	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Antimony	8.8	8.8	--	0.42	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Antimony	9.1	9.1	--	0.34	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Antimony	9.3	9.3	--	0.33	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Antimony	11	11	--	0.36	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Antimony	12	12	--	0.39	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Antimony	12	12	--	0.37	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Antimony	13	13	--	0.42	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Antimony	13	13	--	0.38	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Antimony	14	14	--	0.38	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Antimony	20	20	--	0.42	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Arsenic	2.4	2.4	--	0.3	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Arsenic	3.3	3.3	--	0.31	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Arsenic	3.7	3.7	--	0.3	0.58	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Arsenic	3.9	3.9	--	0.33	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Arsenic	4.5	4.5	--	0.27	0.53	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Arsenic	4.7	4.7	--	0.29	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	4.9	4.9	--	0.27	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Arsenic	5.3	5.3	--	0.3	0.57	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	5.6	5.6	--	0.27	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	6	6.0	--	0.32	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.1	6.1	--	0.27	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.4	6.4	--	0.29	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.4	6.4	--	0.3	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.4	6.4	--	0.3	0.58	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.5	6.5	--	0.33	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.6	6.6	--	0.32	0.61	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.7	6.7	--	0.34	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Arsenic	6.8	6.8	--	0.27	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.1	7.1	--	0.26	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.3	7.3	--	0.34	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.4	7.4	--	0.3	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.5	7.5	--	0.33	0.63	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.5	7.5	--	0.29	0.56	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.6	7.6	--	0.28	0.54	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.6	7.6	--	0.33	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Arsenic	7.7	7.7	--	0.3	0.58	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Arsenic	8.1	8.1	--	0.31	0.59	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Arsenic	9.1	9.1	--	0.33	0.64	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Arsenic	10	10	--	0.31	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Arsenic	12	12	--	0.3	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Barium	22	22	--	0.018	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Barium	26	26	--	0.017	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Barium	32	32	--	0.017	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Barium	44	44	--	0.019	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Barium	55	55	--	0.016	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Barium	59	59	--	0.017	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Barium	140	140	--	0.017	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Barium	150	150	--	0.016	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Barium	150	150	--	0.017	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Barium	150	150	--	0.016	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Barium	150	150	--	0.017	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Barium	160	160	--	0.017	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Barium	170	170	--	0.017	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Barium	180	180	--	0.017	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Barium	200	200	--	0.018	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Barium	200	200	--	0.018	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Barium	220	220	--	0.019	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Barium	220	220	--	0.015	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Barium	230	230	--	0.018	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Barium	230	230	--	0.019	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Barium	240	240	--	0.019	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Barium	250	250	--	0.02	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Barium	270	270	--	0.017	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Barium	280	280	--	0.018	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Barium	300	300	--	0.016	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Barium	320	320	--	0.017	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Barium	380	380	--	0.015	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Barium	400	400	--	0.019	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Barium	430	430	--	0.019	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Barium	450	450	--	0.016	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	--	U	U	0.17	0.65	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	--	U	U	0.17	0.65	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	--	U	U	0.16	0.63	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Beryllium	--	U	U	0.15	0.56	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Beryllium	--	U	U	0.16	0.6	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Beryllium	--	U	U	0.15	0.58	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.16	0.16	J	0.15	0.57	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.18	0.18	J	0.14	0.53	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.19	0.19	J	0.17	0.64	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.21	0.21	J	0.14	0.52	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.22	0.22	J	0.14	0.52	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.22	0.22	J	0.15	0.57	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.23	0.23	J	0.16	0.62	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.23	0.23	J	0.14	0.56	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.23	0.23	J	0.15	0.57	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.23	0.23	J	0.15	0.58	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.23	0.23	J	0.15	0.58	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.24	0.24	J	0.15	0.58	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.24	0.24	J	0.16	0.61	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.26	0.26	J	0.16	0.63	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.26	0.26	J	0.13	0.51	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.26	0.26	J	0.14	0.52	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.26	0.26	J	0.15	0.56	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.27	0.27	J	0.13	0.52	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.27	0.27	J	0.17	0.64	mg/Kg-dry	4	12-Jan-15	6	Z5	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.28	0.28	J	0.14	0.54	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.3	0.30	J	0.15	0.59	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.32	0.32	J	0.16	0.63	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.32	0.32	J	0.15	0.58	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Beryllium	0.48	0.48	J	0.16	0.6	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Cadmium	0.17	0.17	J	0.06	0.6	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Cadmium	0.24	0.24	J	0.056	0.56	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Cadmium	0.34	0.34	J	0.057	0.57	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Cadmium	1.4	1.4	--	0.064	0.64	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Cadmium	1.9	1.9	--	0.058	0.58	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Cadmium	1.9	1.9	--	0.053	0.53	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Cadmium	2.6	2.6	--	0.052	0.52	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	2.8	2.8	--	0.052	0.52	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	2.9	2.9	--	0.062	0.62	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	3	3.0	--	0.052	0.52	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	3.3	3.3	--	0.051	0.51	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Cadmium	3.4	3.4	--	0.057	0.57	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	3.6	3.6	--	0.052	0.52	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Cadmium	3.7	3.7	--	0.057	0.57	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Cadmium	3.7	3.7	--	0.058	0.58	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Cadmium	4.3	4.3	--	0.061	0.61	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	4.7	4.7	--	0.065	0.65	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Cadmium	5	5.0	--	0.058	0.58	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Cadmium	5.2	5.2	--	0.06	0.6	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Cadmium	5.3	5.3	--	0.056	0.56	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	5.4	5.4	--	0.063	0.63	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Cadmium	5.6	5.6	--	0.059	0.59	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Cadmium	6.1	6.1	--	0.056	0.56	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Cadmium	6.2	6.2	--	0.054	0.54	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Cadmium	6.3	6.3	--	0.058	0.58	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	7.8	7.8	--	0.065	0.65	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Cadmium	7.9	7.9	--	0.064	0.64	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Cadmium	8.4	8.4	--	0.058	0.58	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Cadmium	14	14	--	0.063	0.63	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Cadmium	16	16	--	0.063	0.63	mg/Kg-dry	4	03-Feb-15	13	Z8	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Chromium	6.6	6.6	--	0.34	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Chromium	6.7	6.7	--	0.31	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Chromium	7.8	7.8	--	0.32	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Chromium	8.9	8.9	--	0.36	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Chromium	9.1	9.1	--	0.33	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Chromium	11	11	--	0.29	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Chromium	17	17	--	0.29	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Chromium	20	20	--	0.29	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Chromium	20	20	--	0.29	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Chromium	20	20	--	0.29	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Chromium	20	20	--	0.32	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Chromium	21	21	--	0.34	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Chromium	22	22	--	0.32	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Chromium	23	23	--	0.31	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Chromium	23	23	--	0.32	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Chromium	25	25	--	0.32	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Chromium	26	26	--	0.32	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Chromium	27	27	--	0.28	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Chromium	28	28	--	0.36	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Chromium	29	29	--	0.35	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Chromium	29	29	--	0.34	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Chromium	29	29	--	0.35	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Chromium	30	30	--	0.35	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Chromium	30	30	--	0.33	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Chromium	30	30	--	0.34	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Chromium	30	30	--	0.31	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Chromium	31	31	--	0.36	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Chromium	35	35	--	0.3	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Chromium	41	41	--	0.36	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Chromium	62	62	--	0.32	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Cobalt	1.6	1.6	--	0.17	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Cobalt	1.8	1.8	--	0.17	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Cobalt	1.8	1.8	--	0.18	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Cobalt	3.3	3.3	--	0.19	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Cobalt	3.3	3.3	--	0.16	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Cobalt	3.8	3.8	--	0.17	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Cobalt	4.8	4.8	--	0.16	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Cobalt	5	5.0	--	0.17	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Cobalt	5	5.0	--	0.18	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.1	5.1	--	0.16	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.3	5.3	--	0.15	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.3	5.3	--	0.16	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.3	5.3	--	0.17	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.4	5.4	--	0.17	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.5	5.5	--	0.15	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.7	5.7	--	0.17	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.9	5.9	--	0.18	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	5.9	5.9	--	0.19	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	6	6.0	--	0.19	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	6.2	6.2	--	0.2	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Cobalt	6.2	6.2	--	0.17	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Cobalt	6.5	6.5	--	0.19	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Cobalt	6.9	6.9	--	0.17	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Cobalt	7.3	7.3	--	0.18	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Cobalt	7.4	7.4	--	0.19	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Cobalt	7.5	7.5	--	0.19	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Cobalt	8.5	8.5	--	0.18	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Cobalt	9.1	9.1	--	0.16	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Cobalt	9.7	9.7	--	0.17	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Cobalt	12	12	--	0.17	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Copper	4.7	4.7	--	0.17	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Copper	5.6	5.6	--	0.16	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Copper	9.9	9.9	--	0.16	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Copper	36	36	--	0.18	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Copper	36	36	--	0.16	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Copper	45	45	--	0.15	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Copper	110	110	--	0.16	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Copper	120	120	--	0.15	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Copper	120	120	--	0.16	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Copper	130	130	--	0.16	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Copper	130	130	--	0.16	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Copper	150	150	--	0.14	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Copper	150	150	--	0.15	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Copper	160	160	--	0.14	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Copper	170	170	--	0.16	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Copper	200	200	--	0.17	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Copper	200	200	--	0.18	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Copper	200	200	--	0.18	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Copper	230	230	--	0.18	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Copper	230	230	--	0.15	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Copper	230	230	--	0.18	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Copper	250	250	--	0.18	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Copper	260	260	--	0.17	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Copper	290	290	--	0.16	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Copper	300	300	--	0.15	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Copper	310	310	--	0.16	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Copper	330	330	--	0.17	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Copper	410	410	--	0.16	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Copper	520	520	--	0.18	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Copper	2,900	2,900	--	1.7	15	mg/Kg-dry	40	13-Jan-15	11	Z7	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Iron	5,900	5,900	--	4.2	23	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Iron	6,300	6,300	--	4.4	24	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Iron	8,100	8,100	--	4.1	22	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Iron	11,000	11,000	--	4.7	26	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Iron	12,000	12,000	--	4.3	23	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Iron	15,000	15,000	--	3.9	21	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Iron	17,000	17,000	--	3.8	21	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Iron	19,000	19,000	--	3.7	20	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Iron	21,000	21,000	--	3.8	21	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Iron	22,000	22,000	--	3.8	21	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Iron	23,000	23,000	--	4.7	25	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Iron	23,000	23,000	--	4.2	23	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Iron	24,000	24,000	--	4.3	23	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Iron	25,000	25,000	--	3.8	21	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Iron	26,000	26,000	--	4.5	25	mg/Kg-dry	4	03-Feb-15	17	Z9	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Iron	27,000	27,000	--	4.1	22	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Iron	28,000	28,000	--	4.2	23	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Iron	29,000	29,000	--	4.5	25	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Iron	30,000	30,000	--	4.7	25	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Iron	30,000	30,000	--	4.2	23	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Iron	32,000	32,000	--	4.2	23	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Iron	33,000	33,000	--	4.4	24	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Iron	35,000	35,000	--	4.8	26	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Iron	37,000	37,000	--	4.1	22	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Iron	38,000	38,000	--	4	22	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Iron	40,000	40,000	--	4.7	26	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Iron	41,000	41,000	--	4.6	25	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Iron	43,000	43,000	--	4.3	24	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Iron	43,000	43,000	--	43	230	mg/Kg-dry	40	03-Feb-15	23	Z1	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Iron	47,000	47,000	--	4.7	26	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Lead	13	13	--	0.16	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Lead	14	14	--	0.15	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Lead	19	19	--	0.15	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Lead	74	74	--	0.17	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Lead	110	110	--	0.15	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Lead	140	140	--	0.15	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Lead	140	140	--	0.14	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Lead	210	210	--	0.15	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Lead	220	220	--	0.16	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Lead	230	230	--	0.14	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Lead	240	240	--	0.14	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Lead	300	300	--	0.13	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Lead	310	310	--	0.14	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Lead	350	350	--	0.13	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Lead	350	350	--	0.16	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Lead	360	360	--	0.15	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Lead	380	380	--	1.4	14	mg/Kg-dry	40	03-Feb-15	22	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Lead	380	380	--	0.16	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Lead	400	400	--	0.15	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Lead	420	420	--	0.16	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Lead	420	420	--	0.15	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Lead	460	460	--	0.17	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Lead	490	490	--	0.17	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Lead	500	500	--	1.4	14	mg/Kg-dry	40	13-Jan-15	12	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Lead	540	540	--	1.5	14	mg/Kg-dry	40	13-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Lead	560	560	--	1.5	15	mg/Kg-dry	40	13-Jan-15	11	Z7	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Lead	650	650	--	1.5	14	mg/Kg-dry	40	03-Feb-15	23	Z1	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Lead	680	680	--	1.7	16	mg/Kg-dry	40	13-Jan-15	6	Z5	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Lead	960	960	--	1.6	16	mg/Kg-dry	40	03-Feb-15	13	Z8	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Lead	1,000	1,000	--	1.6	16	mg/Kg-dry	40	13-Jan-15	10	Z7	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Manganese	97	97	--	0.23	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Manganese	130	130	--	0.24	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Manganese	140	140	--	0.22	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Manganese	190	190	--	0.26	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Manganese	210	210	--	0.23	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Manganese	210	210	--	0.21	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Manganese	240	240	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Manganese	270	270	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Manganese	280	280	--	0.23	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Manganese	290	290	--	0.25	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Manganese	310	310	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Manganese	320	320	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Manganese	340	340	--	0.25	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Manganese	340	340	--	0.2	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Manganese	360	360	--	0.23	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Manganese	380	380	--	0.23	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Manganese	380	380	--	0.25	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Manganese	390	390	--	0.25	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Manganese	390	390	--	0.24	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Manganese	400	400	--	0.26	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Manganese	400	400	--	0.23	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Manganese	420	420	--	0.22	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Manganese	420	420	--	0.22	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Manganese	430	430	--	0.26	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Manganese	430	430	--	0.23	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Manganese	450	450	--	0.25	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Manganese	450	450	--	0.22	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Manganese	470	470	--	0.24	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Manganese	700	700	--	2.6	16	mg/Kg-dry	40	13-Jan-15	6	Z5	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Manganese	720	720	--	2.3	14	mg/Kg-dry	40	03-Feb-15	23	Z1	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Nickel	4.8	4.8	--	0.76	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Nickel	4.8	4.8	--	0.81	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Nickel	5.2	5.2	--	0.77	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Nickel	11	11	--	0.87	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Nickel	15	15	--	0.71	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Nickel	17	17	--	0.79	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Nickel	25	25	--	0.77	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Nickel	28	28	--	0.83	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Nickel	28	28	--	0.78	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Nickel	30	30	--	0.78	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Nickel	31	31	--	0.77	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Nickel	32	32	--	0.83	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Nickel	33	33	--	0.7	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Nickel	33	33	--	0.71	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Nickel	33	33	--	0.88	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Nickel	34	34	--	0.7	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Nickel	35	35	--	0.85	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Nickel	37	37	--	0.68	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Nickel	39	39	--	0.86	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Nickel	40	40	--	0.8	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Nickel	40	40	--	0.85	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Nickel	40	40	--	0.76	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Nickel	42	42	--	0.87	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Nickel	50	50	--	0.75	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Nickel	51	51	--	0.73	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Nickel	52	52	--	0.85	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Nickel	52	52	--	0.78	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Nickel	54	54	--	0.7	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Nickel	56	56	--	0.81	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Nickel	58	58	--	0.78	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Selenium	0.59	0.59	J	0.29	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Selenium	0.62	0.62	J	0.33	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Selenium	0.63	0.63	J	0.3	1.2	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Selenium	0.64	0.64	J	0.34	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Selenium	0.67	0.67	J	0.32	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Selenium	0.67	0.67	J	0.3	1.1	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Selenium	0.71	0.71	J	0.3	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Selenium	0.77	0.77	J	0.3	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Selenium	0.78	0.78	J	0.3	1.2	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Selenium	0.82	0.82	J	0.27	1.1	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Selenium	0.84	0.84	J	0.29	1.1	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Selenium	0.85	0.85	J	0.33	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Selenium	0.85	0.85	J	0.3	1.2	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Selenium	0.87	0.87	J	0.27	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Selenium	0.92	0.92	J	0.33	1.3	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Selenium	0.93	0.93	J	0.31	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Selenium	0.96	0.96	J	0.3	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Selenium	0.96	0.96	J	0.33	1.3	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Selenium	0.98	0.98	J	0.31	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Selenium	1	1.0	J	0.28	1.1	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Selenium	1	1.0	J	0.27	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Selenium	1	1.0	J	0.27	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Selenium	1	1.0	J	0.27	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Selenium	1.1	1.1	J	0.34	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Selenium	1.1	1.1	J	0.29	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Selenium	1.1	1.1	J	0.32	1.2	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Selenium	1.2	1.2	J	0.33	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Selenium	1.3	1.3	--	0.31	1.2	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Selenium	1.3	1.3	J	0.3	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Selenium	1.5	1.5	--	0.26	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Silver	0.021	0.021	J	0.0056	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Silver	0.025	0.025	J	0.006	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Silver	0.057	0.057	J	0.0057	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Silver	0.32	0.32	J	0.0064	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Silver	0.33	0.33	J	0.0058	0.58	mg/Kg-dry	4	12-Jan-15	2	Z3	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Silver	0.46	0.46	J	0.0053	0.53	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Silver	0.52	0.52	J	0.0058	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Silver	0.78	0.78	J	0.0052	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Silver	1.2	1.2	--	0.0057	0.57	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Silver	1.3	1.3	J	0.0052	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Silver	1.3	1.3	J	0.0062	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Silver	1.3	1.3	J	0.0052	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Silver	1.3	1.3	J	0.006	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Silver	1.3	1.3	--	0.0058	0.58	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Silver	1.5	1.5	--	0.0061	0.61	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Silver	1.6	1.6	--	0.0057	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Silver	1.7	1.7	--	0.0051	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Silver	1.8	1.8	--	0.0056	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Silver	2.1	2.1	--	0.0065	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Silver	2.3	2.3	--	0.0063	0.63	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Silver	2.3	2.3	--	0.0064	0.64	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Silver	2.4	2.4	--	0.0054	0.54	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Silver	2.4	2.4	--	0.0058	0.58	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Silver	2.5	2.5	--	0.0063	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Silver	2.6	2.6	--	0.0059	0.59	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Silver	3.2	3.2	--	0.0052	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Silver	3.2	3.2	--	0.0056	0.56	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Silver	3.6	3.6	--	0.0058	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Silver	4.1	4.1	--	0.0065	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Silver	4.4	4.4	--	0.0063	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.15	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.14	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.14	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.14	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.14	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.18	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.15	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.15	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.15	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.15	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.14	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.14	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.15	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.15	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.17	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Thallium	--	U	U	0.16	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Vanadium	8.4	8.4	--	0.24	1.5	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Vanadium	8.7	8.7	--	0.22	1.4	mg/Kg-dry	4	12-Jan-15	12	Z7	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Vanadium	9	9.0	--	0.23	1.4	mg/Kg-dry	4	12-Jan-15	4	Z5	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Vanadium	9.3	9.3	--	0.24	1.4	mg/Kg-dry	4	12-Jan-15	9	Z6	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Vanadium	9.4	9.4	--	0.23	1.4	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Vanadium	9.4	9.4	--	0.22	1.3	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Vanadium	9.7	9.7	--	0.26	1.6	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Vanadium	10	10	--	0.25	1.5	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Vanadium	10	10	--	0.23	1.4	mg/Kg-dry	4	12-Jan-15	5	Z5	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Vanadium	10	10	--	0.24	1.4	mg/Kg-dry	4	12-Jan-15	8	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Vanadium	11	11	--	0.26	1.6	mg/Kg-dry	4	12-Jan-15	10	Z7	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	11	11	--	0.26	1.6	mg/Kg-dry	4	03-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Vanadium	11	11	--	0.23	1.4	mg/Kg-dry	4	03-Feb-15	22	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Vanadium	11	11	--	0.24	1.4	mg/Kg-dry	4	03-Feb-15	24	Z1	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Vanadium	11	11	--	0.23	1.4	mg/Kg-dry	4	03-Feb-15	26	Z10	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Vanadium	11	11	--	0.25	1.5	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	12	12	--	0.26	1.6	mg/Kg-dry	4	03-Feb-15	19	Z2	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	12	12	--	0.27	1.6	mg/Kg-dry	4	03-Feb-15	20	Z2	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Vanadium	13	13	--	0.24	1.5	mg/Kg-dry	4	12-Jan-15	11	Z7	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	13	13	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	13	13	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	13	13	--	0.25	1.5	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	13	13	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Vanadium	13	13	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	29	Z4	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Vanadium	13	13	--	0.24	1.4	mg/Kg-dry	4	03-Feb-15	30	Z4	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	14	14	--	0.26	1.6	mg/Kg-dry	4	03-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Vanadium	14	14	--	0.21	1.3	mg/Kg-dry	4	03-Feb-15	14	Z8	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Vanadium	16	16	--	0.24	1.4	mg/Kg-dry	4	03-Feb-15	23	Z1	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Vanadium	16	16	--	0.25	1.5	mg/Kg-dry	4	03-Feb-15	28	Z4	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Vanadium	19	19	--	0.26	1.6	mg/Kg-dry	4	12-Jan-15	6	Z5	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Metals by ICP-MS	Zinc	22	22	--	1.1	3	mg/Kg-dry	4	03-Feb-15	27	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Metals by ICP-MS	Zinc	25	25	--	1	2.8	mg/Kg-dry	4	03-Feb-15	26	Z10	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Metals by ICP-MS	Zinc	36	36	--	1	2.9	mg/Kg-dry	4	03-Feb-15	25	Z10	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Metals by ICP-MS	Zinc	180	180	--	1.2	3.2	mg/Kg-dry	4	12-Jan-15	1	Z3	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Metals by ICP-MS	Zinc	180	180	--	0.95	2.6	mg/Kg-dry	4	12-Jan-15	3	Z3	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Metals by ICP-MS	Zinc	190	190	--	1	2.9	mg/Kg-dry	4	12-Jan-15	2	Z3	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Metals by ICP-MS	Zinc	410	410	--	0.94	2.6	mg/Kg-dry	4	03-Feb-15	18	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Metals by ICP-MS	Zinc	440	440	--	0.94	2.6	mg/Kg-dry	4	03-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Metals by ICP-MS	Zinc	440	440	--	1.1	3.1	mg/Kg-dry	4	03-Feb-15	17	Z9	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Metals by ICP-MS	Zinc	510	510	--	9.3	26	mg/Kg-dry	40	03-Feb-15	14	Z8	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Metals by ICP-MS	Zinc	530	530	--	1.1	3.1	mg/Kg-dry	4	12-Jan-15	7	Z6	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Metals by ICP-MS	Zinc	560	560	--	9.1	25	mg/Kg-dry	40	03-Feb-15	15	Z8	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Metals by ICP-MS	Zinc	580	580	--	10	29	mg/Kg-dry	40	13-Jan-15	8	Z6	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Metals by ICP-MS	Zinc	590	590	--	10	28	mg/Kg-dry	40	03-Feb-15	22	Z1	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Metals by ICP-MS	Zinc	640	640	--	10	28	mg/Kg-dry	40	13-Jan-15	4	Z5	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Metals by ICP-MS	Zinc	690	690	--	12	33	mg/Kg-dry	40	05-Feb-15	20	Z2	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Metals by ICP-MS	Zinc	740	740	--	10	29	mg/Kg-dry	40	13-Jan-15	9	Z6	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Metals by ICP-MS	Zinc	760	760	--	10	29	mg/Kg-dry	40	03-Feb-15	24	Z1	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Metals by ICP-MS	Zinc	780	780	--	12	32	mg/Kg-dry	40	05-Feb-15	19	Z2	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Metals by ICP-MS	Zinc	810	810	--	11	32	mg/Kg-dry	40	03-Feb-15	13	Z8	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Metals by ICP-MS	Zinc	820	820	--	11	31	mg/Kg-dry	40	05-Feb-15	21	Z2	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Metals by ICP-MS	Zinc	880	880	--	10	28	mg/Kg-dry	40	13-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Metals by ICP-MS	Zinc	920	920	--	11	32	mg/Kg-dry	40	13-Jan-15	6	Z5	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Metals by ICP-MS	Zinc	940	940	--	9.4	26	mg/Kg-dry	40	03-Feb-15	29	Z4	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Metals by ICP-MS	Zinc	950	950	--	10	29	mg/Kg-dry	40	03-Feb-15	23	Z1	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Metals by ICP-MS	Zinc	960	960	--	11	32	mg/Kg-dry	40	13-Jan-15	10	Z7	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Metals by ICP-MS	Zinc	970	970	--	11	30	mg/Kg-dry	40	03-Feb-15	28	Z4	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Metals by ICP-MS	Zinc	1,100	1,100	--	9.7	27	mg/Kg-dry	40	13-Jan-15	12	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Metals by ICP-MS	Zinc	1,500	1,500	--	11	30	mg/Kg-dry	40	13-Jan-15	11	Z7	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Metals by ICP-MS	Zinc	1,800	1,800	--	10	29	mg/Kg-dry	40	03-Feb-15	30	Z4	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	Moisture	Moisture	0.14	0.14	--	0.025	0.05	% of sample	1	05-Feb-15	26	Z10	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	Moisture	Moisture	0.19	0.19	--	0.025	0.05	% of sample	1	05-Feb-15	24	Z1	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	Moisture	Moisture	0.2	0.20	--	0.025	0.05	% of sample	1	05-Feb-15	27	Z10	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	Moisture	Moisture	0.21	0.21	--	0.025	0.05	% of sample	1	05-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	Moisture	Moisture	0.23	0.23	--	0.025	0.05	% of sample	1	05-Feb-15	23	Z1	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	Moisture	Moisture	0.23	0.23	--	0.025	0.05	% of sample	1	05-Feb-15	30	Z4	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	Moisture	Moisture	0.25	0.25	--	0.025	0.05	% of sample	1	05-Feb-15	18	Z9	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	Moisture	Moisture	0.26	0.26	--	0.025	0.05	% of sample	1	05-Feb-15	16	Z9	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	Moisture	Moisture	0.26	0.26	--	0.025	0.05	% of sample	1	12-Jan-15	9	Z6	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	Moisture	Moisture	0.28	0.28	--	0.025	0.05	% of sample	1	05-Feb-15	29	Z4	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	Moisture	Moisture	0.3	0.30	--	0.025	0.05	% of sample	1	05-Feb-15	14	Z8	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	Moisture	Moisture	0.3	0.30	--	0.025	0.05	% of sample	1	12-Jan-15	2	Z3	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	Moisture	Moisture	0.31	0.31	--	0.025	0.05	% of sample	1	05-Feb-15	28	Z4	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	Moisture	Moisture	0.32	0.32	--	0.025	0.05	% of sample	1	12-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	Moisture	Moisture	0.33	0.33	--	0.025	0.05	% of sample	1	12-Jan-15	12	Z7	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	Moisture	Moisture	0.33	0.33	--	0.025	0.05	% of sample	1	05-Feb-15	15	Z8	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	Moisture	Moisture	0.33	0.33	--	0.025	0.05	% of sample	1	05-Feb-15	17	Z9	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	Moisture	Moisture	0.36	0.36	--	0.025	0.05	% of sample	1	05-Feb-15	13	Z8	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	Moisture	Moisture	0.37	0.37	--	0.025	0.05	% of sample	1	12-Jan-15	10	Z7	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	Moisture	Moisture	0.39	0.39	--	0.025	0.05	% of sample	1	12-Jan-15	8	Z6	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	Moisture	Moisture	0.4	0.40	--	0.025	0.05	% of sample	1	12-Jan-15	7	Z6	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	Moisture	Moisture	0.41	0.41	--	0.025	0.05	% of sample	1	12-Jan-15	3	Z3	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	Moisture	Moisture	0.42	0.42	--	0.025	0.05	% of sample	1	05-Feb-15	25	Z10	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	Moisture	Moisture	0.46	0.46	--	0.025	0.05	% of sample	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	Moisture	Moisture	0.46	0.46	--	0.025	0.05	% of sample	1	12-Jan-15	1	Z3	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-20-Z2	1502016-08	23-Jan-15	Soil	Moisture	Moisture	0.47	0.47	--	0.025	0.05	% of sample	1	05-Feb-15	20	Z2	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	Moisture	Moisture	0.48	0.48	--	0.025	0.05	% of sample	1	12-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	Moisture	Moisture	0.55	0.55	--	0.025	0.05	% of sample	1	12-Jan-15	5	Z5	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	Moisture	Moisture	0.6	0.60	--	0.025	0.05	% of sample	1	05-Feb-15	21	Z2	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	Moisture	Moisture	0.62	0.62	--	0.025	0.05	% of sample	1	12-Jan-15	6	Z5	2015
ISM-22-Z1	1502016-13	26-Jan-15	Soil	Moisture	Moisture	22	22	--	0.025	0.05	% of sample	1	30-Jan-15	22	Z1	2015
ISM-23-Z1	1502015-01	27-Jan-15	Soil	Moisture	Moisture	22	22	--	0.025	0.05	% of sample	1	30-Jan-15	23	Z1	2015
ISM-24-Z1	1502015-02	27-Jan-15	Soil	Moisture	Moisture	22	22	--	0.025	0.05	% of sample	1	30-Jan-15	24	Z1	2015
ISM-28-Z4	1502013-04	28-Jan-15	Soil	Moisture	Moisture	22.3	22.3	--	0.025	0.05	% of sample	1	30-Jan-15	28	Z4	2015
ISM-29-Z4	1502014-01	29-Jan-15	Soil	Moisture	Moisture	22.3	22.3	--	0.025	0.05	% of sample	1	30-Jan-15	29	Z4	2015
ISM-30-Z4	1502014-02	29-Jan-15	Soil	Moisture	Moisture	22.3	22.3	--	0.025	0.05	% of sample	1	30-Jan-15	30	Z4	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	79	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	25	79	µg/Kg-dry	1	05-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	79	µg/Kg-dry	1	20-Jan-15	3	Z3	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	84	µg/Kg-dry	1	20-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	Aroclor 1016	--	U	U	25	79	µg/Kg-dry	1	15-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	79	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	25	79	µg/Kg-dry	1	05-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	79	µg/Kg-dry	1	20-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	84	µg/Kg-dry	1	20-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	8	Z6	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	Aroclor 1221	--	U	U	25	79	µg/Kg-dry	1	15-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	79	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	25	79	µg/Kg-dry	1	05-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	79	µg/Kg-dry	1	20-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	84	µg/Kg-dry	1	20-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	Aroclor 1232	--	U	U	25	79	µg/Kg-dry	1	15-Jan-15	9	Z6	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	15-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	04-Feb-15	13	Z8	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	79	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	25	79	µg/Kg-dry	1	05-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	79	µg/Kg-dry	1	20-Jan-15	3	Z3	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	84	µg/Kg-dry	1	20-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	5	Z5	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	7	Z6	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	Aroclor 1242	--	U	U	25	79	µg/Kg-dry	1	15-Jan-15	9	Z6	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	81	µg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	21	Z2	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	79	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	80	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	81	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	25	79	µg/Kg-dry	1	05-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	27	83	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	82	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	79	µg/Kg-dry	1	20-Jan-15	3	Z3	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	27	83	µg/Kg-dry	1	15-Jan-15	6	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	Aroclor 1248	--	U	U	26	82	µg/Kg-dry	1	15-Jan-15	7	Z6	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	Aroclor 1248	150	150	--	27	83	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	Aroclor 1248	230	230	--	26	81	µg/Kg-dry	1	15-Jan-15	10	Z7	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	Aroclor 1248	230	230	--	25	79	µg/Kg-dry	1	15-Jan-15	9	Z6	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	Aroclor 1248	260	260	--	26	81	µg/Kg-dry	1	15-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	Aroclor 1248	290	290	--	26	81	µg/Kg-dry	1	15-Jan-15	12	Z7	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	Aroclor 1248	390	390	--	27	83	µg/Kg-dry	1	15-Jan-15	5	Z5	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	Aroclor 1248	1,100	1,100	--	27	84	µg/Kg-dry	1	20-Jan-15	4	Z5	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	Aroclor 1248	1,100	1,100	--	26	82	µg/Kg-dry	1	15-Jan-15	8	Z6	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	31	83	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	30	81	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	30	80	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	31	81	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	30	79	µg/Kg-dry	1	05-Feb-15	28	Z4	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	31	84	µg/Kg-dry	1	20-Jan-15	4	Z5	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	31	83	µg/Kg-dry	1	15-Jan-15	5	Z5	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	Aroclor 1254	--	U	U	31	82	µg/Kg-dry	1	15-Jan-15	8	Z6	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	Aroclor 1254	33	33	J	31	83	µg/Kg-dry	1	15-Jan-15	2	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	Aroclor 1254	78	78	J	30	81	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	Aroclor 1254	110	110	--	30	81	µg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	Aroclor 1254	120	120	--	31	81	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	Aroclor 1254	120	120		30	80	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	Aroclor 1254	130	130	--	31	82	µg/Kg-dry	1	05-Feb-15	18	Z9	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	Aroclor 1254	130	130	--	30	79	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	Aroclor 1254	140	140		31	83	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	Aroclor 1254	140	140	--	30	79	µg/Kg-dry	1	15-Jan-15	9	Z6	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	Aroclor 1254	230	230	--	31	83	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	Aroclor 1254	230	230	--	31	82	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	Aroclor 1254	240	240	--	31	81	µg/Kg-dry	1	15-Jan-15	10	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	Aroclor 1254	250	250	--	30	81	µg/Kg-dry	1	15-Jan-15	12	Z7	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	Aroclor 1254	260	260	--	31	83	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	Aroclor 1254	270	270	--	30	80	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	Aroclor 1254	300	300	--	31	82	µg/Kg-dry	1	15-Jan-15	7	Z6	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	Aroclor 1254	330	330	--	31	83	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	Aroclor 1254	330	330	--	30	79	µg/Kg-dry	1	20-Jan-15	3	Z3	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	Aroclor 1254	440	440	--	31	83	µg/Kg-dry	1	15-Jan-15	6	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	Aroclor 1254	450	450	--	30	81	µg/Kg-dry	1	15-Jan-15	11	Z7	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	Aroclor 1254	490	490	--	31	83	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	Aroclor 1254	3,400	3,400	--	150	410	µg/Kg-dry	5	06-Feb-15	22	Z1	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	81	µg/Kg-dry	1	15-Jan-15	10	Z7	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	81	µg/Kg-dry	1	15-Jan-15	11	Z7	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	81	µg/Kg-dry	1	15-Jan-15	12	Z7	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	81	µg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	81	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	80	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	82	µg/Kg-dry	1	05-Feb-15	18	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	80	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	82	µg/Kg-dry	1	05-Feb-15	22	Z1	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	79	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	81	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	81	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	80	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	81	µg/Kg-dry	1	05-Feb-15	27	Z10	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	15-Jan-15	2	Z3	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	82	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	79	µg/Kg-dry	1	20-Jan-15	3	Z3	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	83	µg/Kg-dry	1	15-Jan-15	6	Z5	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	31	82	µg/Kg-dry	1	15-Jan-15	8	Z6	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	Aroclor 1260	--	U	U	30	79	µg/Kg-dry	1	15-Jan-15	9	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	Aroclor 1260	180	180	--	31	83	µg/Kg-dry	1	15-Jan-15	5	Z5	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	Aroclor 1260	240	240	--	31	82	µg/Kg-dry	1	15-Jan-15	7	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	Aroclor 1260	360	360	--	31	84	µg/Kg-dry	1	20-Jan-15	4	Z5	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	Aroclor 1260	470	470	--	30	79	µg/Kg-dry	1	05-Feb-15	28	Z4	2015

Table A-3
Metals and PCB Data for Incremental Soil Samples

Client Samp ID	Frac ID	Collection Date	Media	Test Name	Van Buren Analyte	Result	Final Result	Qual	RMDL	R Limit	R Units	Dilution Factor	Anal Date	Cell	Zone	Year
ISM-1-Z3	1501301-01	06-Jan-15	Soil	PCBs	PCBs, Total	--	U	U	--	--	µg/Kg-dry	1	15-Jan-15	1	Z3	2015
ISM-25-Z10	1502016-10	26-Jan-15	Soil	PCBs	PCBs, Total	--	U	U	--	--	µg/Kg-dry	1	05-Feb-15	25	Z10	2015
ISM-26-Z10	1502016-11	26-Jan-15	Soil	PCBs	PCBs, Total	--	U	U	--	--	µg/Kg-dry	1	05-Feb-15	26	Z10	2015
ISM-27-Z10	1502016-12	26-Jan-15	Soil	PCBs	PCBs, Total	--	U	U	--	--	µg/Kg-dry	1	05-Feb-15	27	Z10	2015
ISM-2-Z3	1501301-02	06-Jan-15	Soil	PCBs	PCBs, Total	1070	--	--	--	--	µg/Kg-dry	--	--	2	Z3	2015
ISM-24-Z1	1502013-03	28-Jan-15	Soil	PCBs	PCBs, Total	78	78	--	--	--	µg/Kg-dry	1	05-Feb-15	24	Z1	2015
ISM-13-Z8	1502016-01	23-Jan-15	Soil	PCBs	PCBs, Total	110	110	--	--	--	µg/Kg-dry	1	04-Feb-15	13	Z8	2015
ISM-14-Z8	1502016-02	23-Jan-15	Soil	PCBs	PCBs, Total	120	120	--	--	--	µg/Kg-dry	1	05-Feb-15	14	Z8	2015
ISM-15-Z8	1502016-03	23-Jan-15	Soil	PCBs	PCBs, Total	120	120	--	--	--	µg/Kg-dry	1	05-Feb-15	15	Z8	2015
ISM-18-Z9	1502016-06	23-Jan-15	Soil	PCBs	PCBs, Total	130	130	--	--	--	µg/Kg-dry	1	05-Feb-15	18	Z9	2015
ISM-23-Z1	1502013-02	28-Jan-15	Soil	PCBs	PCBs, Total	130	130	--	--	--	µg/Kg-dry	1	05-Feb-15	23	Z1	2015
ISM-16-Z9	1502016-04	23-Jan-15	Soil	PCBs	PCBs, Total	230	230	--	--	--	µg/Kg-dry	1	05-Feb-15	16	Z9	2015
ISM-30-Z4	1502011-03	30-Jan-15	Soil	PCBs	PCBs, Total	230	230	--	--	--	µg/Kg-dry	1	05-Feb-15	30	Z4	2015
ISM-20-Z2	1502016-08	23-Jan-15	Soil	PCBs	PCBs, Total	260	260	--	--	--	µg/Kg-dry	1	05-Feb-15	20	Z2	2015
ISM-21-Z2	1502016-09	23-Jan-15	Soil	PCBs	PCBs, Total	270	270	--	--	--	µg/Kg-dry	1	05-Feb-15	21	Z2	2015
ISM-17-Z9	1502016-05	23-Jan-15	Soil	PCBs	PCBs, Total	280	280	--	--	--	µg/Kg-dry	1	06-Feb-15	17	Z9	2015
ISM-19-Z2	1502016-07	23-Jan-15	Soil	PCBs	PCBs, Total	330	330	--	--	--	µg/Kg-dry	1	05-Feb-15	19	Z2	2015
ISM-3-Z3	1501301-03	06-Jan-15	Soil	PCBs	PCBs, Total	1730	--	--	--	--	µg/Kg-dry	--	--	3	Z3	2015
ISM-9-Z6	1501301-09	07-Jan-15	Soil	PCBs	PCBs, Total	3330	--	--	--	--	µg/Kg-dry	--	--	9	Z6	2015
ISM-6-Z5	1501301-06	07-Jan-15	Soil	PCBs	PCBs, Total	6430	--	--	--	--	µg/Kg-dry	--	--	6	Z5	2015
ISM-10-Z7	1501301-10	08-Jan-15	Soil	PCBs	PCBs, Total	12630	--	--	--	--	µg/Kg-dry	--	--	10	Z7	2015
ISM-28-Z4	1502011-01	30-Jan-15	Soil	PCBs	PCBs, Total	470	470	--	--	--	µg/Kg-dry	1	05-Feb-15	28	Z4	2015
ISM-29-Z4	1502011-02	30-Jan-15	Soil	PCBs	PCBs, Total	490	490	--	--	--	µg/Kg-dry	1	05-Feb-15	29	Z4	2015
ISM-12-Z7	1501301-12	08-Jan-15	Soil	PCBs	PCBs, Total	25410	--	--	--	--	µg/Kg-dry	--	--	12	Z7	2015
ISM-7-Z6	1501301-07	07-Jan-15	Soil	PCBs	PCBs, Total	50490	--	--	--	--	µg/Kg-dry	--	--	7	Z6	2015
ISM-5-Z5	1501301-05	07-Jan-15	Soil	PCBs	PCBs, Total	99250	--	--	--	--	µg/Kg-dry	--	--	5	Z5	2015
ISM-11-Z7	1501301-11	08-Jan-15	Soil	PCBs	PCBs, Total	195170	--	--	--	--	µg/Kg-dry	--	--	11	Z7	2015
ISM-8-Z6	1501301-08	07-Jan-15	Soil	PCBs	PCBs, Total	383910	--	--	--	--	µg/Kg-dry	--	--	8	Z6	2015
ISM-4-Z5	1501301-04	06-Jan-15	Soil	PCBs	PCBs, Total	755190	--	--	--	--	µg/Kg-dry	--	--	4	Z5	2015
ISM-22-Z1	1502013-01	28-Jan-15	Soil	PCBs	PCBs, Total	3,400	3,400	--	--	--	µg/Kg-dry	5	06-Feb-15	22	Z1	2015

Notes:
µg/Kg-dry = micrograms per kilogram-dry weight
CVAA = cold vapor atomic absorption
ICP-MS = Inductively Coupled Plasma-Mass Spectrometry
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
RMDL = Recommended Method Detection Limit
SL = screening level

Qualifier Notes:
H = Analyzed outside of Holding Time
J = Analyte is present at an estimated concentration between MDL and Report Limit
U = Analyzed but not detected above MDL

Table A-4a
By Zones Exposure Data and UCL Calculations

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (antimony***z1***soil)	Antimony	z1	3	0	5.1	14	8.5	4.807	0.566	soil	0.05	2.92	17	21	18	mg/kg (dry)
Result_MDL (antimony***z10***soil)	Antimony	z10	3	0	0.37	0.4	0.383	0.0153	0.0398	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (antimony***z2***soil)	Antimony	z2	3	0	6.7	8.7	7.967	1.102	0.138	soil	0.05	2.92	10	11	10	mg/kg (dry)
Result_MDL (antimony***z3***soil)	Antimony	z3	3	0	1.4	2.1	1.867	0.404	0.217	soil	0.05	2.92	3	3	3	mg/kg (dry)
Result_MDL (antimony***z4***soil)	Antimony	z4	3	0	2.7	6.8	4.2	2.261	0.538	soil	0.05	2.92	8	10	9	mg/kg (dry)
Result_MDL (antimony***z5***soil)	Antimony	z5	3	0	8.2	12	9.667	2.043	0.211	soil	0.05	2.92	13	15	14	mg/kg (dry)
Result_MDL (antimony***z6***soil)	Antimony	z6	3	0	6.8	13	8.9	3.551	0.399	soil	0.05	2.92	15	18	16	mg/kg (dry)
Result_MDL (antimony***z7***soil)	Antimony	z7	3	0	11	13	12	1	0.0833	soil	0.05	2.92	14	15	14	mg/kg (dry)
Result_MDL (antimony***z8***soil)	Antimony	z8	3	0	9.1	20	12.8	6.236	0.487	soil	0.05	2.92	23	28	26	mg/kg (dry)
Result_MDL (antimony***z9***soil)	Antimony	z9	3	0	5.4	6.3	5.9	0.458	0.0777	soil	0.05	2.92	7	7	7	mg/kg (dry)
Result_MDL (aroclor 1254***z1***soil)	Aroclor 1254	z1	3	0	78	3400	1203	1903	1.582	soil	0.05	2.92	4,411	5,992	5,141	µg/kg (dry)
Result_MDL (aroclor 1254***z10***soil)	Aroclor 1254	z10	3	0	30	31	30.33	0.577	0.019	soil	0.05	2.92	31	32	32	µg/kg (dry)
Result_MDL (aroclor 1254***z2***soil)	Aroclor 1254	z2	3	0	260	330	286.7	37.86	0.132	soil	0.05	2.92	351	382	366	µg/kg (dry)
Result_MDL (aroclor 1254***z3***soil)	Aroclor 1254	z3	3	0	31	330	131.3	172.1	1.31	soil	0.05	2.92	421	564	488	µg/kg (dry)
Result_MDL (aroclor 1254***z4***soil)	Aroclor 1254	z4	3	0	30	490	250	230.7	0.923	soil	0.05	2.92	639	831	728	µg/kg (dry)
Result_MDL (aroclor 1254***z5***soil)	Aroclor 1254	z5	3	0	31	440	167.3	236.1	1.411	soil	0.05	2.92	565	761	656	µg/kg (dry)
Result_MDL (aroclor 1254***z6***soil)	Aroclor 1254	z6	3	0	31	300	157	135.3	0.862	soil	0.05	2.92	385	497	438	µg/kg (dry)
Result_MDL (aroclor 1254***z7***soil)	Aroclor 1254	z7	3	0	240	450	313.3	118.5	0.378	soil	0.05	2.92	513	612	560	µg/kg (dry)
Result_MDL (aroclor 1254***z8***soil)	Aroclor 1254	z8	3	0	110	120	116.7	5.774	0.0495	soil	0.05	2.92	126	131	129	µg/kg (dry)
Result_MDL (aroclor 1254***z9***soil)	Aroclor 1254	z9	3	0	130	230	166.7	55.08	0.33	soil	0.05	2.92	260	305	282	µg/kg (dry)
Result_MDL (barium***z1***soil)	Barium	z1	3	0	150	320	210	95.39	0.454	soil	0.05	2.92	371	450	409	mg/kg (dry)
Result_MDL (barium***z10***soil)	Barium	z10	3	0	22	32	26.67	5.033	0.189	soil	0.05	2.92	35	39	37	mg/kg (dry)
Result_MDL (barium***z2***soil)	Barium	z2	3	0	230	250	240	10	0.0417	soil	0.05	2.92	257	265	261	mg/kg (dry)
Result_MDL (barium***z3***soil)	Barium	z3	3	0	44	59	52.67	7.767	0.147	soil	0.05	2.92	66	72	69	mg/kg (dry)
Result_MDL (barium***z4***soil)	Barium	z4	3	0	140	200	163.3	32.15	0.197	soil	0.05	2.92	218	244	230	mg/kg (dry)
Result_MDL (barium***z5***soil)	Barium	z5	3	0	150	430	283.3	140.5	0.496	soil	0.05	2.92	520	637	576	mg/kg (dry)
Result_MDL (barium***z6***soil)	Barium	z6	3	0	170	200	183.3	15.28	0.0833	soil	0.05	2.92	209	222	215	mg/kg (dry)
Result_MDL (barium***z7***soil)	Barium	z7	3	0	220	300	266.7	41.63	0.156	soil	0.05	2.92	337	371	354	mg/kg (dry)
Result_MDL (barium***z8***soil)	Barium	z8	3	0	220	400	333.3	98.66	0.296	soil	0.05	2.92	500	582	539	mg/kg (dry)
Result_MDL (barium***z9***soil)	Barium	z9	3	0	150	450	276.7	155.3	0.562	soil	0.05	2.92	539	668	600	mg/kg (dry)
Result_MDL (benzo(a)anthracene***z1***soil)	Benzo(a)anthracene	z1	3	0	480	1300	756.7	470.6	0.622	soil	0.05	2.92	1,550	1,941	1,735	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z10***soil)	Benzo(a)anthracene	z10	3	0	31	48	40.67	8.737	0.215	soil	0.05	2.92	55	63	59	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z2***soil)	Benzo(a)anthracene	z2	3	0	99	340	199.7	125.3	0.628	soil	0.05	2.92	411	515	460	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z3***soil)	Benzo(a)anthracene	z3	3	0	160	380	280	111.4	0.398	soil	0.05	2.92	468	560	512	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z4***soil)	Benzo(a)anthracene	z4	3	0	450	580	520	65.57	0.126	soil	0.05	2.92	631	685	657	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z5***soil)	Benzo(a)anthracene	z5	3	0	5900	15000	9200	5039	0.548	soil	0.05	2.92	17,695	21,881	19,677	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z6***soil)	Benzo(a)anthracene	z6	3	0	1800	3500	2400	953.9	0.397	soil	0.05	2.92	4,008	4,801	4,387	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z7***soil)	Benzo(a)anthracene	z7	3	0	4800	7400	5733	1447	0.252	soil	0.05	2.92	8,172	9,375	8,753	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z8***soil)	Benzo(a)anthracene	z8	3	0	66	320	161.3	138.3	0.857	soil	0.05	2.92	394	509	448	µg/kg (dry)
Result_MDL (benzo(a)anthracene***z9***soil)	Benzo(a)anthracene	z9	3	0	600	1600	1100	500	0.455	soil	0.05	2.92	1,943	2,358	2,141	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z1***soil)	Benzo(a)pyrene	z1	3	0	410	1100	650	390	0.6	soil	0.05	2.92	1,307	1,631	1,461	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z10***soil)	Benzo(a)pyrene	z10	3	0	58	72	64.67	7.024	0.109	soil	0.05	2.92	77	82	79	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z2***soil)	Benzo(a)pyrene	z2	3	0	120	300	196.7	92.92	0.472	soil	0.05	2.92	353	431	390	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z3***soil)	Benzo(a)pyrene	z3	3	0	150	390	253.3	123.4	0.487	soil	0.05	2.92	461	564	510	µg/kg (dry)

Table A-4a
By Zones Exposure Data and UCL Calculations

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (benzo(a)pyrene***z4***soil)	Benzo(a)pyrene	z4	3	0	610	710	656.7	50.33	0.0766	soil	0.05	2.92	742	783	762	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z5***soil)	Benzo(a)pyrene	z5	3	0	4500	12000	7300	4095	0.561	soil	0.05	2.92	14,204	17,606	15,813	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z6***soil)	Benzo(a)pyrene	z6	3	0	1600	3000	2100	781	0.372	soil	0.05	2.92	3,417	4,065	3,727	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z7***soil)	Benzo(a)pyrene	z7	3	0	3600	5800	4467	1172	0.262	soil	0.05	2.92	6,443	7,416	6,913	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z8***soil)	Benzo(a)pyrene	z8	3	0	85	380	191.7	163.6	0.853	soil	0.05	2.92	468	603	531	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z9***soil)	Benzo(a)pyrene	z9	3	0	570	1300	936.7	365	0.39	soil	0.05	2.92	1,552	1,855	1,697	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z1***soil)	Benzo(b)fluoranthene	z1	3	0	650	1800	1040	658.3	0.633	soil	0.05	2.92	2,150	2,697	2,408	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z10***soil)	Benzo(b)fluoranthene	z10	3	0	83	97	88.67	7.371	0.0831	soil	0.05	2.92	101	107	104	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z2***soil)	Benzo(b)fluoranthene	z2	3	0	170	510	316.7	174.7	0.552	soil	0.05	2.92	611	756	680	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z3***soil)	Benzo(b)fluoranthene	z3	3	0	230	660	416.7	220.5	0.529	soil	0.05	2.92	788	972	875	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z4***soil)	Benzo(b)fluoranthene	z4	3	0	910	1000	950	45.83	0.0482	soil	0.05	2.92	1,027	1,065	1,046	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z5***soil)	Benzo(b)fluoranthene	z5	3	0	6800	16000	10067	5147	0.511	soil	0.05	2.92	18,744	23,020	20,772	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z6***soil)	Benzo(b)fluoranthene	z6	3	0	2300	4000	2933	929.2	0.317	soil	0.05	2.92	4,499	5,271	4,870	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z7***soil)	Benzo(b)fluoranthene	z7	3	0	5300	7600	6100	1300	0.213	soil	0.05	2.92	8,292	9,372	8,815	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z8***soil)	Benzo(b)fluoranthene	z8	3	0	120	540	273.3	231.8	0.848	soil	0.05	2.92	664	857	754	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z9***soil)	Benzo(b)fluoranthene	z9	3	0	880	1900	1393	510	0.366	soil	0.05	2.92	2,253	2,676	2,456	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z1***soil)	Benzo(g,h,i)perylene	z1	3	0	300	860	503.3	309.9	0.616	soil	0.05	2.92	1,026	1,283	1,147	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z10***soil)	Benzo(g,h,i)perylene	z10	3	0	56	71	63	7.55	0.12	soil	0.05	2.92	76	82	79	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z2***soil)	Benzo(g,h,i)perylene	z2	3	0	110	250	173.3	70.95	0.409	soil	0.05	2.92	293	352	321	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z3***soil)	Benzo(g,h,i)perylene	z3	3	0	150	450	270	158.7	0.588	soil	0.05	2.92	538	669	600	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z4***soil)	Benzo(g,h,i)perylene	z4	3	0	560	670	610	55.68	0.0913	soil	0.05	2.92	704	750	727	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z5***soil)	Benzo(g,h,i)perylene	z5	3	0	3600	8400	5400	2615	0.484	soil	0.05	2.92	9,809	11,981	10,840	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z6***soil)	Benzo(g,h,i)perylene	z6	3	0	1300	2300	1667	550.8	0.33	soil	0.05	2.92	2,596	3,053	2,815	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z7***soil)	Benzo(g,h,i)perylene	z7	3	0	2900	4100	3333	665.8	0.2	soil	0.05	2.92	4,455	5,009	4,724	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z8***soil)	Benzo(g,h,i)perylene	z8	3	0	82	340	177.3	141.6	0.798	soil	0.05	2.92	416	534	471	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z9***soil)	Benzo(g,h,i)perylene	z9	3	0	530	1000	746.7	237.1	0.318	soil	0.05	2.92	1,146	1,343	1,241	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z1***soil)	Benzo(k)fluoranthene	z1	3	0	230	580	346.7	202.1	0.583	soil	0.05	2.92	687	855	767	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z10***soil)	Benzo(k)fluoranthene	z10	3	0	43	53	46.67	5.508	0.118	soil	0.05	2.92	56	61	58	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z2***soil)	Benzo(k)fluoranthene	z2	3	0	69	190	119.7	62.85	0.525	soil	0.05	2.92	226	278	250	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z3***soil)	Benzo(k)fluoranthene	z3	3	0	90	230	153.3	70.95	0.463	soil	0.05	2.92	273	332	301	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z4***soil)	Benzo(k)fluoranthene	z4	3	0	330	1000	730	353.4	0.484	soil	0.05	2.92	1,326	1,619	1,465	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z5***soil)	Benzo(k)fluoranthene	z5	3	0	3100	6900	4367	2194	0.502	soil	0.05	2.92	8,066	9,888	8,931	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z6***soil)	Benzo(k)fluoranthene	z6	3	0	950	1700	1217	419.3	0.345	soil	0.05	2.92	1,924	2,272	2,091	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z7***soil)	Benzo(k)fluoranthene	z7	3	0	2100	3200	2500	608.3	0.243	soil	0.05	2.92	3,526	4,031	3,770	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z8***soil)	Benzo(k)fluoranthene	z8	3	0	53	250	124.3	109.2	0.878	soil	0.05	2.92	308	399	351	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z9***soil)	Benzo(k)fluoranthene	z9	3	0	380	730	530	180.3	0.34	soil	0.05	2.92	834	984	906	µg/kg (dry)
Result_MDL (cadmium***z1***soil)	Cadmium	z1	3	0	3.7	8.4	5.8	2.39	0.412	soil	0.05	2.92	10	12	11	mg/kg (dry)
Result_MDL (cadmium***z10***soil)	Cadmium	z10	3	0	0.17	0.34	0.25	0.0854	0.342	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (cadmium***z2***soil)	Cadmium	z2	3	0	4.7	7.8	5.967	1.626	0.272	soil	0.05	2.92	9	10	9	mg/kg (dry)
Result_MDL (cadmium***z3***soil)	Cadmium	z3	3	0	1.4	1.9	1.733	0.289	0.167	soil	0.05	2.92	2	2	2	mg/kg (dry)
Result_MDL (cadmium***z4***soil)	Cadmium	z4	3	0	2.6	5.2	3.833	1.305	0.34	soil	0.05	2.92	6	7	7	mg/kg (dry)
Result_MDL (cadmium***z5***soil)	Cadmium	z5	3	0	3.4	7.9	5.8	2.265	0.391	soil	0.05	2.92	10	12	11	mg/kg (dry)
Result_MDL (cadmium***z6***soil)	Cadmium	z6	3	0	4.3	6.3	5.2	1.015	0.195	soil	0.05	2.92	7	8	7	mg/kg (dry)
Result_MDL (cadmium***z7***soil)	Cadmium	z7	3	0	5.6	14	8.6	4.686	0.545	soil	0.05	2.92	16	20	18	mg/kg (dry)

Table A-4a
By Zones Exposure Data and UCL Calculations

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (cadmium***z8***soil)	Cadmium	z8	3	0	3.3	16	7.633	7.247	0.949	soil	0.05	2.92	20	26	23	mg/kg (dry)
Result_MDL (cadmium***z9***soil)	Cadmium	z9	3	0	2.8	3	2.9	0.1	0.0345	soil	0.05	2.92	3	3	3	mg/kg (dry)
Result_MDL (chromium***z1***soil)	Chromium	z1	3	0	23	62	36	22.52	0.625	soil	0.05	2.92	74	93	83	mg/kg (dry)
Result_MDL (chromium***z10***soil)	Chromium	z10	3	0	6.6	7.8	7.033	0.666	0.0947	soil	0.05	2.92	8	9	8	mg/kg (dry)
Result_MDL (chromium***z2***soil)	Chromium	z2	3	0	28	31	29.33	1.528	0.0521	soil	0.05	2.92	32	33	33	mg/kg (dry)
Result_MDL (chromium***z3***soil)	Chromium	z3	3	0	8.9	11	9.667	1.159	0.12	soil	0.05	2.92	12	13	12	mg/kg (dry)
Result_MDL (chromium***z4***soil)	Chromium	z4	3	0	20	30	25	5	0.2	soil	0.05	2.92	33	38	35	mg/kg (dry)
Result_MDL (chromium***z5***soil)	Chromium	z5	3	0	20	41	30.33	10.5	0.346	soil	0.05	2.92	48	57	52	mg/kg (dry)
Result_MDL (chromium***z6***soil)	Chromium	z6	3	0	21	26	23	2.646	0.115	soil	0.05	2.92	27	30	29	mg/kg (dry)
Result_MDL (chromium***z7***soil)	Chromium	z7	3	0	30	35	31.67	2.887	0.0912	soil	0.05	2.92	37	39	38	mg/kg (dry)
Result_MDL (chromium***z8***soil)	Chromium	z8	3	0	20	29	25.33	4.726	0.187	soil	0.05	2.92	33	37	35	mg/kg (dry)
Result_MDL (chromium***z9***soil)	Chromium	z9	3	0	17	29	22	6.245	0.284	soil	0.05	2.92	33	38	35	mg/kg (dry)
Result_MDL (chrysene***z1***soil)	Chrysene	z1	3	0	600	1500	916.7	505.8	0.552	soil	0.05	2.92	1,769	2,190	1,968	µg/kg (dry)
Result_MDL (chrysene***z10***soil)	Chrysene	z10	3	0	44	61	50.33	9.292	0.185	soil	0.05	2.92	66	74	70	µg/kg (dry)
Result_MDL (chrysene***z2***soil)	Chrysene	z2	3	0	120	390	253.3	135	0.533	soil	0.05	2.92	481	593	534	µg/kg (dry)
Result_MDL (chrysene***z3***soil)	Chrysene	z3	3	0	200	590	383.3	196	0.511	soil	0.05	2.92	714	877	791	µg/kg (dry)
Result_MDL (chrysene***z4***soil)	Chrysene	z4	3	0	490	690	570	105.8	0.186	soil	0.05	2.92	748	836	791	µg/kg (dry)
Result_MDL (chrysene***z5***soil)	Chrysene	z5	3	0	6400	17000	10167	5928	0.583	soil	0.05	2.92	20,161	25,085	22,489	µg/kg (dry)
Result_MDL (chrysene***z6***soil)	Chrysene	z6	3	0	2000	3700	2633	929.2	0.353	soil	0.05	2.92	4,199	4,971	4,569	µg/kg (dry)
Result_MDL (chrysene***z7***soil)	Chrysene	z7	3	0	4800	7300	6000	1253	0.209	soil	0.05	2.92	8,112	9,153	8,617	µg/kg (dry)
Result_MDL (chrysene***z8***soil)	Chrysene	z8	3	0	87	360	189	149	0.788	soil	0.05	2.92	440	564	498	µg/kg (dry)
Result_MDL (chrysene***z9***soil)	Chrysene	z9	3	0	730	1600	1143	436.6	0.382	soil	0.05	2.92	1,879	2,242	2,052	µg/kg (dry)
Result_MDL (copper***z1***soil)	Copper	z1	3	0	130	410	283.3	141.9	0.501	soil	0.05	2.92	523	640	578	mg/kg (dry)
Result_MDL (copper***z10***soil)	Copper	z10	3	0	4.7	9.9	6.733	2.779	0.413	soil	0.05	2.92	11	14	13	mg/kg (dry)
Result_MDL (copper***z2***soil)	Copper	z2	3	0	200	250	226.7	25.17	0.111	soil	0.05	2.92	269	290	279	mg/kg (dry)
Result_MDL (copper***z3***soil)	Copper	z3	3	0	36	45	39	5.196	0.133	soil	0.05	2.92	48	52	50	mg/kg (dry)
Result_MDL (copper***z4***soil)	Copper	z4	3	0	120	330	193.3	118.5	0.613	soil	0.05	2.92	393	492	440	mg/kg (dry)
Result_MDL (copper***z5***soil)	Copper	z5	3	0	120	290	203.3	85.05	0.418	soil	0.05	2.92	347	417	380	mg/kg (dry)
Result_MDL (copper***z6***soil)	Copper	z6	3	0	110	260	180	75.5	0.419	soil	0.05	2.92	307	370	337	mg/kg (dry)
Result_MDL (copper***z7***soil)	Copper	z7	3	0	300	2900	1240	1442	1.163	soil	0.05	2.92	3,671	4,869	4,228	mg/kg (dry)
Result_MDL (copper***z8***soil)	Copper	z8	3	0	150	230	180	43.59	0.242	soil	0.05	2.92	253	290	271	mg/kg (dry)
Result_MDL (copper***z9***soil)	Copper	z9	3	0	150	230	193.3	40.41	0.209	soil	0.05	2.92	261	295	278	mg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z1***soil)	Dibenzo(a,h)anthracene	z1	3	0	79	220	127.7	80	0.627	soil	0.05	2.92	263	329	294	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z10***soil)	Dibenzo(a,h)anthracene	z10	3	0	11	23	17.67	6.11	0.346	soil	0.05	2.92	28	33	30	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z2***soil)	Dibenzo(a,h)anthracene	z2	3	0	28	73	44.67	24.66	0.552	soil	0.05	2.92	86	107	96	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z3***soil)	Dibenzo(a,h)anthracene	z3	3	0	52	130	83.67	41.02	0.49	soil	0.05	2.92	153	187	169	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z4***soil)	Dibenzo(a,h)anthracene	z4	3	0	120	180	150	30	0.2	soil	0.05	2.92	201	225	213	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z5***soil)	Dibenzo(a,h)anthracene	z5	3	0	1100	2200	1467	635.1	0.433	soil	0.05	2.92	2,538	3,065	2,789	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z6***soil)	Dibenzo(a,h)anthracene	z6	3	0	25	700	418.3	351.1	0.839	soil	0.05	2.92	1,010	1,302	1,147	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z7***soil)	Dibenzo(a,h)anthracene	z7	3	0	880	1300	1023	239.7	0.234	soil	0.05	2.92	1,427	1,626	1,523	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z8***soil)	Dibenzo(a,h)anthracene	z8	3	0	25	78	43	30.32	0.705	soil	0.05	2.92	94	119	106	µg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z9***soil)	Dibenzo(a,h)anthracene	z9	3	0	140	270	193.3	68.07	0.352	soil	0.05	2.92	308	365	335	µg/kg (dry)
Result_MDL (fluoranthene***z1***soil)	Fluoranthene	z1	3	0	860	4300	2187	1850	0.846	soil	0.05	2.92	5,306	6,843	6,025	µg/kg (dry)
Result_MDL (fluoranthene***z10***soil)	Fluoranthene	z10	3	0	76	110	89	18.36	0.206	soil	0.05	2.92	120	135	127	µg/kg (dry)

Table A-4a
By Zones Exposure Data and UCL Calculations

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (fluoranthene***z2***soil)	Fluoranthene	z2	3	0	200	670	433.3	235	0.542	soil	0.05	2.92	829	1,025	922	µg/kg (dry)
Result_MDL (fluoranthene***z3***soil)	Fluoranthene	z3	3	0	310	870	660	305.1	0.462	soil	0.05	2.92	1,174	1,428	1,295	µg/kg (dry)
Result_MDL (fluoranthene***z4***soil)	Fluoranthene	z4	3	0	670	780	743.3	63.51	0.0854	soil	0.05	2.92	850	903	876	µg/kg (dry)
Result_MDL (fluoranthene***z5***soil)	Fluoranthene	z5	3	0	20000	66000	35667	26274	0.737	soil	0.05	2.92	79,961	101,788	90,217	µg/kg (dry)
Result_MDL (fluoranthene***z6***soil)	Fluoranthene	z6	3	0	3900	8700	5933	2483	0.418	soil	0.05	2.92	10,119	12,182	11,103	µg/kg (dry)
Result_MDL (fluoranthene***z7***soil)	Fluoranthene	z7	3	0	13000	19000	15667	3055	0.195	soil	0.05	2.92	20,817	23,355	22,050	µg/kg (dry)
Result_MDL (fluoranthene***z8***soil)	Fluoranthene	z8	3	0	140	750	356.7	341.2	0.957	soil	0.05	2.92	932	1,215	1,064	µg/kg (dry)
Result_MDL (fluoranthene***z9***soil)	Fluoranthene	z9	3	0	1500	5100	3067	1845	0.602	soil	0.05	2.92	6,177	7,710	6,901	µg/kg (dry)
Result_MDL (high molecular weight pahs***z1***soil)	HPAHs	z1	3	0	4604	14810	8288	5664	0.683	soil	0.05	2.92	17,837	22,542	20,052	µg/kg (dry)
Result_MDL (high molecular weight pahs***z10***soil)	HPAHs	z10	3	0	550	666	599.7	59.77	0.0997	soil	0.05	2.92	700	750	725	µg/kg (dry)
Result_MDL (high molecular weight pahs***z2***soil)	HPAHs	z2	3	0	1206	3503	2254	1162	0.515	soil	0.05	2.92	4,213	5,178	4,671	µg/kg (dry)
Result_MDL (high molecular weight pahs***z3***soil)	HPAHs	z3	3	0	1782	4700	3227	1459	0.452	soil	0.05	2.92	5,687	6,899	6,263	µg/kg (dry)
Result_MDL (high molecular weight pahs***z4***soil)	HPAHs	z4	3	0	5830	6620	6337	439.8	0.0694	soil	0.05	2.92	7,078	7,444	7,259	µg/kg (dry)
Result_MDL (high molecular weight pahs***z5***soil)	HPAHs	z5	3	0	67500	198100	114100	72891	0.639	soil	0.05	2.92	236,984	297,538	265,540	µg/kg (dry)
Result_MDL (high molecular weight pahs***z6***soil)	HPAHs	z6	3	0	19830	37100	25735	9845	0.383	soil	0.05	2.92	42,332	50,511	46,241	µg/kg (dry)
Result_MDL (high molecular weight pahs***z7***soil)	HPAHs	z7	3	0	50790	73300	60123	11737	0.195	soil	0.05	2.92	79,910	89,660	84,645	µg/kg (dry)
Result_MDL (high molecular weight pahs***z8***soil)	HPAHs	z8	3	0	859	3898	1974	1673	0.848	soil	0.05	2.92	4,794	6,184	5,445	µg/kg (dry)
Result_MDL (high molecular weight pahs***z9***soil)	HPAHs	z9	3	0	6810	17200	11670	5227	0.448	soil	0.05	2.92	20,482	24,824	22,549	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z1***soil)	Indeno(1,2,3-cd)pyrene	z1	3	0	340	950	560	338.7	0.605	soil	0.05	2.92	1,131	1,412	1,264	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z10***soil)	Indeno(1,2,3-cd)pyrene	z10	3	0	68	78	73.67	5.132	0.0697	soil	0.05	2.92	82	87	84	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z2***soil)	Indeno(1,2,3-cd)pyrene	z2	3	0	120	270	186.7	76.38	0.409	soil	0.05	2.92	315	379	346	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z3***soil)	Indeno(1,2,3-cd)pyrene	z3	3	0	150	470	280	168.2	0.601	soil	0.05	2.92	564	703	630	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z4***soil)	Indeno(1,2,3-cd)pyrene	z4	3	0	590	780	690	95.39	0.138	soil	0.05	2.92	851	930	890	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z5***soil)	Indeno(1,2,3-cd)pyrene	z5	3	0	4100	9600	6133	3017	0.492	soil	0.05	2.92	11,219	13,726	12,409	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z6***soil)	Indeno(1,2,3-cd)pyrene	z6	3	0	1500	2600	1933	585.9	0.303	soil	0.05	2.92	2,921	3,407	3,155	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z7***soil)	Indeno(1,2,3-cd)pyrene	z7	3	0	3300	4600	3767	723.4	0.192	soil	0.05	2.92	4,987	5,588	5,278	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z8***soil)	Indeno(1,2,3-cd)pyrene	z8	3	0	91	410	207	176.4	0.852	soil	0.05	2.92	504	651	573	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z9***soil)	Indeno(1,2,3-cd)pyrene	z9	3	0	620	1100	840	242.5	0.289	soil	0.05	2.92	1,249	1,450	1,346	µg/kg (dry)
Result_MDL (lead***z1***soil)	Lead	z1	3	0	140	650	390	255.1	0.654	soil	0.05	2.92	820	1,032	920	mg/kg (dry)
Result_MDL (lead***z10***soil)	Lead	z10	3	0	13	19	15.33	3.215	0.21	soil	0.05	2.92	21	23	22	mg/kg (dry)
Result_MDL (lead***z2***soil)	Lead	z2	3	0	420	490	456.7	35.12	0.0769	soil	0.05	2.92	516	545	530	mg/kg (dry)
Result_MDL (lead***z3***soil)	Lead	z3	3	0	74	140	108	33.05	0.306	soil	0.05	2.92	164	191	177	mg/kg (dry)
Result_MDL (lead***z4***soil)	Lead	z4	3	0	210	380	300	85.44	0.285	soil	0.05	2.92	444	515	478	mg/kg (dry)
Result_MDL (lead***z5***soil)	Lead	z5	3	0	360	680	526.7	160.4	0.305	soil	0.05	2.92	797	930	861	mg/kg (dry)
Result_MDL (lead***z6***soil)	Lead	z6	3	0	350	420	390	36.06	0.0925	soil	0.05	2.92	451	481	466	mg/kg (dry)
Result_MDL (lead***z7***soil)	Lead	z7	3	0	500	1000	686.7	273	0.398	soil	0.05	2.92	1,147	1,374	1,255	mg/kg (dry)
Result_MDL (lead***z8***soil)	Lead	z8	3	0	300	960	536.7	367.5	0.685	soil	0.05	2.92	1,156	1,462	1,300	mg/kg (dry)
Result_MDL (lead***z9***soil)	Lead	z9	3	0	220	240	230	10	0.0435	soil	0.05	2.92	247	255	251	mg/kg (dry)
Result_MDL (manganese***z1***soil)	Manganese	z1	3	0	420	720	523.3	170.4	0.326	soil	0.05	2.92	811	952	879	mg/kg (dry)
Result_MDL (manganese***z10***soil)	Manganese	z10	3	0	97	140	122.3	22.5	0.184	soil	0.05	2.92	160	179	169	mg/kg (dry)
Result_MDL (manganese***z2***soil)	Manganese	z2	3	0	390	430	406.7	20.82	0.0512	soil	0.05	2.92	442	459	450	mg/kg (dry)
Result_MDL (manganese***z3***soil)	Manganese	z3	3	0	190	210	203.3	11.55	0.0568	soil	0.05	2.92	223	232	228	mg/kg (dry)
Result_MDL (manganese***z4***soil)	Manganese	z4	3	0	240	390	336.7	83.86	0.249	soil	0.05	2.92	478	548	512	mg/kg (dry)
Result_MDL (manganese***z5***soil)	Manganese	z5	3	0	280	700	476.7	211.3	0.443	soil	0.05	2.92	833	1,008	916	mg/kg (dry)

Table A-4a
By Zones Exposure Data and UCL Calculations

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (manganese***z6***soil)	Manganese	z6	3	0	360	400	380	20	0.0526	soil	0.05	2.92	414	430	422	mg/kg (dry)
Result_MDL (manganese***z7***soil)	Manganese	z7	3	0	340	470	410	65.57	0.16	soil	0.05	2.92	521	575	547	mg/kg (dry)
Result_MDL (manganese***z8***soil)	Manganese	z8	3	0	320	450	370	70	0.189	soil	0.05	2.92	488	546	516	mg/kg (dry)
Result_MDL (manganese***z9***soil)	Manganese	z9	3	0	270	310	290	20	0.069	soil	0.05	2.92	324	340	332	mg/kg (dry)
Result_MDL (mercury***z1***soil)	Mercury	z1	3	0	0.063	0.16	0.104	0.0504	0.486	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (mercury***z10***soil)	Mercury	z10	3	0	0.032	0.054	0.0417	0.0112	0.27	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (mercury***z2***soil)	Mercury	z2	3	0	0.1	0.83	0.35	0.416	1.188	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (mercury***z3***soil)	Mercury	z3	3	0	0.035	0.076	0.0533	0.0208	0.391	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (mercury***z4***soil)	Mercury	z4	3	0	0.11	2.5	0.907	1.38	1.522	soil	0.05	2.92	3	4	4	mg/kg (dry)
Result_MDL (mercury***z5***soil)	Mercury	z5	3	0	0.12	0.31	0.207	0.0961	0.465	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (mercury***z6***soil)	Mercury	z6	3	0	0.12	0.25	0.17	0.07	0.412	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (mercury***z7***soil)	Mercury	z7	3	0	0.17	0.21	0.193	0.0208	0.108	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (mercury***z8***soil)	Mercury	z8	3	0	0.067	0.12	0.099	0.0282	0.284	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (mercury***z9***soil)	Mercury	z9	3	0	0.13	0.37	0.22	0.131	0.594	soil	0.05	2.92	0	1	0	mg/kg (dry)
Result_MDL (nickel***z1***soil)	Nickel	z1	3	0	25	58	44.33	17.21	0.388	soil	0.05	2.92	73	88	80	mg/kg (dry)
Result_MDL (nickel***z10***soil)	Nickel	z10	3	0	4.8	5.2	4.933	0.231	0.0468	soil	0.05	2.92	5	6	5	mg/kg (dry)
Result_MDL (nickel***z2***soil)	Nickel	z2	3	0	33	52	42.33	9.504	0.225	soil	0.05	2.92	58	66	62	mg/kg (dry)
Result_MDL (nickel***z3***soil)	Nickel	z3	3	0	11	17	14.33	3.055	0.213	soil	0.05	2.92	19	22	21	mg/kg (dry)
Result_MDL (nickel***z4***soil)	Nickel	z4	3	0	52	56	54	2	0.037	soil	0.05	2.92	57	59	58	mg/kg (dry)
Result_MDL (nickel***z5***soil)	Nickel	z5	3	0	31	40	36.67	4.933	0.135	soil	0.05	2.92	45	49	47	mg/kg (dry)
Result_MDL (nickel***z6***soil)	Nickel	z6	3	0	28	32	30	2	0.0667	soil	0.05	2.92	33	35	34	mg/kg (dry)
Result_MDL (nickel***z7***soil)	Nickel	z7	3	0	35	51	42	8.185	0.195	soil	0.05	2.92	56	63	59	mg/kg (dry)
Result_MDL (nickel***z8***soil)	Nickel	z8	3	0	33	40	36.67	3.512	0.0958	soil	0.05	2.92	43	46	44	mg/kg (dry)
Result_MDL (nickel***z9***soil)	Nickel	z9	3	0	28	34	31.67	3.215	0.102	soil	0.05	2.92	37	40	38	mg/kg (dry)
Result_MDL (pcbs, total***z1***soil)	PCBs (total)	z1	3	0	78	3400	1203	1903	1.582	soil	0.05	2.92	4,411	5,992	5,141	µg/kg (dry)
Result_MDL (pcbs, total***z2***soil)	PCBs (total)	z2	3	0	260	330	286.7	37.86	0.132	soil	0.05	2.92	351	382	366	µg/kg (dry)
Result_MDL (pcbs, total***z3***soil)	PCBs (total)	z3	3	0	31	330	131.3	172.1	1.31	soil	0.05	2.92	421	564	488	µg/kg (dry)
Result_MDL (pcbs, total***z4***soil)	PCBs (total)	z4	3	0	230	490	396.7	144.7	0.365	soil	0.05	2.92	641	761	698	µg/kg (dry)
Result_MDL (pcbs, total***z5***soil)	PCBs (total)	z5	3	0	440	1460	823.3	555.2	0.674	soil	0.05	2.92	1,759	2,221	1,976	µg/kg (dry)
Result_MDL (pcbs, total***z6***soil)	PCBs (total)	z6	3	0	370	1100	670	382	0.57	soil	0.05	2.92	1,314	1,631	1,464	µg/kg (dry)
Result_MDL (pcbs, total***z7***soil)	PCBs (total)	z7	3	0	470	710	573.3	123.4	0.215	soil	0.05	2.92	781	884	831	µg/kg (dry)
Result_MDL (pcbs, total***z8***soil)	PCBs (total)	z8	3	0	110	120	116.7	5.774	0.0495	soil	0.05	2.92	126	131	129	µg/kg (dry)
Result_MDL (pcbs, total***z9***soil)	PCBs (total)	z9	3	0	130	280	213.3	76.38	0.358	soil	0.05	2.92	342	406	372	µg/kg (dry)
Result_MDL (phenanthrene***z1***soil)	Phenanthrene	z1	3	0	530	2100	1153	833.4	0.723	soil	0.05	2.92	2,558	3,250	2,883	µg/kg (dry)
Result_MDL (phenanthrene***z10***soil)	Phenanthrene	z10	3	0	52	67	57.33	8.386	0.146	soil	0.05	2.92	71	78	75	µg/kg (dry)
Result_MDL (phenanthrene***z2***soil)	Phenanthrene	z2	3	0	130	370	266.7	123.4	0.463	soil	0.05	2.92	475	577	523	µg/kg (dry)
Result_MDL (phenanthrene***z3***soil)	Phenanthrene	z3	3	0	300	800	593.3	261	0.44	soil	0.05	2.92	1,033	1,250	1,137	µg/kg (dry)
Result_MDL (phenanthrene***z4***soil)	Phenanthrene	z4	3	0	420	620	496.7	107.9	0.217	soil	0.05	2.92	679	768	722	µg/kg (dry)
Result_MDL (phenanthrene***z5***soil)	Phenanthrene	z5	3	0	15000	79000	37667	35852	0.952	soil	0.05	2.92	98,108	127,893	112,015	µg/kg (dry)
Result_MDL (phenanthrene***z6***soil)	Phenanthrene	z6	3	0	2200	7100	4500	2464	0.547	soil	0.05	2.92	8,654	10,701	9,623	µg/kg (dry)
Result_MDL (phenanthrene***z7***soil)	Phenanthrene	z7	3	0	12000	18000	16000	3464	0.217	soil	0.05	2.92	21,840	24,718	23,234	µg/kg (dry)
Result_MDL (phenanthrene***z8***soil)	Phenanthrene	z8	3	0	92	390	197.3	167.1	0.847	soil	0.05	2.92	479	618	544	µg/kg (dry)
Result_MDL (phenanthrene***z9***soil)	Phenanthrene	z9	3	0	1200	4300	2367	1686	0.712	soil	0.05	2.92	5,209	6,610	5,868	µg/kg (dry)
Result_MDL (pyrene***z1***soil)	Pyrene	z1	3	0	600	2200	1200	871.8	0.726	soil	0.05	2.92	2,670	3,394	3,010	µg/kg (dry)

Table A-4a
By Zones Exposure Data and UCL Calculations

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (pyrene***z10***soil)	Pyrene	z10	3	0	47	82	65.33	17.56	0.269	soil	0.05	2.92	95	110	102	µg/kg (dry)
Result_MDL (pyrene***z2***soil)	Pyrene	z2	3	0	170	510	330	170.9	0.518	soil	0.05	2.92	618	760	685	µg/kg (dry)
Result_MDL (pyrene***z3***soil)	Pyrene	z3	3	0	290	530	446.7	135.8	0.304	soil	0.05	2.92	676	788	730	µg/kg (dry)
Result_MDL (pyrene***z4***soil)	Pyrene	z4	3	0	600	780	716.7	101.2	0.141	soil	0.05	2.92	887	971	928	µg/kg (dry)
Result_MDL (pyrene***z5***soil)	Pyrene	z5	3	0	12000	45000	24333	18009	0.74	soil	0.05	2.92	54,694	69,655	61,722	µg/kg (dry)
Result_MDL (pyrene***z6***soil)	Pyrene	z6	3	0	3100	6900	4500	2088	0.464	soil	0.05	2.92	8,020	9,755	8,845	µg/kg (dry)
Result_MDL (pyrene***z7***soil)	Pyrene	z7	3	0	9600	13000	11533	1747	0.152	soil	0.05	2.92	14,478	15,930	15,187	µg/kg (dry)
Result_MDL (pyrene***z8***soil)	Pyrene	z8	3	0	110	470	250	192.9	0.771	soil	0.05	2.92	575	735	650	µg/kg (dry)
Result_MDL (pyrene***z9***soil)	Pyrene	z9	3	0	860	2600	1720	870.2	0.506	soil	0.05	2.92	3,187	3,910	3,530	µg/kg (dry)
Result_MDL (selenium***z1***soil)	Selenium	z1	3	0	0.77	1.3	1.057	0.268	0.253	soil	0.05	2.92	2	2	2	mg/kg (dry)
Result_MDL (selenium***z10***soil)	Selenium	z10	3	0	0.59	0.93	0.743	0.172	0.232	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (selenium***z2***soil)	Selenium	z2	3	0	0.64	1.1	0.863	0.23	0.267	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (selenium***z3***soil)	Selenium	z3	3	0	0.62	0.82	0.69	0.113	0.163	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (selenium***z4***soil)	Selenium	z4	3	0	0.96	1	0.98	0.02	0.0204	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (selenium***z5***soil)	Selenium	z5	3	0	0.67	0.96	0.823	0.146	0.177	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (selenium***z6***soil)	Selenium	z6	3	0	0.78	1.1	0.91	0.168	0.185	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (selenium***z7***soil)	Selenium	z7	3	0	0.92	1.3	1.073	0.2	0.187	soil	0.05	2.92	1	2	1	mg/kg (dry)
Result_MDL (selenium***z8***soil)	Selenium	z8	3	0	0.87	1.5	1.19	0.315	0.265	soil	0.05	2.92	2	2	2	mg/kg (dry)
Result_MDL (selenium***z9***soil)	Selenium	z9	3	0	0.67	1	0.89	0.191	0.214	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (silver***z1***soil)	Silver	z1	3	0	1.6	3.6	2.333	1.102	0.472	soil	0.05	2.92	4	5	5	mg/kg (dry)
Result_MDL (silver***z10***soil)	Silver	z10	3	0	0.021	0.057	0.0343	0.0197	0.575	soil	0.05	2.92	0	0	0	mg/kg (dry)
Result_MDL (silver***z2***soil)	Silver	z2	3	0	2.1	4.1	2.9	1.058	0.365	soil	0.05	2.92	5	6	5	mg/kg (dry)
Result_MDL (silver***z3***soil)	Silver	z3	3	0	0.32	0.46	0.37	0.0781	0.211	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (silver***z4***soil)	Silver	z4	3	0	0.52	1.3	0.867	0.397	0.458	soil	0.05	2.92	2	2	2	mg/kg (dry)
Result_MDL (silver***z5***soil)	Silver	z5	3	0	1.2	3.2	2.233	1.002	0.449	soil	0.05	2.92	4	5	4	mg/kg (dry)
Result_MDL (silver***z6***soil)	Silver	z6	3	0	1.3	2.4	1.733	0.586	0.338	soil	0.05	2.92	3	3	3	mg/kg (dry)
Result_MDL (silver***z7***soil)	Silver	z7	3	0	2.3	2.6	2.433	0.153	0.0628	soil	0.05	2.92	3	3	3	mg/kg (dry)
Result_MDL (silver***z8***soil)	Silver	z8	3	0	1.7	4.4	3.1	1.353	0.436	soil	0.05	2.92	5	7	6	mg/kg (dry)
Result_MDL (silver***z9***soil)	Silver	z9	3	0	1.3	1.3	1.3	0	N/A	soil	0.05	2.92	1	1	1	mg/kg (dry)
Result_MDL (vanadium***z1***soil)	Vanadium	z1	3	0	11	16	12.67	2.887	0.228	soil	0.05	2.92	18	20	19	mg/kg (dry)
Result_MDL (vanadium***z10***soil)	Vanadium	z10	3	0	9.4	11	10.13	0.808	0.0798	soil	0.05	2.92	11	12	12	mg/kg (dry)
Result_MDL (vanadium***z2***soil)	Vanadium	z2	3	0	11	12	11.67	0.577	0.0495	soil	0.05	2.92	13	13	13	mg/kg (dry)
Result_MDL (vanadium***z3***soil)	Vanadium	z3	3	0	8.4	9.7	9.167	0.681	0.0743	soil	0.05	2.92	10	11	11	mg/kg (dry)
Result_MDL (vanadium***z4***soil)	Vanadium	z4	3	0	13	16	14	1.732	0.124	soil	0.05	2.92	17	18	18	mg/kg (dry)
Result_MDL (vanadium***z5***soil)	Vanadium	z5	3	0	9	19	12.67	5.508	0.435	soil	0.05	2.92	22	27	24	mg/kg (dry)
Result_MDL (vanadium***z6***soil)	Vanadium	z6	3	0	9.3	11	10.1	0.854	0.0846	soil	0.05	2.92	12	12	12	mg/kg (dry)
Result_MDL (vanadium***z7***soil)	Vanadium	z7	3	0	8.7	13	10.9	2.152	0.197	soil	0.05	2.92	15	16	15	mg/kg (dry)
Result_MDL (vanadium***z8***soil)	Vanadium	z8	3	0	13	14	13.67	0.577	0.0422	soil	0.05	2.92	15	15	15	mg/kg (dry)
Result_MDL (vanadium***z9***soil)	Vanadium	z9	3	0	13	13	13	0	N/A	soil	0.05	2.92	13	13	13	mg/kg (dry)
Result_MDL (zinc***z1***soil)	Zinc	z1	3	0	590	950	766.7	180.1	0.235	soil	0.05	2.92	1,070	1,220	1,143	mg/kg (dry)
Result_MDL (zinc***z10***soil)	Zinc	z10	3	0	22	36	27.67	7.371	0.266	soil	0.05	2.92	40	46	43	mg/kg (dry)
Result_MDL (zinc***z2***soil)	Zinc	z2	3	0	690	820	763.3	66.58	0.0872	soil	0.05	2.92	876	931	903	mg/kg (dry)
Result_MDL (zinc***z3***soil)	Zinc	z3	3	0	180	190	183.3	5.774	0.0315	soil	0.05	2.92	193	198	195	mg/kg (dry)
Result_MDL (zinc***z4***soil)	Zinc	z4	3	0	940	1800	1237	488.1	0.395	soil	0.05	2.92	2,060	2,465	2,254	mg/kg (dry)

Table A-4a
By Zones Exposure Data and UCL Calculations

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (zinc***z5***soil)	Zinc	z5	3	0	640	920	813.3	151.4	0.186	soil	0.05	2.92	1,069	1,194	1,130	mg/kg (dry)
Result_MDL (zinc***z6***soil)	Zinc	z6	3	0	530	740	616.7	109.7	0.178	soil	0.05	2.92	802	893	846	mg/kg (dry)
Result_MDL (zinc***z7***soil)	Zinc	z7	3	0	960	1500	1187	280.2	0.236	soil	0.05	2.92	1,659	1,892	1,772	mg/kg (dry)
Result_MDL (zinc***z8***soil)	Zinc	z8	3	0	510	810	626.7	160.7	0.256	soil	0.05	2.92	898	1,031	962	mg/kg (dry)
Result_MDL (zinc***z9***soil)	Zinc	z9	3	0	410	440	430	17.32	0.0403	soil	0.05	2.92	459	474	466	mg/kg (dry)

Notes:
µg/kg = micrograms per kilogram
CV = coeficient of variation
HPAH = high molecular weight polycyclic aromatic hydrocarbon
mg/kg = milligrams per kilogram
PCB = polychlorinated biphenyl
SD = standard deviation
UCL = upper confidence limit

Table A-4b
By Zones Exposure Data and UCL Calculations, Chemicals with Non-Detects for Entire Zones

Model Run	Variable	Zone	Number of Observations	Number Missing	Number of Detects	Number of Non-Detects	KM Mean	KM SD	% Non-Detects	Min Non-Detects	Max Non-Detects	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (1,1`-biphenyl***z1***soil)	1,1`-Biphenyl	z1	3	0	2	1	17.3	8.853	33.33%	4.9	4.9	soil	0.05	2.92	32	40	36	µg/kg (dry)
Result_MDL (1,1`-biphenyl***z5***soil)	1,1`-Biphenyl	z5	3	0	1	2	206	222	66.67%	49	49	soil	0.05	2.92	580	765	666	µg/kg (dry)
Result_MDL (1,1`-biphenyl***z9***soil)	1,1`-Biphenyl	z9	3	0	2	1	19.5	3.5	33.33%	25	25	soil	0.05	2.92	25	28	27	µg/kg (dry)
Result_MDL (aroclor 1248***z5***soil)	Aroclor 1248	z5	3	0	2	1	505.7	445.6	33.33%	27	27	soil	0.05	2.92	1,257	1,627	1,430	µg/kg (dry)
Result_MDL (aroclor 1248***z6***soil)	Aroclor 1248	z6	3	0	2	1	452	465.7	33.33%	26	26	soil	0.05	2.92	1,237	1,624	1,417	µg/kg (dry)
Result_MDL (aroclor 1248***z9***soil)	Aroclor 1248	z9	3	0	1	2	67.33	58.45	66.67%	26	27	soil	0.05	2.92	166	214	189	µg/kg (dry)
Result_MDL (aroclor 1248_z7)	Aroclor 1248	z7	3	0	3	0	260	30	0.00%	N/A	N/A	soil	0.05	2.92	311	335	323	µg/kg (dry)
Result_MDL (aroclor 1260_z4)	Aroclor 1260	z4	3	0	1	2	177.3	206.9	66.67%	31	31	soil	0.05	2.92	526	698	606	µg/kg (dry)
Result_MDL (aroclor 1260_z5)	Aroclor 1260	z5	3	0	2	1	190.3	134.5	33.33%	31	31	soil	0.05	2.92	417	529	470	µg/kg (dry)
Result_MDL (aroclor 1260_z6)	Aroclor 1260	z6	3	0	1	2	100	98.99	66.67%	30	31	soil	0.05	2.92	267	349	305	µg/kg (dry)
Result_MDL (bis(2-ethylhexyl)phthalate***z10***soil)	Bis(2-Ethylhexyl)Phthalate	z10	3	0	2	1	79.33	52.94	33.33%	11	11	soil	0.05	2.92	169	213	189	µg/kg (dry)
Result_MDL (bis(2-ethylhexyl)phthalate***z5***soil)	Bis(2-Ethylhexyl)Phthalate	z5	3	0	2	1	6170	5807	33.33%	110	110	soil	0.05	2.92	15,960	20,784	18,213	µg/kg (dry)
Result_MDL (bis(2-ethylhexyl)phthalate***z6***soil)	Bis(2-Ethylhexyl)Phthalate	z6	3	0	2	1	780	568.6	33.33%	110	110	soil	0.05	2.92	1,739	2,211	1,961	µg/kg (dry)
Result_MDL (bis(2-ethylhexyl)phthalate***z7***soil)	Bis(2-Ethylhexyl)Phthalate	z7	3	0	2	1	2503	2589	33.33%	110	110	soil	0.05	2.92	6,868	9,019	7,870	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z2***soil)	Butyl Benzyl Phthalate	z2	3	0	2	1	64.33	39.8	33.33%	13	13	soil	0.05	2.92	131	164	147	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z3***soil)	Butyl Benzyl Phthalate	z3	3	0	1	2	83.73	110.5	66.67%	5.6	12	soil	0.05	2.92	270	362	313	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z5***soil)	Butyl Benzyl Phthalate	z5	3	0	1	2	580	650.5	66.67%	120	120	soil	0.05	2.92	1,677	2,217	1,928	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z7***soil)	Butyl Benzyl Phthalate	z7	3	0	1	2	1013	1263	66.67%	120	120	soil	0.05	2.92	3,142	4,191	3,629	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z8***soil)	Butyl Benzyl Phthalate	z8	3	0	2	1	156	109.9	33.33%	61	61	soil	0.05	2.92	341	433	384	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z9***soil)	Butyl Benzyl Phthalate	z9	3	0	1	2	54.67	60.34	66.67%	12	62	soil	0.05	2.92	156	207	180	µg/kg (dry)
Result_MDL (carbazole***z2***soil)	Carbazole	z2	3	0	2	1	20.6	7.68	33.33%	9.8	9.8	soil	0.05	2.92	34	40	37	µg/kg (dry)
Result_MDL (carbazole***z3***soil)	Carbazole	z3	3	0	2	1	35.53	23.2	33.33%	3.6	3.6	soil	0.05	2.92	75	94	84	µg/kg (dry)
Result_MDL (carbazole***z4***soil)	Carbazole	z4	3	0	1	2	40	5.657	66.67%	36	36	soil	0.05	2.92	50	54	52	µg/kg (dry)
Result_MDL (carbazole***z8***soil)	Carbazole	z8	3	0	1	2	14.4	4.6	66.67%	9.8	49	soil	0.05	2.92	22	26	24	µg/kg (dry)
Result_MDL (carbazole***z9***soil)	Carbazole	z9	3	0	2	1	183	119.9	33.33%	49	49	soil	0.05	2.92	385	485	432	µg/kg (dry)
Result_MDL (dibenzofuran***z2***soil)	Dibenzofuran	z2	3	0	1	2	12.33	3.3	66.67%	10	10	soil	0.05	2.92	18	21	19	µg/kg (dry)
Result_MDL (dibenzofuran***z4***soil)	Dibenzofuran	z4	3	0	1	2	45	0	66.67%	48	49	soil	0.05	2.92	45	45	45	µg/kg (dry)
Result_MDL (dibenzofuran***z6***soil)	Dibenzofuran	z6	3	0	2	1	456.7	252.5	33.33%	100	100	soil	0.05	2.92	882	1,092	982	µg/kg (dry)
Result_MDL (dibenzofuran***z9***soil)	Dibenzofuran	z9	3	0	1	2	66.67	80.14	66.67%	10	51	soil	0.05	2.92	202	268	233	µg/kg (dry)
Result_MDL (di-n-butyl phthalate***z1***soil)	Di-n-butyl Phthalate	z1	3	0	1	2	76.47	101.5	66.67%	4.7	4.7	soil	0.05	2.92	248	332	287	µg/kg (dry)
Result_MDL (di-n-butyl phthalate***z4***soil)	Di-n-butyl Phthalate	z4	3	0	1	2	62	2.828	66.67%	60	61	soil	0.05	2.92	67	69	68	µg/kg (dry)
Result_MDL (di-n-butyl phthalate***z9***soil)	Di-n-butyl Phthalate	z9	3	0	2	1	354.9	390.6	33.33%	4.7	4.7	soil	0.05	2.92	1,013	1,338	1,164	µg/kg (dry)

Notes:
µg/kg = micrograms per kilogram
CV = coeficient of variation
KM = Kaplan Meyer method
SD = standard deviation
UCL = upper confidence limit

Table A-5
Zones 1 to 9 Exposure Data and UCL Calculations With Outliers

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (1,1`-biphenyl***z19***soil)	1,1`-Biphenyl	z19	27	0	4.8	520	44.58	97.08	2.178	soil	0.05	1.71	76	126	98	µg/kg (dry)
Result_MDL (antimony***z19***soil)	Antimony	z19	27	0	1.4	20	7.978	4.256	0.534	soil	0.05	1.71	9	12	10	mg/kg (dry)
Result_MDL (aroclor 1248***z19***soil)	Aroclor 1248	z19	27	0	25	1100	157.4	290.6	1.846	soil	0.05	1.71	253	401	318	µg/kg (dry)
Result_MDL (aroclor 1254***z19***soil)	Aroclor 1254	z19	27	0	30	3400	310.2	632.4	2.039	soil	0.05	1.71	518	841	660	µg/kg (dry)
Result_MDL (barium***z19***soil)	Barium	z19	27	0	44	450	223.3	106.9	0.479	soil	0.05	1.71	258	313	284	mg/kg (dry)
Result_MDL (benzo(a)anthracene***z19***soil)	Benzo(a)anthracene	z19	27	0	66	15000	2261	3375	1.493	soil	0.05	1.71	3,369	5,092	4,142	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z19***soil)	Benzo(a)pyrene	z19	27	0	85	12000	1861	2655	1.426	soil	0.05	1.71	2,732	4,088	3,342	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z19***soil)	Benzo(b)fluoranthene	z19	27	0	120	16000	2610	3563	1.365	soil	0.05	1.71	3,780	5,599	4,600	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z19***soil)	Benzo(g,h,i)perylene	z19	27	0	82	8400	1431	1895	1.324	soil	0.05	1.71	2,053	3,021	2,490	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z19***soil)	Benzo(k)fluoranthene	z19	27	0	53	6900	1121	1527	1.362	soil	0.05	1.71	1,622	2,402	1,974	µg/kg (dry)
Result_MDL (bis(2-ethylhexyl)phthalate***z19***soil)	Bis(2-ethylhexyl)Phthalate	z19	27	0	95	14000	1988	2942	1.48	soil	0.05	1.71	2,954	4,456	3,628	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z19***soil)	Butyl Benzyl Phthalate	z19	27	0	5.6	2800	353.7	604.1	1.708	soil	0.05	1.71	552	860	689	µg/kg (dry)
Result_MDL (cadmium***z19***soil)	Cadmium	z19	27	0	1.4	16	5.274	3.37	0.639	soil	0.05	1.71	6	8	7	mg/kg (dry)
Result_MDL (carbazole***z19***soil)	Carbazole	z19	27	0	3.6	4900	571.3	1051	1.839	soil	0.05	1.71	916	1,453	1,154	µg/kg (dry)
Result_MDL (chromium***z19***soil)	Chromium	z19	27	0	8.9	62	25.81	10.4	0.403	soil	0.05	1.71	29	35	32	mg/kg (dry)
Result_MDL (chrysene***z19***soil)	Chrysene	z19	27	0	87	17000	2473	3712	1.501	soil	0.05	1.71	3,691	5,587	4,541	µg/kg (dry)
Result_MDL (copper***z19***soil)	Copper	z19	27	0	36	2900	304.3	530.4	1.743	soil	0.05	1.71	478	749	599	mg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z19***soil)	Dibenzo(a,h)anthracene	z19	27	0	25	2200	394.5	532.7	1.35	soil	0.05	1.71	569	841	692	µg/kg (dry)
Result_MDL (dibenzofuran***z19***soil)	Dibenzofuran	z19	27	0	10	4700	527.2	1008	1.912	soil	0.05	1.71	858	1,373	1,085	µg/kg (dry)
Result_MDL (di-n-butyl phthalate***z19***soil)	Di-N-Butyl Phthalate	z19	27	0	4.7	1500	166.6	349.9	2.1	soil	0.05	1.71	281	460	360	µg/kg (dry)
Result_MDL (fluoranthene***z19***soil)	Fluoranthene	z19	27	0	140	66000	7190	13495	1.877	soil	0.05	1.71	11,620	18,511	14,666	µg/kg (dry)
Result_MDL (high molecular weight pahs***z19***soil)	HPAHs	z19	27	0	859	198100	25967	41926	1.615	soil	0.05	1.71	39,729	61,137	49,284	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z19***soil)	Indeno(1,2,3-cd)pyrene	z19	27	0	91	9600	1622	2157	1.33	soil	0.05	1.71	2,330	3,431	2,828	µg/kg (dry)
Result_MDL (lead***z19***soil)	Lead	z19	27	0	74	1000	402.7	228.4	0.567	soil	0.05	1.71	478	594	533	mg/kg (dry)
Result_MDL (manganese***z19***soil)	Manganese	z19	27	0	190	720	377.4	124.1	0.329	soil	0.05	1.71	418	482	449	mg/kg (dry)
Result_MDL (mercury***z19***soil)	Mercury	z19	27	0	0.035	2.5	0.256	0.474	1.851	soil	0.05	1.71	0	1	1	mg/kg (dry)
Result_MDL (nickel***z19***soil)	Nickel	z19	27	0	11	58	36.89	12.4	0.336	soil	0.05	1.71	41	47	44	mg/kg (dry)
Result_MDL (pcbs, total***z19***soil)	PCBs (total)	z19	27	0	31	3400	490.4	663.8	1.354	soil	0.05	1.71	708	1,047	861	µg/kg (dry)
Result_MDL (phenanthrene***z19***soil)	Phenanthrene	z19	27	0	92	79000	7027	15676	2.231	soil	0.05	1.71	12,173	20,177	15,672	µg/kg (dry)
Result_MDL (pyrene***z19***soil)	Pyrene	z19	27	0	110	45000	5003	9288	1.856	soil	0.05	1.71	8,052	12,794	10,150	µg/kg (dry)
Result_MDL (selenium***z19***soil)	Selenium	z19	27	0	0.62	1.5	0.942	0.221	0.235	soil	0.05	1.71	1	1	1	mg/kg (dry)
Result_MDL (silver***z19***soil)	Silver	z19	27	0	0.32	4.4	1.919	1.107	0.577	soil	0.05	1.71	2	3	3	mg/kg (dry)
Result_MDL (vanadium***z19***soil)	Vanadium	z19	27	0	8.4	19	11.98	2.49	0.208	soil	0.05	1.71	13	14	13	mg/kg (dry)
Result_MDL (zinc***z19***soil)	Zinc	z19	27	0	180	1800	735.9	366.4	0.498	soil	0.05	1.71	856	1,043	945	mg/kg (dry)

Notes:

µg/kg = micrograms per kilogram

BCA = Bias-corrected accelerated bootstrap method

CV = coefficient of variation

HPAH = high molecular weight polycyclic aromatic hydrocarbon

KM = Kaplan Meyer method

mg/kg = milligrams per kilogram

PCB = polychlorinated biphenyl

SD = standard deviation

UCL = upper confidence limit

Z19 = Zones 1 to 9 combined

Table A-6
Zones 1 to 9 Exposure Data and UCL Calculations Without Outliers

Model Run	Variable	Zone	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL_No_Outlier (antimony_z19)	Antimony	z19	26	1	1.4	14	7.515	3.583	0.477	soil	0.05	1.71	9	11	10	mg/kg (dry)
Result_MDL_No_Outlier (bis(2-ethylhexyl)phthalate_z19)	bis(2-ethylhexyl)Phthalate	z19	26	1	95	6100	1526	1735	1.137	soil	0.05	1.71	2,107	3,009	2,518	mg/kg (dry)
Result_MDL_No_Outlier (cadmium_z19)	Cadmium	z19	26	1	1.4	14	4.862	2.652	0.546	soil	0.05	1.71	6	7	6	mg/kg (dry)
Result_MDL_No_Outlier (chromium_z19)	Chromium	z19	26	1	8.9	41	24.42	7.617	0.312	soil	0.05	1.71	27	31	29	mg/kg (dry)
Result_MDL_No_Outlier (copper_z19)	Copper	z19	26	1	36	520	204.5	112.8	0.551	soil	0.05	1.71	242	301	270	mg/kg (dry)
Result_MDL_No_Outlier (high molecular weight pahs_z19)	HPAHs	z19	26	1	859	76700	19347	24440	1.263	soil	0.05	1.71	27,534	40,240	33,286	µg/kg (dry)
Result_MDL_No_Outlier (pcbs, total_z19)	PCBs (total)	z19	26	1	31	1460	378.5	326.6	0.863	soil	0.05	1.71	488	658	566	µg/kg (dry)
Result_MDL_No_Outlier (vanadium_z19)	Vanadium	z19	26	1	8.4	16	11.71	2.098	0.179	soil	0.05	1.71	12	14	13	mg/kg (dry)
Result_MDL_No_Outlier (zinc_z19)	Zinc	z19	26	1	180	1500	695	304.2	0.438	soil	0.05	1.71	797	955	872	mg/kg (dry)

Notes:
µg/kg = micrograms per kilogram
CV = coefficient of variation
HPAH = high molecular weight polycyclic aromatic hydrocarbon
mg/kg = milligrams per kilogram
PCB = polychlorinated biphenyl
SD = standard deviation
UCL = upper confidence limit
Z19 = Zones 1 to 9 combined

Table A-7a
Zones 1 to 9 Exposure Data and UCL Calculations Without Outliers and Weighted Average

Model Run	Variable	Zone Group	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	MidPoint UCL with Weighted Average for Zones 1 to 10	Units
Result_MDL (1,1`-biphenyl***z19***soil)	1,1`-Biphenyl	z19	27	0	4.8	520	44.58	97.08	2.178	soil	0.05	1.71	76	126	98	66	µg/kg (dry)
Result_MDL_No_Outlier (antimony_z19)	Antimony	z19	26	1	1.4	14	7.515	3.583	0.477	soil	0.05	1.71	9	11	9.60	6	mg/kg (dry)
Result_MDL (aroclor 1248***z19***soil)	Aroclor 1248	z19	27	0	25	1100	157.4	290.6	1.846	soil	0.05	1.71	253	401	318	219	µg/kg (dry)
Result_MDL (aroclor 1254***z19***soil)	Aroclor 1254	z19	27	0	30	3400	310.2	632.4	2.039	soil	0.05	1.71	518	841	660	446	µg/kg (dry)
Result_MDL (barium***z19***soil)	Barium	z19	27	0	44	450	223.3	106.9	0.479	soil	0.05	1.71	258	313	284	200	mg/kg (dry)
Result_MDL (benzo(a)anthracene***z19***soil)	Benzo(a)anthracene	z19	27	0	66	15000	2261	3375	1.493	soil	0.05	1.71	3369	5092	4142	2753	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z19***soil)	Benzo(a)pyrene	z19	27	0	85	12000	1861	2655	1.426	soil	0.05	1.71	2732	4088	3342	2232	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z19***soil)	Benzo(b)fluoranthene	z19	27	0	120	16000	2610	3563	1.365	soil	0.05	1.71	3780	5599	4600	3070	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z19***soil)	Benzo(g,h,i)perylene	z19	27	0	82	8400	1431	1895	1.324	soil	0.05	1.71	2053	3021	2490	1670	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z19***soil)	Benzo(k)fluoranthene	z19	27	0	53	6900	1121	1527	1.362	soil	0.05	1.71	1622	2402	1974	1322	µg/kg (dry)
Result_MDL_No_Outlier (bis(2-ethylhexyl)phthalate_z19)	Bis(2-ethylhexyl)Phthalate	z19	26	1	95	6100	1526	1735	1.137	soil	0.05	1.71	2107	3009	2518	1733	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z19***soil)	Butyl Benzyl Phthalate	z19	27	0	5.6	2800	353.7	604.1	1.708	soil	0.05	1.71	552	860	689	459	µg/kg (dry)
Result_MDL_No_Outlier (cadmium_z19)	Cadmium	z19	26	1	1.4	14	4.862	2.652	0.546	soil	0.05	1.71	6	7	6	4	mg/kg (dry)
Result_MDL (carbazole***z19***soil)	Carbazole	z19	27	0	3.6	4900	571.3	1051	1.839	soil	0.05	1.71	916	1453	1154	765	µg/kg (dry)
Result_MDL_No_Outlier (chromium_z19)	Chromium	z19	26	1	8.9	41	24.42	7.617	0.312	soil	0.05	1.71	27	31	29	22	mg/kg (dry)
Result_MDL (chrysene***z19***soil)	Chrysene	z19	27	0	87	17000	2473	3712	1.501	soil	0.05	1.71	3691	5587	4541	3020	µg/kg (dry)
Result_MDL_No_Outlier (copper_z19)	Copper	z19	26	1	36	520	204.5	112.8	0.551	soil	0.05	1.71	242	301	270	182	mg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z19***soil)	Dibenzo(a,h)anthracene	z19	27	0	25	2200	394.5	532.7	1.35	soil	0.05	1.71	569	841	692	467	µg/kg (dry)
Result_MDL (dibenzofuran***z19***soil)	Dibenzofuran	z19	27	0	10	4700	527.2	1008	1.912	soil	0.05	1.71	858	1373	1085	720	µg/kg (dry)
Result_MDL (di-n-butyl phthalate***z19***soil)	Di-N-Butyl Phthalate	z19	27	0	4.7	1500	166.6	349.9	2.1	soil	0.05	1.71	281	460	360	239	µg/kg (dry)
Result_MDL (fluoranthene***z19***soil)	Fluoranthene	z19	27	0	140	66000	7190	13495	1.877	soil	0.05	1.71	11620	18511	14666	9721	µg/kg (dry)
Result_MDL_No_Outlier (high molecular weight pahs_z19)	HPAHs	z19	26	1	859	76700	19347	24440	1.263	soil	0.05	1.71	27534	40240	33286	22208	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z19***soil)	Indeno(1,2,3-cd)pyrene	z19	27	0	91	9600	1622	2157	1.33	soil	0.05	1.71	2330	3431	2828	1894	µg/kg (dry)
Result_MDL (lead***z19***soil)	Lead	z19	27	0	74	1000	402.7	228.4	0.567	soil	0.05	1.71	478	594	533	359	mg/kg (dry)
Result_MDL (manganese***z19***soil)	Manganese	z19	27	0	190	720	377.4	124.1	0.329	soil	0.05	1.71	418	482	449	352	mg/kg (dry)
Result_MDL (mercury***z19***soil)	Mercury	z19	27	0	0.035	2.5	0.256	0.474	1.851	soil	0.05	1.71	0	1	1	0	mg/kg (dry)
Result_MDL (nickel***z19***soil)	Nickel	z19	27	0	11	58	36.89	12.4	0.336	soil	0.05	1.71	41	47	44	31	mg/kg (dry)
Result_MDL_No_Outlier (pcbs, total_z19)	PCBs (total)	z19	26	1	31	1460	378.5	326.6	0.863	soil	0.05	1.71	488	658	566	384	µg/kg (dry)
Result_MDL (phenanthrene***z19***soil)	Phenanthrene	z19	27	0	92	79000	7027	15676	2.231	soil	0.05	1.71	12173	20177	15672	10368	µg/kg (dry)
Result_MDL (pyrene***z19***soil)	Pyrene	z19	27	0	110	45000	5003	9288	1.856	soil	0.05	1.71	8052	12794	10150	6732	µg/kg (dry)
Result_MDL (selenium***z19***soil)	Selenium	z19	27	0	0.62	1.5	0.942	0.221	0.235	soil	0.05	1.71	1	1	1	1	mg/kg (dry)
Result_MDL (silver***z19***soil)	Silver	z19	27	0	0.32	4.4	1.919	1.107	0.577	soil	0.05	1.71	2	3	3	2	mg/kg (dry)
Result_MDL_No_Outlier (vanadium_z19)	Vanadium	z19	26	1	8.4	16	11.71	2.098	0.179	soil	0.05	1.71	12	14	13	12	mg/kg (dry)
Result_MDL_No_Outlier (zinc_z19)	Zinc	z19	26	1	180	1500	695	304.2	0.438	soil	0.05	1.71	797	955	872	590	mg/kg (dry)

Notes:
µg/kg = micrograms per kilogram
CV = coefficient of variation
HPAH = high molecular weight polycyclic aromatic hydrocarbon
KM = Kaplan Meyer method
mg/kg = milligrams per kilogram
PCB = polychlorinated biphenyl
SD = standard deviation
Z19 = Zones 1 to 9 combined

Table A-7b
Zone 10 Exposure Data and UCL Calculations Without Outliers and Weighted Average

Model Run	Variable	Zone Group	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL	Units
Result_MDL (1,1`-biphenyl***z10***soil)	1,1`-Biphenyl	z10	3	0	4.8	4.9	4.867	0.0577	0.0119	soil	0.05	2.92	5.0	5.0	5.0	µg/kg (dry)
Result_MDL (antimony***z10***soil)	Antimony	z10	3	0	0.37	0.4	0.383	0.0153	0.0398	soil	0.05	2.92	0.4	0.4	0.4	mg/kg (dry)
Result_MDL (aroclor 1248***z10***soil)	Aroclor 1248	z10	3	0	26	26	26	0	N/A	soil	0.05	2.92	26.0	26.0	26.0	µg/kg (dry)
Result_MDL (aroclor 1254***z10***soil)	Aroclor 1254	z10	3	0	30	31	30.33	0.577	0.019	soil	0.05	2.92	31.3	31.8	31.5	µg/kg (dry)
Result_MDL (barium***z10***soil)	Barium	z10	3	0	22	32	26.67	5.033	0.189	soil	0.05	2.92	35.2	39.3	37.2	mg/kg (dry)
Result_MDL (benzo(a)anthracene***z10***soil)	Benzo(a)anthracene	z10	3	0	31	48	40.67	8.737	0.215	soil	0.05	2.92	55.4	62.7	58.9	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z10***soil)	Benzo(a)pyrene	z10	3	0	58	72	64.67	7.024	0.109	soil	0.05	2.92	76.5	82.3	79.4	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z10***soil)	Benzo(b)fluoranthene	z10	3	0	83	97	88.67	7.371	0.0831	soil	0.05	2.92	101.1	107.2	104.1	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z10***soil)	Benzo(g,h,i)perylene	z10	3	0	56	71	63	7.55	0.12	soil	0.05	2.92	75.7	82.0	78.8	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z10***soil)	Benzo(k)fluoranthene	z10	3	0	43	53	46.67	5.508	0.118	soil	0.05	2.92	56.0	60.5	58.2	µg/kg (dry)
Result_MDL (bis(2-ethylhexyl)phthalate***z10***soil)	Bis(2-ethylhexyl)Phthalate	z10	3	0	11	140	79.33	64.84	0.817	soil	0.05	2.92	188.6	242.5	213.9	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z10***soil)	Butyl Benzyl Phthalate	z10	3	0	12	12	12	0	N/A	soil	0.05	2.92	12.0	12.0	12.0	µg/kg (dry)
Result_MDL (cadmium***z10***soil)	Cadmium	z10	3	0	0.17	0.34	0.25	0.0854	0.342	soil	0.05	2.92	0.4	0.5	0.4	mg/kg (dry)
Result_MDL (carbazole***z10***soil)	Carbazole	z10	3	0	9.7	9.8	9.733	0.0577	0.00593	soil	0.05	2.92	9.8	9.9	9.9	µg/kg (dry)
Result_MDL (chromium***z10***soil)	Chromium	z10	3	0	6.6	7.8	7.033	0.666	0.0947	soil	0.05	2.92	8.2	8.7	8.4	mg/kg (dry)
Result_MDL (chrysene***z10***soil)	Chrysene	z10	3	0	44	61	50.33	9.292	0.185	soil	0.05	2.92	66.0	73.7	69.7	µg/kg (dry)
Result_MDL (copper***z10***soil)	Copper	z10	3	0	4.7	9.9	6.733	2.779	0.413	soil	0.05	2.92	11.4	13.7	12.5	mg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z10***soil)	Dibenzo(a,h)anthracene	z10	3	0	11	23	17.67	6.11	0.346	soil	0.05	2.92	28.0	33.0	30.4	µg/kg (dry)
Result_MDL (dibenzofuran***z10***soil)	Dibenzofuran	z10	3	0	10	10	10	0	N/A	soil	0.05	2.92	10.0	10.0	10.0	µg/kg (dry)
Result_MDL (di-n-butyl phthalate***z10***soil)	Di-N-Butyl Phthalate	z10	3	0	4.7	4.8	4.733	0.0577	0.0122	soil	0.05	2.92	4.8	4.9	4.9	µg/kg (dry)
Result_MDL (fluoranthene***z10***soil)	Fluoranthene	z10	3	0	76	110	89	18.36	0.206	soil	0.05	2.92	120.0	135.2	127.4	µg/kg (dry)
Result_MDL (high molecular weight pahs***z10***soil)	HPAHs	z10	3	0	550	666	599.7	59.77	0.0997	soil	0.05	2.92	700.5	750.1	724.9	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z10***soil)	Indeno(1,2,3-cd)pyrene	z10	3	0	68	78	73.67	5.132	0.0697	soil	0.05	2.92	82.3	86.6	84.4	µg/kg (dry)
Result_MDL (lead***z10***soil)	Lead	z10	3	0	13	19	15.33	3.215	0.21	soil	0.05	2.92	20.8	23.4	22.0	mg/kg (dry)
Result_MDL (manganese***z10***soil)	Manganese	z10	3	0	97	140	122.3	22.5	0.184	soil	0.05	2.92	160.2	178.9	169.3	mg/kg (dry)
Result_MDL (mercury***z10***soil)	Mercury	z10	3	0	0.032	0.054	0.0417	0.0112	0.27	soil	0.05	2.92	0.1	0.1	0.1	mg/kg (dry)
Result_MDL (nickel***z10***soil)	Nickel	z10	3	0	4.8	5.2	4.933	0.231	0.0468	soil	0.05	2.92	5.3	5.5	5.4	mg/kg (dry)
Result_MDL (pcbs, total***z10***soil)	PCBs (total)	z10	3	0	31	31	31	0	N/A	soil	0.05	2.92	31.0	31.0	31.0	µg/kg (dry)
Result_MDL (phenanthrene***z10***soil)	Phenanthrene	z10	3	0	52	67	57.33	8.386	0.146	soil	0.05	2.92	71.5	78.4	74.9	µg/kg (dry)
Result_MDL (pyrene***z10***soil)	Pyrene	z10	3	0	47	82	65.33	17.56	0.269	soil	0.05	2.92	94.9	109.5	102.0	µg/kg (dry)
Result_MDL (selenium***z10***soil)	Selenium	z10	3	0	0.59	0.93	0.743	0.172	0.232	soil	0.05	2.92	1.0	1.2	1.1	mg/kg (dry)
Result_MDL (silver***z10***soil)	Silver	z10	3	0	0.021	0.057	0.0343	0.0197	0.575	soil	0.05	2.92	0.1	0.1	0.1	mg/kg (dry)
Result_MDL (vanadium***z10***soil)	Vanadium	z10	3	0	9.4	11	10.13	0.808	0.0798	soil	0.05	2.92	11.5	12.2	11.8	mg/kg (dry)
Result_MDL (zinc***z10***soil)	Zinc	z10	3	0	22	36	27.67	7.371	0.266	soil	0.05	2.92	40.1	46.2	43.0	mg/kg (dry)

Notes:
CV = coefficient of variation
HPAH = high molecular weight polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
SD = standard deviation
UCL = upper confidence limit

Table A-8
Presence of Slag in Shallow Soils: Zones 1, 4, and 7

Zone 1		Zone 4		Zone 7	
Boring ID	Presence of Slag	Boring ID	Presence of Slag	Boring ID	Presence of Slag
SB-721	N	SB-811	Y	SB-271	Y
SB-722	Y	SB-812	Y	SB-272	Y
SB-723	Y	SB-813	N	SB-273	Y
SB-724	N	SB-814	Y	SB-274	Y
SB-725	Y	SB-815	Y	SB-275	Y
SB-726	Y	SB-816	Y	SB-276	Y
SB-727	Y	SB-817	N	SB-277	Y
SB-728	Y	SB-818	Y	SB-278	Y
SB-729	Y	SB-819	Y	SB-279	Y
SB-730	Y	SB-820	Y	SB-280	Y
SB-731	Y	SB-821	Y	SB-281	Y
SB-732	Y	SB-822	Y	SB-282	Y
SB-733	Y	SB-823	Y	SB-283	Y
SB-734	N	SB-824	N	SB-284	Y
SB-735	Y	SB-825	N	SB-285	Y
SB-736	Y	SB-826	Y	SB-286	Y
SB-737	Y	SB-827	Y	SB-287	Y
SB-738	Y	SB-828	Y	SB-288	Y
SB-739	Y	SB-829	Y	SB-289	Y
SB-740	N	SB-830	Y	SB-290	Y
SB-741	Y	SB-831	N	SB-291	Y
SB-742	N	SB-832	Y	SB-292	Y
SB-743	N	SB-833	Y	SB-293	Y
SB-744	N	SB-834	N	SB-294	Y
SB-745	Y	SB-835	N	SB-295	Y
SB-746	Y	SB-836	N	SB-296	Y
SB-747	N	SB-837	Y	SB-297	Y
SB-748	N	SB-838	N	SB-298	Y
SB-749	N	SB-839	N	SB-299	Y
SB-750	Y	SB-840	N	SB-300	Y
SB-751	Y	SB-841	Y	SB-301	Y
SB-752	Y	SB-842	Y	SB-302	Y
SB-753	Y	SB-843	Y	SB-303	Y
SB-754	Y	SB-844	Y	SB-304	Y
SB-755	Y	SB-845	Y	SB-305	Y
SB-756	Y	SB-846	Y	SB-306	Y
SB-757	Y	SB-847	N	SB-307	Y
SB-758	Y	SB-848	Y	SB-308	Y
SB-759	Y	SB-849	Y	SB-309	Y
SB-760	Y	SB-850	Y	SB-310	Y
SB-761	Y	SB-851	Y	SB-311	Y
SB-762	Y	SB-852	Y	SB-312	Y
SB-763	Y	SB-853	Y	SB-313	Y
SB-764	Y	SB-854	Y	SB-314	Y
SB-765	Y	SB-855	N	SB-315	Y
SB-766	Y	SB-856	Y	SB-316	Y

Table A-8
Presence of Slag in Shallow Soils: Zones 1, 4, and 7

Zone 1		Zone 4		Zone 7	
Boring ID	Presence of Slag	Boring ID	Presence of Slag	Boring ID	Presence of Slag
SB-767	Y	SB-857	Y	SB-317	Y
SB-768	Y	SB-858	Y	SB-318	Y
SB-769	Y	SB-859	Y	SB-319	Y
SB-770	N	SB-860	N	SB-320	Y
SB-771	Y	SB-861	N	SB-321	Y
SB-772	Y	SB-862	Y	SB-322	Y
SB-773	N	SB-863	Y	SB-323	Y
SB-774	Y	SB-864	N	SB-324	Y
SB-775	Y	SB-865	N	SB-325	N
SB-776	Y	SB-866	N	SB-326	Y
SB-777	N	SB-867	N	SB-327	Y
SB-778	N	SB-868	N	SB-328	Y
SB-779	Y	SB-869	N	SB-329	Y
SB-780	Y	SB-870	N	SB-330	Y
SB-781	Y	SB-871	Y	SB-331	Y
SB-782	Y	SB-872	Y	SB-332	Y
SB-783	Y	SB-873	Y	SB-333	Y
SB-784	Y	SB-874	Y	SB-334	Y
SB-785	Y	SB-875	Y	SB-335	Y
SB-786	N	SB-876	Y	SB-336	Y
SB-787	N	SB-877	Y	SB-337	Y
SB-788	Y	SB-878	Y	SB-338	Y
SB-789	Y	SB-879	Y	SB-339	Y
SB-790	Y	SB-880	Y	SB-340	Y
SB-791	Y	SB-881	Y	SB-341	Y
SB-792	Y	SB-882	Y	SB-342	Y
SB-793	Y	SB-883	Y	SB-343	Y
SB-794	Y	SB-884	N	SB-344	Y
SB-795	Y	SB-885	N	SB-345	Y
SB-796	Y	SB-886	N	SB-346	Y
SB-797	Y	SB-887	N	SB-347	Y
SB-798	Y	SB-888	Y	SB-348	Y
SB-799	Y	SB-889	Y	SB-349	Y
SB-800	Y	SB-890	N	SB-350	Y
SB-801	Y	SB-891	N	SB-351	Y
SB-802	Y	SB-892	Y	SB-352	Y
SB-803	Y	SB-893	N	SB-353	Y
SB-804	Y	SB-894	N	SB-354	Y
SB-805	Y	SB-895	N	SB-355	Y
SB-806	Y	SB-896	N	SB-356	Y
SB-807	Y	SB-897	N	SB-357	Y
SB-808	Y	SB-898	N	SB-358	Y
SB-809	Y	SB-899	N	SB-359	Y
SB-810	Y	SB-900	N	SB-360	Y

Notes:

Shading indicates no slag observed in sub-sample.

N = no

Y = yes

Table A-9
Zones 1 to 10 Exposure Data and UCL Calculations Without Outliers, with Weighted Average and Slag Adjustment

Model Run	Variable	Zone Group	Number of Observations	Number Missing	Minimum	Maximum	Mean	SD	CV	Media	Alpha (95% = 0.05)	t-value (alpha, df = r-1)	Student's-t UCL	Chebychev UCL	MidPoint UCL for Zones 1 to 9 Combined with Slag Adjustment at 50%	MidPoint UCL with Weighted Average for Zones 1 to 10 and Slag Adjustment at 50 %	Units
Result_MDL (1,1`-biphenyl***z19***soil)	1,1`-Biphenyl	z19	27	0	4.8	520	44.58	97.08	2.178	soil	0.05	1.71	76	126	98	66	µg/kg (dry)
Result_MDL_No_Outlier (antimony_z19)	Antimony	z19	26	1	1.4	14	7.515	3.583	0.477	soil	0.05	1.71	9	11	4.8	3.3	mg/kg (dry)
Result_MDL (aroclor 1248***z19***soil)	Aroclor 1248	z19	27	0	25	1100	157.4	290.6	1.846	soil	0.05	1.71	253	401	318	219	µg/kg (dry)
Result_MDL (aroclor 1254***z19***soil)	Aroclor 1254	z19	27	0	30	3400	310.2	632.4	2.039	soil	0.05	1.71	518	841	660	446	µg/kg (dry)
Result_MDL (barium***z19***soil)	Barium	z19	27	0	44	450	223.3	106.9	0.479	soil	0.05	1.71	258	313	142	106	mg/kg (dry)
Result_MDL (benzo(a)anthracene***z19***soil)	Benzo(a)anthracene	z19	27	0	66	15000	2261	3375	1.493	soil	0.05	1.71	3369	5092	4142	2753	µg/kg (dry)
Result_MDL (benzo(a)pyrene***z19***soil)	Benzo(a)pyrene	z19	27	0	85	12000	1861	2655	1.426	soil	0.05	1.71	2732	4088	3342	2232	µg/kg (dry)
Result_MDL (benzo(b)fluoranthene***z19***soil)	Benzo(b)fluoranthene	z19	27	0	120	16000	2610	3563	1.365	soil	0.05	1.71	3780	5599	4600	3070	µg/kg (dry)
Result_MDL (benzo(g,h,i)perylene***z19***soil)	Benzo(g,h,i)perylene	z19	27	0	82	8400	1431	1895	1.324	soil	0.05	1.71	2053	3021	2490	1670	µg/kg (dry)
Result_MDL (benzo(k)fluoranthene***z19***soil)	Benzo(k)fluoranthene	z19	27	0	53	6900	1121	1527	1.362	soil	0.05	1.71	1622	2402	1974	1322	µg/kg (dry)
Result_MDL_No_Outlier (bis(2-ethylhexyl)phthalate_z19)	Bis(2-ethylhexyl)Phthalate	z19	26	1	95	6100	1526	1735	1.137	soil	0.05	1.71	2107	3009	2518	1733	µg/kg (dry)
Result_MDL (butyl benzyl phthalate***z19***soil)	Butyl Benzyl Phthalate	z19	27	0	5.6	2800	353.7	604.1	1.708	soil	0.05	1.71	552	860	689	459	µg/kg (dry)
Result_MDL_No_Outlier (cadmium_z19)	Cadmium	z19	26	1	1.4	14	4.862	2.652	0.546	soil	0.05	1.71	6	7	3.2	2.3	mg/kg (dry)
Result_MDL (carbazole***z19***soil)	Carbazole	z19	27	0	3.6	4900	571.3	1051	1.839	soil	0.05	1.71	916	1453	1154	765	µg/kg (dry)
Result_MDL_No_Outlier (chromium_z19)	Chromium	z19	26	1	8.9	41	24.42	7.617	0.312	soil	0.05	1.71	27	31	14	12	mg/kg (dry)
Result_MDL (chrysene***z19***soil)	Chrysene	z19	27	0	87	17000	2473	3712	1.501	soil	0.05	1.71	3691	5587	4541	3020	µg/kg (dry)
Result_MDL_No_Outlier (copper_z19)	Copper	z19	26	1	36	520	204.5	112.8	0.551	soil	0.05	1.71	242	301	135	93	mg/kg (dry)
Result_MDL (dibenzo(a,h)anthracene***z19***soil)	Dibenzo(a,h)anthracene	z19	27	0	25	2200	394.5	532.7	1.35	soil	0.05	1.71	569	841	692	467	µg/kg (dry)
Result_MDL (dibenzofuran***z19***soil)	Dibenzofuran	z19	27	0	10	4700	527.2	1008	1.912	soil	0.05	1.71	858	1373	1085	720	µg/kg (dry)
Result_MDL (di-n-butyl phthalate***z19***soil)	Di-N-Butyl Phthalate	z19	27	0	4.7	1500	166.6	349.9	2.1	soil	0.05	1.71	281	460	360	239	µg/kg (dry)
Result_MDL (fluoranthene***z19***soil)	Fluoranthene	z19	27	0	140	66000	7190	13495	1.877	soil	0.05	1.71	11620	18511	14666	9721	µg/kg (dry)
Result_MDL_No_Outlier (high molecular weight pahs_z19)	HPAHs	z19	26	1	859	76700	19347	24440	1.263	soil	0.05	1.71	27534	40240	33286	22208	µg/kg (dry)
Result_MDL (indeno(1,2,3-cd)pyrene***z19***soil)	Indeno(1,2,3-cd)pyrene	z19	27	0	91	9600	1622	2157	1.33	soil	0.05	1.71	2330	3431	2828	1894	µg/kg (dry)
Result_MDL (lead***z19***soil)	Lead	z19	27	0	74	1000	402.7	228.4	0.567	soil	0.05	1.71	478	594	266	183	mg/kg (dry)
Result_MDL (manganese***z19***soil)	Manganese	z19	27	0	190	720	377.4	124.1	0.329	soil	0.05	1.71	418	482	224	204	mg/kg (dry)
Result_MDL (mercury***z19***soil)	Mercury	z19	27	0	0.035	2.5	0.256	0.474	1.851	soil	0.05	1.71	0	1	0.26	0.19	mg/kg (dry)
Result_MDL (nickel***z19***soil)	Nickel	z19	27	0	11	58	36.89	12.4	0.336	soil	0.05	1.71	41	47	22	16	mg/kg (dry)
Result_MDL_No_Outlier (pcbs, total_z19)	PCBs (total)	z19	26	1	31	1460	378.5	326.6	0.863	soil	0.05	1.71	488	658	566	384	µg/kg (dry)
Result_MDL (phenanthrene***z19***soil)	Phenanthrene	z19	27	0	92	79000	7027	15676	2.231	soil	0.05	1.71	12173	20177	15672	10368	µg/kg (dry)
Result_MDL (pyrene***z19***soil)	Pyrene	z19	27	0	110	45000	5003	9288	1.856	soil	0.05	1.71	8052	12794	10150	6732	µg/kg (dry)
Result_MDL (selenium***z19***soil)	Selenium	z19	27	0	0.62	1.5	0.942	0.221	0.235	soil	0.05	1.71	1	1	0.53	0.72	mg/kg (dry)
Result_MDL (silver***z19***soil)	Silver	z19	27	0	0.32	4.4	1.919	1.107	0.577	soil	0.05	1.71	2	3	1.27	0.87	mg/kg (dry)
Result_MDL_No_Outlier (vanadium_z19)	Vanadium	z19	26	1	8.4	16	11.71	2.098	0.179	soil	0.05	1.71	12	14	6.5	8.2	mg/kg (dry)
Result_MDL_No_Outlier (zinc_z19)	Zinc	z19	26	1	180	1500	695	304.2	0.438	soil	0.05	1.71	797	955	436	302	mg/kg (dry)

Notes:
µg/kg = micrograms per kilogram
CV = coeficient of variation
HPAH = high molecular weight polycyclic aromatic hydrocarbon
mg/kg = milligrams per kilogram
PCB = polychlorinated biphenyl
SD = standard deviation
UCL = upper confidence limit
Z19 = Zones 1 to 9 combined

APPENDIX B
CALCULATION WORKSHEETS FOR
DETERMINING LOAEL-BASED SOIL
EXPOSURE AND RISK

Table B-1
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Shrew

Analyte	Example Soil Concentration (µg/kg)	Example Soil Concentration (mg/kg)	Literature-derived Bioaccumulation Models						Estimated Concentrations in Biota (mg/kg DW)		Food Intake Rate (kg/kg-BW/d, DW)	Diet Composition (proportion)		
			Plants			Soil Invertebrates								
			Intercept	Slope	BAF	Intercept	Slope	BAF	Plants	Soil Invertebrates		Soil Invertebrates	Plants	Soil
1,1'-Biphenyl	100	0.10			0.17	1.41	1.36		0.02	0.18	0.167	1	0	0.03
Antimony	36,000	36.00	-3.233	0.938				0.14	1.14	5.04	0.167	1	0	0.03
Aroclor 1248	100	0.10			0.17	1.41	1.36		0.02	0.18	0.167	1	0	0.03
Aroclor 1254	100	0.10			0.17	1.41	1.36		0.02	0.18	0.167	1	0	0.03
Barium	48,000	48.00			0.156			0.091	7.49	4.37	0.167	1	0	0.03
Benzo(a)anthracene	100	0.10	-1.7026	0.9469				1.59	0.02	0.16	0.167	1	0	0.03
Benzo(a)pyrene	100	0.10	-1.7026	0.9469				1.33	0.02	0.13	0.167	1	0	0.03
Benzo(b)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.167	1	0	0.03
Benzo(g,h,i)perylene	100	0.10	-1.7026	0.9469				2.94	0.02	0.29	0.167	1	0	0.03
Benzo(k)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.167	1	0	0.03
Bis(2-ethylhexyl)phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.167	1	0	0.03
Butyl benzyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.167	1	0	0.03
Cadmium	11,567	11.57	-0.476	0.546		2.114	0.795		2.36	57.99	0.167	1	0	0.03
Carbazole	1,131,662	1131.66			1.87			0.961	2116.21	1087.53	0.167	1	0	0.03
Chromium (total)	1,131,662	1131.66			0.041			0.306	46.40	346.29	0.167	1	0	0.03
Chrysene	100	0.10	-1.7026	0.9469				2.29	0.02	0.23	0.167	1	0	0.03
Copper	1,168,113	1168.11	0.669	0.394				0.515	31.56	601.58	0.167	1	0	0.03
Dibenzo(a,h)anthracene	100	0.10	-1.7026	0.9469				2.31	0.02	0.23	0.167	1	0	0.03
Dibenzofuran	100	0.10			2.09			3.04	0.21	0.30	0.167	1	0	0.03
Di-n-butyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.167	1	0	0.03
Di-n-octyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.167	1	0	0.03
Fluoranthene	100	0.10	-1.7026	0.9469				3.04	0.02	0.30	0.167	1	0	0.03
High molecular weight PAHs	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.167	1	0	0.03
Indeno(1,2,3-cd)pyrene	100	0.10	-1.7026	0.9469				2.86	0.02	0.29	0.167	1	0	0.03
Lead	15,936,844	15936.84	-1.328	0.561		-0.218	0.807		60.37	1979.99	0.167	1	0	0.03
Manganese	37,894,364	37894.36			0.0792	-0.809	0.682		3001.23	590.53	0.167	1	0	0.03
Mercury	654	0.65	-0.996	0.544		0.0781	0.3369		0.29	0.94	0.167	1	0	0.03
Nickel	83,050	83.05	-2.224	0.748				1.059	2.95	87.95	0.167	1	0	0.03
PCBs (total)	1,149	1.15			0.17	1.41	1.36		0.19	4.95	0.167	1	0	0.03
Phenanthrene	100	0.10			2.09			1.72	0.21	0.17	0.167	1	0	0.03
Pyrene	100	0.10	-1.7026	0.9469				1.75	0.02	0.18	0.167	1	0	0.03
Selenium	12,838	12.84	-0.678	1.104		-0.075	0.733		8.50	6.02	0.167	1	0	0.03
Silver	1,865,961	1865.96			0.014			2.045	26.12	3815.89	0.167	1	0	0.03
Toluene	100	0.10						1.014		0.10	0.167	1	0	0.03
Vanadium	100	0.10			0.00485			0.042	0.00	0.00	0.167	1	0	0.03
Xylene	100	0.10			3.43			1.016	0.34	0.10	0.167	1	0	0.03
Zinc	34,170,342	34170.34	1.575	0.555		4.449	0.328		1585.58	2625.51	0.167	1	0	0.03

Table B-1
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Shrew

Analyte	Bioaccessibility		Estimated Exposure (mg/kg/d)				Percent Estimated Exposure by Pathway			Selected Mammalian NOAEL TRV (mg/kg/d)	Selected Mammalian LOAEL TRV (mg/kg/d)	Example LOAEL HQ
	Biota-Animal	Soil	Soil Invertebrates	Plants	Soil	Total	Soil Invertebrates	Plants	Soil			
1,1'-Biphenyl	80	39	0.02	0.00	0.00	0.02	99.19%	0.00%	0.81%	50	500	0.00
Antimony	64	15	0.54	0.00	0.03	0.57	95.29%	0.00%	4.71%	0.059	0.59	0.96
Aroclor 1248	80	39	0.02	0.00	0.00	0.02	99.19%	0.00%	0.81%	0.068	0.68	0.04
Aroclor 1254	80	39	0.02	0.00	0.00	0.02	99.19%	0.00%	0.81%	0.068	0.68	0.04
Barium	64	33	0.47	0.00	0.08	0.55	85.59%	0.00%	14.41%	51.8	167.2	0.00
Benzo(a)anthracene	80	39	0.02	0.00	0.00	0.02	99.09%	0.00%	0.91%	0.615	3.07	0.01
Benzo(a)pyrene	80	39	0.02	0.00	0.00	0.02	98.91%	0.00%	1.09%	0.615	3.07	0.01
Benzo(b)fluoranthene	80	39	0.03	0.00	0.00	0.03	99.44%	0.00%	0.56%	0.615	3.07	0.01
Benzo(g,h,i)perylene	80	39	0.04	0.00	0.00	0.04	99.51%	0.00%	0.49%	0.615	3.07	0.01
Benzo(k)fluoranthene	80	39	0.03	0.00	0.00	0.03	99.44%	0.00%	0.56%	0.615	3.07	0.01
Bis(2-ethylhexyl)phthalate	80	39	0.00	0.00	0.00	0.00	93.91%	0.00%	6.09%	18.3	183	0.00
Butyl benzyl phthalate	80	39	0.00	0.00	0.00	0.00	93.91%	0.00%	6.09%	159	1590	0.00
Cadmium	71	55	6.87	0.00	0.03	6.90	99.54%	0.00%	0.46%	0.77	2.008	3.44
Carbazole	80	39	145.47	0.00	2.21	147.68	98.50%	0.00%	1.50%	22.8	228	0.65
Chromium (total)	64	5	37.06	0.00	0.27	37.33	99.28%	0.00%	0.72%	2.4	9.62	3.88
Chrysene	80	39	0.03	0.00	0.00	0.03	99.37%	0.00%	0.63%	0.615	3.07	0.01
Copper	79	47	79.95	0.00	2.75	82.70	96.67%	0.00%	3.33%	5.6	31.22	2.65
Dibenzo(a,h)anthracene	80	39	0.03	0.00	0.00	0.03	99.37%	0.00%	0.63%	0.615	3.07	0.01
Dibenzofuran	80	39	0.04	0.00	0.00	0.04	99.52%	0.00%	0.48%	---	---	---
Di-n-butyl phthalate	80	39	0.00	0.00	0.00	0.00	93.91%	0.00%	6.09%	1340	3175	0.00
Di-n-octyl phthalate	80	39	0.00	0.00	0.00	0.00	93.91%	0.00%	6.09%	65.1	651	0.00
Fluoranthene	80	39	0.04	0.00	0.00	0.04	99.52%	0.00%	0.48%	0.615	3.07	0.01
High molecular weight PAHs	80	39	0.03	0.00	0.00	0.03	99.44%	0.00%	0.56%	0.615	3.07	0.01
Indeno(1,2,3-cd)pyrene	80	39	0.04	0.00	0.00	0.04	99.49%	0.00%	0.51%	0.615	3.07	0.01
Lead	46	43	151.68	0.00	34.71	186.39	81.38%	0.00%	18.62%	4.7	28.68	6.50
Manganese	79	36	78.00	0.00	67.67	145.67	53.55%	0.00%	46.45%	59.4	71	2.05
Mercury	64	31	0.10	0.00	0.00	0.10	99.00%	0.00%	1.00%	0.032	0.16	0.63
Nickel	64	16	9.41	0.00	0.06	9.48	99.32%	0.00%	0.68%	1.7	5.92	1.60
PCBs (total)	80	39	0.66	0.00	0.00	0.66	99.66%	0.00%	0.34%	0.068	0.68	0.98
Phenanthrene	80	39	0.02	0.00	0.00	0.02	99.16%	0.00%	0.84%	65.6	328	0.00
Pyrene	80	39	0.02	0.00	0.00	0.02	99.17%	0.00%	0.83%	0.615	3.07	0.01
Selenium	62	52	0.63	0.00	0.03	0.66	94.89%	0.00%	5.11%	0.143	0.442	1.49
Silver	17	31	109.26	0.00	2.90	112.16	97.41%	0.00%	2.59%	6.02	60.20	1.86
Toluene	80	39	0.01	0.00	0.00	0.01	98.58%	0.00%	1.42%	52	520	0.00
Vanadium	64	7	0.00	0.00	0.00	0.00	93.06%	0.00%	6.94%	4.16	6.85	0.00
Xylene	80	39	0.01	0.00	0.00	0.01	98.58%	0.00%	1.42%	179	350	0.00
Zinc	69	33	301.21	0.00	56.29	357.50	84.25%	0.00%	15.75%	75.4	90.28	3.96

Table B-2
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Vole

Analyte	Example Soil Concentration (µg/kg)	Example Soil Concentration (mg/kg)	Literature-derived Bioaccumulation Models						Estimated Concentrations in Biota (mg/kg DW)		Food Intake Rate (kg/kg-bw/d, DW)	Diet Composition (proportion)		
			Plants			Soil Invertebrates						Soil Invertebrates	Plants	Soil
			Intercept	Slope	BAF	Intercept	Slope	BAF	Plants	Soil Invertebrates				
1,1'-Biphenyl	100	0.10			0.17	1.41	1.36		0.02	0.18	0.076	0	1	0.032
Antimony	36,000	36.00	-3.233	0.938				0.14	1.14	5.04	0.076	0	1	0.032
Aroclor 1248	100	0.10			0.17	1.41	1.36		0.02	0.18	0.076	0	1	0.032
Aroclor 1254	100	0.10			0.17	1.41	1.36		0.02	0.18	0.076	0	1	0.032
Barium	48,000	48.00			0.156			0.091	7.49	4.37	0.076	0	1	0.032
Benzo(a)anthracene	100	0.10	-1.7026	0.9469				1.59	0.02	0.16	0.076	0	1	0.032
Benzo(a)pyrene	100	0.10	-1.7026	0.9469				1.33	0.02	0.13	0.076	0	1	0.032
Benzo(b)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.076	0	1	0.032
Benzo(g,h,i)perylene	100	0.10	-1.7026	0.9469				2.94	0.02	0.29	0.076	0	1	0.032
Benzo(k)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.076	0	1	0.032
Bis(2-ethylhexyl)phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.076	0	1	0.032
Butyl benzyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.076	0	1	0.032
Cadmium	11,567	11.57	-0.476	0.546		2.114	0.795		2.36	57.99	0.076	0	1	0.032
Carbazole	1,131,662	1131.66			1.87			0.961	2116.21	1087.53	0.076	0	1	0.032
Chromium (total)	1,131,662	1131.66			0.041			0.306	46.40	346.29	0.076	0	1	0.032
Chrysene	100	0.10	-1.7026	0.9469				2.29	0.02	0.23	0.076	0	1	0.032
Copper	1,168,113	1168.11	0.669	0.394				0.515	31.56	601.58	0.076	0	1	0.032
Dibenzo(a,h)anthracene	100	0.10	-1.7026	0.9469				2.31	0.02	0.23	0.076	0	1	0.032
Dibenzofuran	100	0.10			2.09			3.04	0.21	0.30	0.076	0	1	0.032
Di-n-butyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.076	0	1	0.032
Di-n-octyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.076	0	1	0.032
Fluoranthene	100	0.10	-1.7026	0.9469				3.04	0.02	0.30	0.076	0	1	0.032
High molecular weight PAHs	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.076	0	1	0.032
Indeno(1,2,3-cd)pyrene	100	0.10	-1.7026	0.9469				2.86	0.02	0.29	0.076	0	1	0.032
Lead	15,936,844	15936.84	-1.328	0.561		-0.218	0.807		60.37	1979.99	0.076	0	1	0.032
Manganese	37,894,364	37894.36			0.0792	-0.809	0.682		3001.23	590.53	0.076	0	1	0.032
Mercury	654	0.65	-0.996	0.544		0.0781	0.3369		0.29	0.94	0.076	0	1	0.032
Nickel	83,050	83.05	-2.224	0.748				1.059	2.95	87.95	0.076	0	1	0.032
PCB (total)	1,149	1.15			0.17	1.41	1.36		0.19	4.95	0.076	0	1	0.032
Phenanthrene	100	0.10			2.09			1.72	0.21	0.17	0.076	0	1	0.032
Pyrene	100	0.10	-1.7026	0.9469				1.75	0.02	0.18	0.076	0	1	0.032
Selenium	12,838	12.84	-0.678	1.104		-0.075	0.733		8.50	6.02	0.076	0	1	0.032
Silver	1,865,961	1865.96			0.014			2.045	26.12	3815.89	0.076	0	1	0.032
Toluene	100	0.10						1.014		0.10	0.076	0	1	0.032
Vanadium	100	0.10			0.00485			0.042	0.00	0.00	0.076	0	1	0.032
Xylene	100	0.10			3.43			1.016	0.34	0.10	0.076	0	1	0.032
Zinc	34,170,342	34170.34	1.575	0.555		4.449	0.328		1585.58	2625.51	0.076	0	1	0.032

Table B-2
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Vole

Analyte	Bioaccessibility		Estimated Exposure (mg/kg/d)				Percent Estimated Exposure by Pathway			Selected Mammalian NOAEL TRV (mg/kg/d)	Selected Mammalian LOAEL TRV (mg/kg/d)	Example LOAEL HQ
	Biota-Animal	Soil	Soil Invertebrates	Plants	Soil	Total	Soil Invertebrates	Plants	Soil			
1,1`-Biphenyl	80	39	0.00	0.00	0.00	0.00	0.00%	93.14%	6.86%	50	500	0.00
Antimony	64	15	0.00	0.09	0.01	0.10	0.00%	86.99%	13.01%	0.059	0.59	0.17
Aroclor 1248	80	39	0.00	0.00	0.00	0.00	0.00%	93.14%	6.86%	0.068	0.68	0.00
Aroclor 1254	80	39	0.00	0.00	0.00	0.00	0.00%	93.14%	6.86%	0.068	0.68	0.00
Barium	64	33	0.00	0.57	0.04	0.61	0.00%	93.71%	6.29%	51.8	167.2	0.00
Benzo(a)anthracene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Benzo(a)pyrene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Benzo(b)fluoranthene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Benzo(g,h,i)perylene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Benzo(k)fluoranthene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Bis(2-ethylhexyl)phthalate	80	39	0.00	0.00	0.00	0.00	0.00%	84.09%	15.91%	18.3	183	0.00
Butyl benzyl phthalate	80	39	0.00	0.00	0.00	0.00	0.00%	84.09%	15.91%	159	1590	0.00
Cadmium	71	55	0.00	0.18	0.02	0.20	0.00%	92.05%	7.95%	0.77	2.008	0.10
Carbazole	80	39	0.00	160.83	1.07	161.91	0.00%	99.34%	0.66%	22.8	228	0.71
Chromium (total)	64	5	0.00	3.53	0.13	3.66	0.00%	96.41%	3.59%	2.4	9.62	0.38
Chrysene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Copper	79	47	0.00	2.40	1.33	3.73	0.00%	64.26%	35.74%	5.6	31.22	0.12
Dibenzo(a,h)anthracene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Dibenzofuran	80	39	0.00	0.02	0.00	0.02	0.00%	99.41%	0.59%	---	---	---
Di-n-butyl phthalate	80	39	0.00	0.00	0.00	0.00	0.00%	84.09%	15.91%	1340	3175	0.00
Di-n-octyl phthalate	80	39	0.00	0.00	0.00	0.00	0.00%	84.09%	15.91%	65.1	651	0.00
Fluoranthene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
High molecular weight PAHs	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Indeno(1,2,3-cd)pyrene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Lead	46	43	0.00	4.59	16.83	21.42	0.00%	21.42%	78.58%	4.7	28.68	0.75
Manganese	79	36	0.00	228.09	32.81	260.90	0.00%	87.42%	12.58%	59.4	71	3.67
Mercury	64	31	0.00	0.02	0.00	0.02	0.00%	97.83%	2.17%	0.032	0.16	0.14
Nickel	64	16	0.00	0.22	0.03	0.26	0.00%	87.71%	12.29%	1.7	5.92	0.04
PCB (total)	80	39	0.00	0.01	0.00	0.02	0.00%	93.14%	6.86%	0.068	0.68	0.02
Phenanthrene	80	39	0.00	0.02	0.00	0.02	0.00%	99.41%	0.59%	65.6	328	0.00
Pyrene	80	39	0.00	0.00	0.00	0.00	0.00%	94.29%	5.71%	0.615	3.07	0.00
Selenium	62	52	0.00	0.65	0.02	0.66	0.00%	97.53%	2.47%	0.143	0.442	1.50
Silver	17	31	0.00	1.99	1.41	3.39	0.00%	58.53%	41.47%	6.02	60.20	0.06
Toluene	80	39	0.00	0.00	0.00	0.00	0.00%	0.00%	100.00%	52	520	0.00
Vanadium	64	7	0.00	0.00	0.00	0.00	0.00%	69.40%	30.60%	4.16	6.85	0.00
Xylene	80	39	0.00	0.03	0.00	0.03	0.00%	99.64%	0.36%	179	350	0.00
Zinc	69	33	0.00	120.50	27.29	147.80	0.00%	81.53%	18.47%	75.4	90.28	1.64

Table B-3
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Robin

Analyte	Example Soil Concentration (µg/kg)	Example Soil Concentration (mg/kg)	Literature-derived Bioaccumulation Models						Estimated Concentrations in Biota		Food Intake Rate (kg/kg-BW/d, DW)	Diet Composition (proportion)			Bioaccessibility	
			Plants			Soil Invertebrates			(mg/kg DW)			Soil Invertebrates	Plants	Soil	Biota-Animal	Soil
			Intercept	Slope	BAF	Intercept	Slope	BAF	Plants	Soil Invertebrates						
1,1`-Biphenyl	100	0.10			0.17	1.41	1.36		0.02	0.18	0.193	1	0	0.073	80	39
Antimony	36,000	36.00	-3.233	0.938				0.14	1.14	5.04	0.193	1	0	0.073	64	15
Aroclor 1248	100	0.10			0.17	1.41	1.36		0.02	0.00	0.193	1	0	0.073	80	39
Aroclor 1254	100	0.10			0.17	1.41	1.36		0.02	0.00	0.193	1	0	0.073	80	39
Barium	48,000	48.00			0.156			0.091	7.49	4.37	0.193	1	0	0.073	64	33
Benzo(a)anthracene	100	0.10	-1.7026	0.9469				1.59	0.02	0.16	0.193	1	0	0.073	80	39
Benzo(a)pyrene	100	0.10	-1.7026	0.9469				1.33	0.02	0.13	0.193	1	0	0.073	80	39
Benzo(b)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.193	1	0	0.073	80	39
Benzo(g,h,i)perylene	100	0.10	-1.7026	0.9469				2.94	0.02	0.29	0.193	1	0	0.073	80	39
Benzo(k)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.193	1	0	0.073	80	39
Bis(2-ethylhexyl)phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.193	1	0	0.073	80	39
Butyl benzyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.193	1	0	0.073	80	39
Cadmium	11,567	11.57	-0.476	0.546		2.114	0.795		2.36	57.99	0.193	1	0	0.073	71	55
Carbazole	1,131,662	1131.66			1.87			0.961	2116.21	1087.53	0.167	1	0	0.073	80	39
Chromium (total)	1,131,662	1131.66			0.041			0.306	46.40	346.29	0.193	1	0	0.073	64	5
Chrysene	100	0.10	-1.7026	0.9469				2.29	0.02	0.23	0.193	1	0	0.073	80	39
Copper	1,168,113	1168.11	0.669	0.394				0.515	31.56	601.58	0.193	1	0	0.073	79	47
Dibenzo(a,h)anthracene	100	0.10	-1.7026	0.9469				2.31	0.02	0.23	0.193	1	0	0.073	80	39
Dibenzofuran	100	0.10			2.09			3.04	0.21	0.30	0.193	1	0	0.073	80	39
Di-n-butyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.193	1	0	0.073	80	39
Di-n-octyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.193	1	0	0.073	80	39
Fluoranthene	100	0.10	-1.7026	0.9469				3.04	0.02	0.30	0.193	1	0	0.073	80	39
High molecular weight PAHs	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.193	1	0	0.073	80	39
Indeno(1,2,3-cd)pyrene	100	0.10	-1.7026	0.9469				2.86	0.02	0.29	0.193	1	0	0.073	80	39
Lead	15,936,844	15936.84	-1.328	0.561		-0.218	0.807		60.37	1979.99	0.193	1	0	0.073	46	43
Manganese	37,894,364	37894.36			0.0792	-0.809	0.682		3001.23	590.53	0.193	1	0	0.073	79	36
Mercury	654	0.65	-0.996	0.544		0.0781	0.3369		0.29	0.94	0.193	1	0	0.073	64	31
Nickel	83,050	83.05	-2.224	0.748				1.059	2.95	87.95	0.193	1	0	0.073	64	16
PCBs (total)	1,149	1.15			0.17	1.41	1.36		0.19	4.95	0.193	1	0	0.073	80	39
Phenanthrene	100	0.10			2.09			1.72	0.21	0.17	0.193	1	0	0.073	80	39
Pyrene	100	0.10	-1.7026	0.9469				1.75	0.02	0.18	0.193	1	0	0.073	80	39
Selenium	12,838	12.84	-0.678	1.104		-0.075	0.733		8.50	6.02	0.193	1	0	0.073	62	52
Silver	1,865,961	1865.96			0.014			2.045	26.12	3815.89	0.193	1	0	0.073	17	31
Toluene	100	0.10						1.014		0.10	0.193	1	0	0.073	80	39
Vanadium	100	0.10			0.00485			0.042	0.00	0.00	0.193	1	0	0.073	64	7
Xylene	100	0.10			3.43			1.016	0.34	0.10	0.193	1	0	0.073	80	39
Zinc	34,170,342	34170.34	1.575	0.555		4.449	0.328		1585.58	2625.51	0.193	1	0	0.073	69	33

Table B-3
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Robin

Analyte	Estimated Exposure (mg/kg/d)				Percent Estimated Exposure by Pathway			Selected Avian NOAEL TRV (mg/kg/d)	Selected Avian LOAEL TRV (mg/kg/d)	Example LOAEL HQ
	Soil Invertebrates	Plants	Soil	Total	Soil Invertebrates	Plants	Soil			
1,1'-Biphenyl	0.03	0.00	0.00	0.03	98.05%	0.00%	1.95%	---	---	---
Antimony	0.62	0.00	0.07	0.70	89.27%	0.00%	10.73%	---	---	---
Aroclor 1248	0.00	0.00	0.00	0.00	0.00%	0.00%	100.00%	0.41	4.10	0.00
Aroclor 1254	0.00	0.00	0.00	0.00	0.00%	0.00%	100.00%	0.41	4.10	0.00
Barium	0.54	0.00	0.22	0.76	70.93%	0.00%	29.07%	73.5	735	0.00
Benzo(a)anthracene	0.02	0.00	0.00	0.03	97.81%	0.00%	2.19%	33	330	0.00
Benzo(a)pyrene	0.02	0.00	0.00	0.02	97.39%	0.00%	2.61%	33	330	0.00
Benzo(b)fluoranthene	0.04	0.00	0.00	0.04	98.65%	0.00%	1.35%	33	330	0.00
Benzo(g,h,i)perylene	0.05	0.00	0.00	0.05	98.80%	0.00%	1.20%	33	330	0.00
Benzo(k)fluoranthene	0.04	0.00	0.00	0.04	98.65%	0.00%	1.35%	33	330	0.00
Bis(2-ethylhexyl)phthalate	0.00	0.00	0.00	0.00	86.37%	0.00%	13.63%	1.1	11	0.00
Butyl benzyl phthalate	0.00	0.00	0.00	0.00	86.37%	0.00%	13.63%	1.1	11	0.00
Cadmium	7.92	0.00	0.09	8.01	98.88%	0.00%	1.12%	1.47	2.388	3.35
Carbazole	145.47	0.00	5.39	150.85	96.43%	0.00%	3.57%	---	---	---
Chromium (total)	42.73	0.00	0.76	43.49	98.25%	0.00%	1.75%	2.66	8.315	5.23
Chrysene	0.04	0.00	0.00	0.04	98.47%	0.00%	1.53%	33	330	0.00
Copper	92.19	0.00	7.72	99.91	92.27%	0.00%	7.73%	4.05	28	3.57
Dibenzo(a,h)anthracene	0.04	0.00	0.00	0.04	98.48%	0.00%	1.52%	33	330	0.00
Dibenzofuran	0.05	0.00	0.00	0.05	98.84%	0.00%	1.16%	---	---	---
Di-n-butyl phthalate	0.00	0.00	0.00	0.00	86.37%	0.00%	13.63%	0.14	1.4	0.00
Di-n-octyl phthalate	0.00	0.00	0.00	0.00	86.37%	0.00%	13.63%	1.1	11	0.00
Fluoranthene	0.05	0.00	0.00	0.05	98.84%	0.00%	1.16%	33	330	0.00
High molecular weight PAHs	0.04	0.00	0.00	0.04	98.65%	0.00%	1.35%	33	330	0.00
Indeno(1,2,3-cd)pyrene	0.04	0.00	0.00	0.04	98.77%	0.00%	1.23%	33	330	0.00
Lead	174.91	0.00	97.38	272.29	64.24%	0.00%	35.76%	1.63	13.288	20.49
Manganese	89.95	0.00	189.87	279.81	32.14%	0.00%	67.86%	179	348	0.80
Mercury	0.12	0.00	0.00	0.12	97.59%	0.00%	2.41%	0.068	0.37	0.32
Nickel	10.85	0.00	0.18	11.03	98.35%	0.00%	1.65%	6.71	11.5	0.96
PCBs (total)	0.76	0.00	0.01	0.77	99.18%	0.00%	0.82%	0.41	4.10	0.19
Phenanthrene	0.03	0.00	0.00	0.03	97.97%	0.00%	2.03%	32.5	325	0.00
Pyrene	0.03	0.00	0.00	0.03	98.01%	0.00%	1.99%	33	330	0.00
Selenium	0.72	0.00	0.09	0.82	88.40%	0.00%	11.60%	0.29	0.4256	1.92
Silver	125.99	0.00	8.14	134.13	93.93%	0.00%	6.07%	6.55	65.5	2.05
Toluene	0.02	0.00	0.00	0.02	96.61%	0.00%	3.39%	40.7	407	0.00
Vanadium	0.00	0.00	0.00	0.00	84.64%	0.00%	15.36%	0.344	0.6682	0.00
Xylene	0.02	0.00	0.00	0.02	96.62%	0.00%	3.38%	40.7	407	0.00
Zinc	347.32	0.00	157.95	505.28	68.74%	0.00%	31.26%	66.1	105	4.81

Table B-4
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Dove

Analyte	Example Soil Concentration (µg/kg)	Example Soil Concentration (mg/kg)	Literature-derived Bioaccumulation Models						Estimated Concentrations in Biota (mg/kg DW)		Food Intake Rate (kg/kg-BW/d, DW)
			Plants			Soil Invertebrates			Plants	Soil Invertebrates	
			Intercept	Slope	BAF	Intercept	Slope	BAF			
1,1'-Biphenyl	100	0.10			0.17	1.41	1.36		0.02	0.18	0.137
Antimony	36,000	36.00	-3.233	0.938				0.14	1.14	5.04	0.137
Aroclor 1248	100	0.10			0.17	1.41	1.36		0.02	0.00	0.137
Aroclor 1254	100	0.10			0.17	1.41	1.36		0.02	0.00	0.137
Barium	48,000	48.00			0.156			0.091	7.49	4.37	0.137
Benzo(a)anthracene	100	0.10	-1.7026	0.9469				1.59	0.02	0.16	0.137
Benzo(a)pyrene	100	0.10	-1.7026	0.9469				1.33	0.02	0.13	0.137
Benzo(b)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.137
Benzo(g,h,i)perylene	100	0.10	-1.7026	0.9469				2.94	0.02	0.29	0.137
Benzo(k)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.137
Bis(2-ethylhexyl)phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.137
Butyl benzyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.137
Cadmium	11,567	11.57	-0.476	0.546		2.114	0.795		2.36	57.99	0.137
Carbazole	1,131,662	1131.66			1.87			0.961	2116.21	1087.53	0.167
Chromium (total)	1,131,662	1131.66			0.041			0.306	46.40	346.29	0.137
Chrysene	100	0.10	-1.7026	0.9469				2.29	0.02	0.23	0.137
Copper	1,168,113	1168.11	0.669	0.394				0.515	31.56	601.58	0.137
Dibenzo(a,h)anthracene	100	0.10	-1.7026	0.9469				2.31	0.02	0.23	0.137
Dibenzofuran	100	0.10			2.09			3.04	0.21	0.30	0.137
Di-n-butyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.137
Di-n-octyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.137
Fluoranthene	100	0.10	-1.7026	0.9469				3.04	0.02	0.30	0.137
High molecular weight PAHs	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.137
Indeno(1,2,3-cd)pyrene	100	0.10	-1.7026	0.9469				2.86	0.02	0.29	0.137
Lead	15,936,844	15936.84	-1.328	0.561		-0.218	0.807		60.37	1979.99	0.137
Manganese	37,894,364	37894.36			0.0792	-0.809	0.682		3001.23	590.53	0.137
Mercury	654	0.65	-0.996	0.544		0.0781	0.3369		0.29	0.94	0.137
Nickel	83,050	83.05	-2.224	0.748				1.059	2.95	87.95	0.137
PCBs (total)	1,149	1.15			0.17	1.41	1.36		0.19	4.95	0.137
Phenanthrene	100	0.10			2.09			1.72	0.21	0.17	0.137
Pyrene	100	0.10	-1.7026	0.9469				1.75	0.02	0.18	0.137
Selenium	12,838	12.84	-0.678	1.104		-0.075	0.733		8.50	6.02	0.137
Silver	1,865,961	1865.96			0.014			2.045	26.12	3815.89	0.137
Toluene	100	0.10						1.014		0.10	0.137
Vanadium	100	0.10			0.00485			0.042	0.00	0.00	0.137
Xylene	100	0.10			3.43			1.016	0.34	0.10	0.137
Zinc	34,170,342	34170.34	1.575	0.555		4.449	0.328		1585.58	2625.51	0.137

Table B-4
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Dove

Analyte	Diet Composition (proportion)			Bioaccessibility		Estimated Exposure (mg/kg/d)				Percent Estimated Exposure by Pathway			Selected Avian NOAEL TRV (mg/kg/d)	Selected Avian LOAEL TRV (mg/kg/d)	Example LOAEL HQ
	Soil Invertebrates	Plants	Soil	Biota- Animal	Soil	Soil Invertebrates	Plants	Soil	Total	Soil Invertebrates	Plants	Soil			
1,1`-Biphenyl	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	75.77%	24.23%	---	---	---
Antimony	0	1	0.139	64	15	0.00	0.16	0.10	0.26	0.00%	60.63%	39.37%	---	---	---
Aroclor 1248	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	75.77%	24.23%	0.41	4.10	0.00
Aroclor 1254	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	75.77%	24.23%	0.41	4.10	0.00
Barium	0	1	0.139	64	33	0.00	1.03	0.30	1.32	0.00%	77.44%	22.56%	73.5	735	0.00
Benzo(a)anthracene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Benzo(a)pyrene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Benzo(b)fluoranthene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Benzo(g,h,i)perylene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Benzo(k)fluoranthene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Bis(2-ethylhexyl)phthalate	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	54.90%	45.10%	1.1	11	0.00
Butyl benzyl phthalate	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	54.90%	45.10%	1.1	11	0.00
Cadmium	0	1	0.139	71	55	0.00	0.32	0.12	0.45	0.00%	72.72%	27.28%	1.47	2.388	0.19
Carbazole	0	1	0.139	80	39	0.00	353.83	10.26	364.09	0.00%	97.18%	2.82%	---	---	---
Chromium (total)	0	1	0.139	64	5	0.00	6.36	1.03	7.38	0.00%	86.09%	13.91%	2.66	8.315	0.89
Chrysene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Copper	0	1	0.139	79	47	0.00	4.32	10.45	14.77	0.00%	29.28%	70.72%	4.05	28	0.53
Dibenzo(a,h)anthracene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Dibenzofuran	0	1	0.139	80	39	0.00	0.03	0.00	0.03	0.00%	97.47%	2.53%	---	---	---
Di-n-butyl phthalate	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	54.90%	45.10%	0.14	1.4	0.00
Di-n-octyl phthalate	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	54.90%	45.10%	1.1	11	0.00
Fluoranthene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
High molecular weight PAHs	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Indeno(1,2,3-cd)pyrene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Lead	0	1	0.139	46	43	0.00	8.27	131.76	140.03	0.00%	5.91%	94.09%	1.63	13.288	10.54
Manganese	0	1	0.139	79	36	0.00	411.17	256.90	668.07	0.00%	61.55%	38.45%	179	348	1.92
Mercury	0	1	0.139	64	31	0.00	0.04	0.00	0.04	0.00%	91.23%	8.77%	0.068	0.37	0.12
Nickel	0	1	0.139	64	16	0.00	0.40	0.25	0.65	0.00%	62.17%	37.83%	6.71	11.5	0.06
PCBs (total)	0	1	0.139	80	39	0.00	0.03	0.01	0.04	0.00%	75.77%	24.23%	0.41	4.10	0.01
Phenanthrene	0	1	0.139	80	39	0.00	0.03	0.00	0.03	0.00%	97.47%	2.53%	32.5	325	0.00
Pyrene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	79.16%	20.84%	33	330	0.00
Selenium	0	1	0.139	62	52	0.00	1.16	0.13	1.29	0.00%	90.08%	9.92%	0.29	0.4256	3.04
Silver	0	1	0.139	17	31	0.00	3.58	11.02	14.59	0.00%	24.52%	75.48%	6.55	65.5	0.22
Toluene	0	1	0.139	80	39	0.00	0.00	0.00	0.00	0.00%	0.00%	100.00%	40.7	407	0.00
Vanadium	0	1	0.139	64	7	0.00	0.00	0.00	0.00	0.00%	34.30%	65.70%	0.344	0.6682	0.00
Xylene	0	1	0.139	80	39	0.00	0.05	0.00	0.05	0.00%	98.44%	1.56%	40.7	407	0.00
Zinc	0	1	0.139	69	33	0.00	217.22	213.72	430.94	0.00%	50.41%	49.59%	66.1	105	4.10

Table B-5
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Woodcock

Analyte	Example Soil Concentration (µg/kg)	Example Soil Concentration (mg/kg)	Literature-derived Bioaccumulation Models						Estimated Concentrations in Biota (mg/kg DW)		Food Intake Rate (kg/kg-BW/d, dw)	Diet Composition (proportion)			Bioaccessibility		Estimated Exposure (mg/kg/d)			
			Plants			Soil Invertebrates						Plants	Soil Invertebrates	Soil Invertebrates	Plants	Soil	Biota-Animal	Soil	Soil Invertebrates	Plants
			Intercept	Slope	BAF	Intercept	Slope	BAF												
1,1'-Biphenyl	100	0.10			0.17	1.41	1.36		0.02	0.18	0.142	1	0	0.073	80	39	0.02	0.00	0.00	0.02
Antimony	36,000	36.00	-3.233	0.938				0.14	1.14	5.04	0.142	1	0	0.073	64	15	0.46	0.00	0.06	0.51
Aroclor 1248	100	0.10			0.17	1.41	1.36		0.02	0.00	0.142	1	0	0.073	80	39	0.00	0.00	0.00	0.00
Aroclor 1254	100	0.10			0.17	1.41	1.36		0.02	0.00	0.142	1	0	0.073	80	39	0.00	0.00	0.00	0.00
Barium	48,000	48.00			0.156			0.091	7.49	4.37	0.142	1	0	0.073	64	33	0.40	0.00	0.16	0.56
Benzo(a)anthracene	100	0.10	-1.7026	0.9469				1.59	0.02	0.16	0.142	1	0	0.073	80	39	0.02	0.00	0.00	0.02
Benzo(a)pyrene	100	0.10	-1.7026	0.9469				1.33	0.02	0.13	0.142	1	0	0.073	80	39	0.02	0.00	0.00	0.02
Benzo(b)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Benzo(g,h,i)perylene	100	0.10	-1.7026	0.9469				2.94	0.02	0.29	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Benzo(k)fluoranthene	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Bis(2-ethylhexyl)phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.142	1	0	0.073	80	39	0.00	0.00	0.00	0.00
Butyl benzyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.142	1	0	0.073	80	39	0.00	0.00	0.00	0.00
Cadmium	11,567	11.57	-0.476	0.546		2.114	0.795		2.36	57.99	0.142	1	0	0.073	71	55	5.83	0.00	0.07	5.90
Carbazole	1,131,662	1131.66			1.87			0.961	2116.21	1087.53	0.167	1	0	0.073	80	39	145.47	0.00	5.39	150.85
Chromium (total)	1,131,662	1131.66			0.041			0.306	46.40	346.29	0.142	1	0	0.073	64	5	31.47	0.00	0.56	32.03
Chrysene	100	0.10	-1.7026	0.9469				2.29	0.02	0.23	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Copper	1,168,113	1168.11	0.669	0.394				0.515	31.56	601.58	0.142	1	0	0.073	79	47	67.90	0.00	5.69	73.58
Dibenzo(a,h)anthracene	100	0.10	-1.7026	0.9469				2.31	0.02	0.23	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Dibenzofuran	100	0.10			2.09			3.04	0.21	0.30	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Di-n-butyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.142	1	0	0.073	80	39	0.00	0.00	0.00	0.00
Di-n-octyl phthalate	100	0.10			0.07	-1.813	0.859	0.210	0.01	0.02	0.142	1	0	0.073	80	39	0.00	0.00	0.00	0.00
Fluoranthene	100	0.10	-1.7026	0.9469				3.04	0.02	0.30	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
High molecular weight PAHs	100	0.10	-1.7026	0.9469				2.6	0.02	0.26	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Indeno(1,2,3-cd)pyrene	100	0.10	-1.7026	0.9469				2.86	0.02	0.29	0.142	1	0	0.073	80	39	0.03	0.00	0.00	0.03
Lead	15,936,844	15936.84	-1.328	0.561		-0.218	0.807		60.37	1979.99	0.142	1	0	0.073	46	43	128.82	0.00	71.73	200.55
Manganese	37,894,364	37894.36			0.0792	-0.809	0.682		3001.23	590.53	0.142	1	0	0.073	79	36	66.25	0.00	139.84	206.09
Mercury	654	0.65	-0.996	0.544		0.0781	0.3369		0.29	0.94	0.142	1	0	0.073	64	31	0.09	0.00	0.00	0.09
Nickel	83,050	83.05	-2.224	0.748				1.059	2.95	87.95	0.142	1	0	0.073	64	16	7.99	0.00	0.13	8.13
PCBs (total)	1,149	1.15			0.17	1.41	1.36		0.19	4.95	0.142	1	0	0.073	80	39	0.56	0.00	0.00	0.57
Phenanthrene	100	0.10			2.09			1.72	0.21	0.17	0.142	1	0	0.073	80	39	0.02	0.00	0.00	0.02
Pyrene	100	0.10	-1.7026	0.9469				1.75	0.02	0.18	0.142	1	0	0.073	80	39	0.02	0.00	0.00	0.02
Selenium	12,838	12.84	-0.678	1.104		-0.075	0.733		8.50	6.02	0.142	1	0	0.073	62	52	0.53	0.00	0.07	0.60
Silver	1,865,961	1865.96			0.014			2.045	26.12	3815.89	0.142	1	0	0.073	17	31	92.79	0.00	6.00	98.79
Toluene	100	0.10						1.014		0.10	0.142	1	0	0.073	80	39	0.01	0.00	0.00	0.01
Vanadium	100	0.10			0.00485			0.042	0.00	0.00	0.142	1	0	0.073	64	7	0.00	0.00	0.00	0.00
Xylene	100	0.10			3.43			1.016	0.34	0.10	0.142	1	0	0.073	80	39	0.01	0.00	0.00	0.01
Zinc	34,170,342	34170.34	1.575	0.555		4.449	0.328		1585.58	2625.51	0.142	1	0	0.073	69	33	255.81	0.00	116.34	372.15

Table B-5
Calculation Worksheet for Determining LOAEL-Based Soil Exposure and Risk for Woodcock

Analyte	Percent Estimated Exposure by Pathway			Selected Avian NOAEL TRV (mg/kg/d)	Selected Avian LOAEL TRV (mg/kg/d)	Example LOAEL HQ
	Soil Invertebrates	Plants	Soil			
1,1`-Biphenyl	98.05%	0.00%	1.95%	---	---	---
Antimony	89.27%	0.00%	10.73%	---	---	---
Aroclor 1248	0.00%	0.00%	100.00%	0.41	4.10	0.00
Aroclor 1254	0.00%	0.00%	100.00%	0.41	4.10	0.00
Barium	70.93%	0.00%	29.07%	73.5	735	0.00
Benzo(a)anthracene	97.81%	0.00%	2.19%	33	330	0.00
Benzo(a)pyrene	97.39%	0.00%	2.61%	33	330	0.00
Benzo(b)fluoranthene	98.65%	0.00%	1.35%	33	330	0.00
Benzo(g,h,i)perylene	98.80%	0.00%	1.20%	33	330	0.00
Benzo(k)fluoranthene	98.65%	0.00%	1.35%	33	330	0.00
Bis(2-ethylhexyl)phthalate	86.37%	0.00%	13.63%	1.1	11	0.00
Butyl benzyl phthalate	86.37%	0.00%	13.63%	1.1	11	0.00
Cadmium	98.88%	0.00%	1.12%	1.47	2.388	2.47
Carbazole	96.43%	0.00%	3.57%	---	---	---
Chromium (total)	98.25%	0.00%	1.75%	2.66	8.315	3.85
Chrysene	98.47%	0.00%	1.53%	33	330	0.00
Copper	92.27%	0.00%	7.73%	4.05	28	2.63
Dibenzo(a,h)anthracene	98.48%	0.00%	1.52%	33	330	0.00
Dibenzofuran	98.84%	0.00%	1.16%	---	---	---
Di-n-butyl phthalate	86.37%	0.00%	13.63%	0.14	1.4	0.00
Di-n-octyl phthalate	86.37%	0.00%	13.63%	1.1	11	0.00
Fluoranthene	98.84%	0.00%	1.16%	33	330	0.00
High molecular weight PAHs	98.65%	0.00%	1.35%	33	330	0.00
Indeno(1,2,3-cd)pyrene	98.77%	0.00%	1.23%	33	330	0.00
Lead	64.24%	0.00%	35.76%	1.63	13.288	15.09
Manganese	32.14%	0.00%	67.86%	179	348	0.59
Mercury	97.59%	0.00%	2.41%	0.068	0.37	0.24
Nickel	98.35%	0.00%	1.65%	6.71	11.5	0.71
PCBs (total)	99.18%	0.00%	0.82%	0.41	4.10	0.14
Phenanthrene	97.97%	0.00%	2.03%	32.5	325	0.00
Pyrene	98.01%	0.00%	1.99%	33	330	0.00
Selenium	88.40%	0.00%	11.60%	0.29	0.4256	1.41
Silver	93.93%	0.00%	6.07%	6.55	65.5	1.51
Toluene	96.61%	0.00%	3.39%	40.7	407	0.00
Vanadium	84.64%	0.00%	15.36%	0.344	0.6682	0.00
Xylene	96.62%	0.00%	3.38%	40.7	407	0.00
Zinc	68.74%	0.00%	31.26%	66.1	105	3.54

Acronyms and Equations for Avian and Mammalian Exposure Calculation Worksheets

Acronyms:

µg/kg = micrograms per kilogram
BAF = bioaccumulation factor
DW = dry weight
FIR = food ingestion rate
HPAH = high molecular weight polycyclic aromatic hydrocarbon
HQ = hazard quotient
kg/kg BW/day = kilograms per kilogram of body weight per day
LOAEL = lowest observed adverse effect level
mg/kg = milligrams per kilogram
mg/kg BW/day = milligrams per kilogram of body weight per day
mg/kg/d = milligrams per kilogram per day
NOAEL = no observed adverse effect level
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
TRV = toxicity reference value

Equations:

Total Estimated Exposure = Food intake + Incidental soil intake
Food Intake = Estimated concentration in biota X Proportion of biota type X FIR
Incidental Soil Intake = Concentration in soil X Proportion of soil as component of diet X FIR
Estimated Concentrations in Biota (method 1) = $B1 * (\ln[\text{Site Specific Soil Concentration}]) + B0$
where: B1 = slope and B0 = intercept
Estimated Concentrations in Biota (method 2) = Soil concentration X BAF
Hazard Quotient = Total Estimated Exposure (Dose)/TRV

Table B-6
LOAEL-Based Soil Screening Levels for Earthworms and Plants

Analyte	Earthworm, EC10 or MATC, µg/kg DW	Earthworm Notes	Plant, EC10 or MATC, µg/kg DW	Plants Notes
Antimony	78,000	Antimony, only EC20. Bioavailability = 2	NA	NA
Arsenic (total all valence states)	NA	NA	42,986	Arsenic, did evaluate. Bioavailability = 1
Barium	330,000	Barium (Ba), no additional data available for Ba and earthworm. Bioavailability = 2	NA	NA
Beryllium	40,000	Beryllium (Be), no additional data available for Be and earthworm. Bioavailability = 2	NA	NA
Cadmium	140,000	Cadmium, no other acceptable data according to Eco-SSL. Bioavailability = 2	32,000	Cadmium, more toxic at bioavailability = 2
Chromium (total)	NA	NA	NA	NA
Cobalt	NA	NA	13,000	Cobalt (Co), no additional data available for Co and plants. Bioavailability = 2
Copper	151,000	Copper, did evaluate. Bioavailability = 1	175,605	Copper, did evaluate. Bioavailability = 1
Lead	1,700,000	Lead, already entirely MATC based. Bioavailability = 1	245,000	Lead, did evaluate. Bioavailability = 1
Manganese	450,000	Manganese (Mn), no additional data available for Mn and earthworm. Bioavailability = 2	220,000	Manganese (Mn), no additional data available for Mn and plants. Bioavailability = 2
Mercury	NA	NA	NA	NA
Nickel	280,000	Nickel (Ni), no additional data available for Ni and earthworm. Bioavailability = 1, as used by Eco-SSL	98,292	Nickel, did evaluate. Bioavailability = 1
Selenium	4,100	Selenium (Se), no additional data available for Se and earthworm. Bioavailability = 2	1,442	Selenium. Bioavailability = 0 (pH = 5, OM 10%)
Silver	NA	NA	560,000	Silver (Ag), no additional data available for Ag and plants. Bioavailability = 0, as used by Eco-SSL
Vanadium	NA	NA	NA	NA
Zinc	477,000	Zinc, did evaluate. Bioavailability = 1	165,810	Zinc, did evaluate. Bioavailability = 1
All phthalates	NA	NA	338,290	NA
All HPAHs	18,000	HPAH, EC10 and MATC, no other bioavailability data available. Bioavailability = 0	NA	NA
Total PCBs	NA	NA	282,010	NA

Notes:

µg/kg = micrograms per kilogram
DW = dry weight
Eco-SSL = ecological soil screening level
HPAH = high molecular weight polycyclic aromatic hydrocarbon
MATC = Maximum Acceptable Toxicant Concentration
NA = not available
PCB = polychlorinated biphenyl

Table B-7
LOAEL Evaluation and Selection for Avian Receptors

Soil Constituent	Selected Avian NOAEL TRV (mg/kg/d)	Selected Avian LOAEL TRV (mg/kg/d)	20th Percentile of LOAELs (mg/kg/d)	Lowest Bounded, LOAEL (mg/kg/d)	Relationship between LOAEL/NOAEL Ratios and Eco-SSL NOAEL ¹	Eco_SSL NOAEL (mg/kg/d)	Geomean of NOAEL and LOAEL Ratios	LOAEL from Literature (mg/kg/d) ²	Test Species	Source/Surrogate
1,1`-Biphenyl	NA	NA	--	--	--	--	--	NA	NA	NA
Antimony	NA	NA	--	--	--	--	--	NA	None	Eco-SSL (USEPA 2005a)
Total PCBs	0.41	4.1	--	--	--	--	--	4.1	Screech owl	Sample et al. 1996; as Aroclor 1242
Total PCBs	0.41	4.1	--	--	--	--	--	4.1	Screech owl	Sample et al. 1996; as Aroclor 1242
Barium	73.5	735	--	--	--	--	--	735	Multiple	LANL 2012
Benzo(a)anthracene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Benzo(a)pyrene	33	330	--	--	--	--	--	330	Chicken	Rigdon and Neal 1963
Benzo(b)fluoranthene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Benzo(g,h,i)perylene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Benzo(k)fluoranthene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Bis[2-ethylhexyl] phthalate	1.1	11	--	--	--	--	--	11	Ringed dove	Sample et al 1996 (Peakall 1974, ringed dove)
Bis[2-ethylhexyl] phthalate	1.1	11	--	--	--	--	--	11	Ringed dove	Sample et al 1996 (Peakall 1974, ringed dove)
Cadmium	1.47	2.388	2.388	2.37	3.9	1.14	3.5	--	Multiple	Eco-SSL (USEPA 2005c)
Carbazole	NA	NA	--	--	--	--	--	NA	NA	NA
Chromium (3+)	2.66	8.315	--	2.78	8.3	2.66	3.1	--	Multiple	Eco-SSL (USEPA 2008)
Chrysene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Copper	4.05	28	28	4.68	7.4	4.05	1.8	--	Multiple	Eco-SSL (USEPA 2007a)
Dibenzo(a,h)anthracene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Dibenzofuran	NA	NA	--	--	--	--	--	NA	NA	NA
Di-n-Butyl Phthalate	0.14	1.4	--	--	--	--	--	1.4	Multiple	LANL 2012
Bis[2-ethylhexyl] phthalate	1.1	11	--	--	--	--	--	11	Ringed dove	Sample et al 1996 (Peakall 1974, ringed dove)
Fluoranthene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Total HPAH (10 of 17)	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Indeno(1,2,3-c,d)pyrene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Lead	1.63	13.288	13.288	1.94	9.5	1.63	5.8	--	Multiple	Eco-SSL (USEPA 2005d)
Manganese	179	348	--	348	262	179	1.5	--	Multiple	Eco-SSL (USEPA 2007c)
Mercury	0.068	0.37	--	--	--	--	--	0.37	Mallard duck	Sample et al. 1996; methyl mercury
Nickel	6.71	11.5	--	11.5	9.7	6.71	1.4	--	Multiple	Eco-SSL (USEPA 2007b)
Total PCBs	0.41	4.1	--	--	--	--	--	4.1	Screech owl	Sample et al. 1996; as Aroclor 1242
Phenanthrene	32.5	325	--	--	--	--	--	325	Mallard	Patton and Dieter 1980
Pyrene	33	330	--	--	--	--	--	330	Chicken	Benzo(a)pyrene
Selenium	0.29	0.4256	0.4256	0.368	0.7	0.29	2.4	--	Multiple	Eco-SSL (USEPA 2007f)
Silver	6.55	65.5	65.5	20.2	13.4	6.71	2.0	--	Multiple	Eco-SSL (USEPA 2006)
Vanadium	0.344	0.6682	0.6682	0.413	0.7	0.344	2.0	--	Multiple	Eco-SSL (USEPA 2005e)
Zinc	66.1	105	105	66.5	114	66.1	1.7	--	Multiple	Eco-SSL (USEPA 2007d)

Notes:
1 = Geometric mean of LOAEL/NOAEL Ratios x Eco-SSL NOAEL
2= LOAEL from literature when not from EcoSSL
Bold are the selected and appropriate LOAELs
-- = Could not be derived or not needed

Eco-SSL = ecological soil screening level
HPAH - high molecular weight polycyclic aromatic hydrocarbon
LOAEL = lowest observed adverse effects level
mg/kg/day = milligrams per kilogram per body weight day

NA = no benchmark available
NOAEL = no observed adverse effects level
PCB = polychlorinated biphenyl
TRV = toxicity reference value

Table B-8
LOAEL Evaluation and Selection for Mammalian Receptors

Soil Constituent	Selected Mammalian NOAEL TRV (mg/kg/d)	Selected Mammalian LOAEL TRV (mg/kg/d)	20th Percentile of LOAELs (mg/kg/d)	Lowest Bounded, LOAEL (mg/kg/d)	Relationship between LOAEL/NOAEL Ratios and Eco-SSL NOAEL ¹	Eco_SSL NOAEL (mg/kg/d)	Geomean of NOAEL and LOAEL Ratios	LOAEL from Literature (mg/kg/d) ²	Test Species	Source/Surrogate
1,1`-Biphenyl	50	500	--	--	--	--	--	500	Rat	USEPA IRIS (2011)
Antimony	0.059	0.59	--	0.59	0.29	0.059	4.8	--	Multiple	Eco-SSL (USEPA 2005a)
Aroclor 1248	0.068	0.68	--	--	--	--	--	0.68	Rhesus monkey	Barsotti et al. 1976
Aroclor 1254	0.068	0.68	--	--	--	--	--	0.68	Rhesus monkey	Barsotti et al. 1976
Barium	51.8	167.2	167.2	121	105	51.8	2.0	--	Multiple	Eco-SSL (USEPA 2005b)
Benzo(a)anthracene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Benzo(a)pyrene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Benzo(b)fluoranthene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Benzo(g,h,i)perylene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Benzo(k)fluoranthene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Bis[2-ethylhexyl] phthalate	18.3	183	--	--	--	--	--	183	Mouse	Sample et al. 1996; (Lamb et al. 1987; mouse)
Butyl benzyl phthalate	159	1590	--	--	--	--	--	1590	Multiple	LANL 2012
Cadmium	0.77	2.008	2.008	0.9	3.5	0.77	4.5	228	Rat	Eco-SSL (USEPA 2005c)
Carbazole	22.8	228	--	--	--	--	--	228	Multiple	LANL 2012
Chromium (3+)	2.4	9.62	--	9.62	--	2.4	--	--	Multiple	Eco-SSL (USEPA 2008)
Chrysene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Copper	5.6	31.22	31.22	6.79	11.1	5.6	2.0	--	Pig	Eco-SSL (USEPA 2007a)
Dibenzo(a,h)anthracene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Dibenzofuran	NA	NA	--	--	--	--	--	NA	NA	NA
Di-n-butyl phthalate	1340	3175	--	--	--	--	--	3175	Multiple	LANL 2012
Di-n-octyl phthalate	65.1	651	--	--	--	--	--	651	Multiple	LANL 2012
Fluoranthene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Total HPAH (10 of 17)	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Indeno(1,2,3-cd)pyrene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Lead	4.7	28.68	28.68	5	16.3	4.7	3.5	--	Rat	Eco-SSL (USEPA 2005d)
Manganese	59.4	71	71	65	165	59.4	2.8	--	Multiple	Eco-SSL (USEPA 2007c)
Mercury	0.032	--	--	--	--	--	--	0.16	Mink	Sample et al. 1996; methyl mercury
Nickel	1.7	5.92	5.92	2.71	5.1	1.7	3.0	--	Mouse	Eco-SSL (USEPA 2007b)
Total PCBs	0.068	--	--	--	--	--	--	0.68	Rhesus monkey	Barsotti et al. 1976
Phenanthrene	65.6	328	--	328	--	65.6	--	--	Rat	Eco-SSL (USEPA 2007e)
Pyrene	0.615	3.07	--	3.07	--	0.615	--	--	Mouse	Eco-SSL (USEPA 2007e)
Selenium	0.143	0.442	0.442	0.145	0.30	0.143	2.1	--	Pig	Eco-SSL (USEPA 2007f)
Silver	6.02	60.2	--	60.2	60.2	6.02	10.0	--	Pig	Eco-SSL (USEPA 2006)
Vanadium	4.16	6.85	6.85	5.11	16.5	4.16	4.0	350	Multiple	Eco-SSL (USEPA 2005e)
Zinc	75.4	90.28	90.28	75.9	462	75.4	6.1	--	Multiple	Eco-SSL (USEPA 2007d)

Notes:

1 = Geometric mean of LOAEL/NOAEL Ratios x Eco-SSL NOAEL

2= LOAEL from literature when not from EcoSSL

Bold are the selected and appropriate LOAELs

-- = Could not be derived or not needed

Eco-SSL = ecological soil screening level

HPAH - high molecular weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effects level

mg/kg/day = milligrams per kilogram per body weight day

NA = no benchmark available

NOAEL = no observed adverse effects level

PCB = polychlorinated biphenyl

TRV = toxicity reference value

APPENDIX C

HAZARD QUOTIENT RESULTS

DRAFT

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
1	Antimony	18,493	0.49	0.09	NC	NC	NC	0.24	NC
10	Antimony	415	0.01	<0.01	NC	NC	NC	<0.01	NC
2	Antimony	10,272	0.27	0.05	NC	NC	NC	0.13	NC
3	Antimony	2,711	0.07	0.01	NC	NC	NC	0.03	NC
4	Antimony	8,901	0.24	0.04	NC	NC	NC	0.11	NC
5	Antimony	13,934	0.37	0.07	NC	NC	NC	0.18	NC
6	Antimony	16,295	0.43	0.08	NC	NC	NC	0.21	NC
7	Antimony	14,095	0.38	0.07	NC	NC	NC	0.18	NC
8	Antimony	25,773	0.69	0.12	NC	NC	NC	0.33	NC
9	Antimony	6,860	0.18	0.04	NC	NC	NC	0.09	NC
1	Aroclor 1254	5,141	7.48	0.10	<0.01	<0.01	0.04	NC	0.02
10	Aroclor 1254	32	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
2	Aroclor 1254	366	0.21	<0.01	<0.01	<0.01	<0.01	NC	<0.01
3	Aroclor 1254	488	0.30	<0.01	<0.01	<0.01	<0.01	NC	<0.01
4	Aroclor 1254	728	0.53	0.01	<0.01	<0.01	<0.01	NC	<0.01
5	Aroclor 1254	656	0.46	0.01	<0.01	<0.01	<0.01	NC	<0.01
6	Aroclor 1254	438	0.26	<0.01	<0.01	<0.01	<0.01	NC	<0.01
7	Aroclor 1254	560	0.37	0.01	<0.01	<0.01	<0.01	NC	<0.01
8	Aroclor 1254	129	0.05	<0.01	<0.01	<0.01	<0.01	NC	<0.01
9	Aroclor 1254	282	0.14	<0.01	<0.01	<0.01	<0.01	NC	<0.01
1	Barium	408,520	0.03	0.03	<0.01	<0.01	0.02	1.24	NC
10	Barium	37,187	<0.01	<0.01	<0.01	<0.01	<0.01	0.11	NC
2	Barium	260,979	0.02	0.02	<0.01	<0.01	<0.01	0.79	NC
3	Barium	68,915	<0.01	<0.01	<0.01	<0.01	<0.01	0.21	NC
4	Barium	230,468	0.02	0.02	<0.01	<0.01	<0.01	0.70	NC
5	Barium	575,572	0.04	0.04	0.01	<0.01	0.02	1.74	NC
6	Barium	215,313	0.01	0.02	<0.01	<0.01	<0.01	0.65	NC
7	Barium	353,752	0.02	0.03	<0.01	<0.01	0.01	1.07	NC
8	Barium	539,052	0.04	0.04	0.01	<0.01	0.02	1.63	NC

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
9	Barium	599,561	0.04	0.05	0.01	<0.01	0.02	1.82	NC
1	Benzo(a)anthracene	1,735	0.20	<0.01	<0.01	<0.01	<0.01	0.10	NC
10	Benzo(a)anthracene	59	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Benzo(a)anthracene	460	0.05	<0.01	<0.01	<0.01	<0.01	0.03	NC
3	Benzo(a)anthracene	512	0.06	<0.01	<0.01	<0.01	<0.01	0.03	NC
4	Benzo(a)anthracene	657	0.07	<0.01	<0.01	<0.01	<0.01	0.04	NC
5	Benzo(a)anthracene	19,677	2.24	0.08	0.02	0.02	<0.01	1.09	NC
6	Benzo(a)anthracene	4,387	0.50	0.02	<0.01	<0.01	<0.01	0.24	NC
7	Benzo(a)anthracene	8,753	1.00	0.04	0.01	<0.01	<0.01	0.49	NC
8	Benzo(a)anthracene	448	0.05	<0.01	<0.01	<0.01	<0.01	0.02	NC
9	Benzo(a)anthracene	2,141	0.24	<0.01	<0.01	<0.01	<0.01	0.12	NC
1	Benzo(a)pyrene	1,461	0.17	<0.01	<0.01	<0.01	<0.01	0.08	NC
10	Benzo(a)pyrene	79	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Benzo(a)pyrene	390	0.04	<0.01	<0.01	<0.01	<0.01	0.02	NC
3	Benzo(a)pyrene	510	0.06	<0.01	<0.01	<0.01	<0.01	0.03	NC
4	Benzo(a)pyrene	762	0.09	<0.01	<0.01	<0.01	<0.01	0.04	NC
5	Benzo(a)pyrene	15,813	1.80	0.07	0.02	0.01	<0.01	0.88	NC
6	Benzo(A)Pyrene	3,727	0.42	0.02	<0.01	<0.01	<0.01	0.21	NC
7	Benzo(a)pyrene	6,913	0.79	0.03	<0.01	<0.01	<0.01	0.38	NC
8	Benzo(a)pyrene	531	0.06	<0.01	<0.01	<0.01	<0.01	0.03	NC
9	Benzo(a)pyrene	1,697	0.19	<0.01	<0.01	<0.01	<0.01	0.09	NC
1	Benzo(b)fluoranthene	2,408	0.27	0.01	<0.01	<0.01	<0.01	0.13	NC
10	Benzo(b)fluoranthene	104	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Benzo(b)fluoranthene	680	0.08	<0.01	<0.01	<0.01	<0.01	0.04	NC
3	Benzo(b)fluoranthene	875	0.10	<0.01	<0.01	<0.01	<0.01	0.05	NC
4	Benzo(b)fluoranthene	1,046	0.12	<0.01	<0.01	<0.01	<0.01	0.06	NC
5	Benzo(b)fluoranthene	20,772	2.37	0.09	0.03	0.02	<0.01	1.15	NC
6	Benzo(b)fluoranthene	4,870	0.55	0.02	<0.01	<0.01	<0.01	0.27	NC
7	Benzo(b)fluoranthene	8,815	1.00	0.04	0.01	<0.01	<0.01	0.49	NC

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
8	Benzo(b)fluoranthene	754	0.09	<0.01	<0.01	<0.01	<0.01	0.04	NC
9	Benzo(b)fluoranthene	2,456	0.28	0.01	<0.01	<0.01	<0.01	0.14	NC
1	Benzo(g,h,i)perylene	1,147	0.13	<0.01	<0.01	<0.01	<0.01	0.06	NC
10	Benzo(g,h,i)perylene	79	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Benzo(g,h,i)perylene	321	0.04	<0.01	<0.01	<0.01	<0.01	0.02	NC
3	Benzo(g,h,i)perylene	600	0.07	<0.01	<0.01	<0.01	<0.01	0.03	NC
4	Benzo(g,h,i)perylene	727	0.08	<0.01	<0.01	<0.01	<0.01	0.04	NC
5	Benzo(g,h,i)perylene	10,840	1.23	0.05	0.01	<0.01	<0.01	0.60	NC
6	Benzo(g,h,i)perylene	2,815	0.32	0.01	<0.01	<0.01	<0.01	0.16	NC
7	Benzo(g,h,i)perylene	4,724	0.54	0.02	<0.01	<0.01	<0.01	0.26	NC
8	Benzo(g,h,i)perylene	471	0.05	<0.01	<0.01	<0.01	<0.01	0.03	NC
9	Benzo(g,h,i)perylene	1,241	0.14	<0.01	<0.01	<0.01	<0.01	0.07	NC
1	Benzo(k)fluoranthene	767	0.09	<0.01	<0.01	<0.01	<0.01	0.04	NC
10	Benzo(k)fluoranthene	58	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Benzo(k)fluoranthene	250	0.03	<0.01	<0.01	<0.01	<0.01	0.01	NC
3	Benzo(k)fluoranthene	301	0.03	<0.01	<0.01	<0.01	<0.01	0.02	NC
4	Benzo(k)fluoranthene	1,465	0.17	<0.01	<0.01	<0.01	<0.01	0.08	NC
5	Benzo(k)fluoranthene	8,931	1.02	0.04	0.01	<0.01	<0.01	0.50	NC
6	Benzo(k)fluoranthene	2,091	0.24	<0.01	<0.01	<0.01	<0.01	0.12	NC
7	Benzo(k)fluoranthene	3,770	0.43	0.02	<0.01	<0.01	<0.01	0.21	NC
8	Benzo(k)fluoranthene	351	0.04	<0.01	<0.01	<0.01	<0.01	0.02	NC
9	Benzo(k)fluoranthene	906	0.10	<0.01	<0.01	<0.01	<0.01	0.05	NC
1	Cadmium ¹	10,776	3.25, 0.96	0.09	3.17, 0.96	2.33, 0.7	0.18	0.08	0.34
10	Cadmium ¹	428	0.25, 0.11	0.02	0.24, 0.11	0.18, 0.08	0.02	<0.01	0.01
2	Cadmium ¹	9,359	2.9, 0.88	0.09	2.83, 0.87	2.09, 0.64	0.16	0.07	0.29
3	Cadmium ¹	2,337	0.96, 0.35	0.04	0.94, 0.34	0.69, 0.25	0.07	0.02	0.07
4	Cadmium ¹	6,553	2.19, 0.69	0.07	2.13, 0.68	1.57, 0.5	0.13	0.05	0.20
5	Cadmium ¹	10,517	3.19, 0.95	0.09	3.11, 0.94	2.29, 0.69	0.18	0.08	0.33

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
6	Cadmium ¹	7,321	2.39, 0.75	0.07	2.33, 0.74	1.72, 0.54	0.14	0.05	0.23
7	Cadmium ¹	18,343	4.96, 1.37	0.13	4.84, 1.37	3.57, 1.01	0.26	0.13	0.57
8	Cadmium ¹	22,662	5.87, 1.58	0.14	5.73, 1.58	4.22, 1.16	0.30	0.16	0.71
9	Cadmium ¹	3,110	1.21, 0.42	0.05	1.18, 0.42	0.87, 0.31	0.08	0.02	0.10
1	Chromium	82,793	0.28	0.03	0.38	0.28	0.06	NC	NC
10	Chromium	8,428	0.03	<0.01	0.04	0.03	<0.01	NC	NC
2	Chromium	32,534	0.11	0.01	0.15	0.11	0.03	NC	NC
3	Chromium	12,093	0.04	<0.01	0.06	0.04	<0.01	NC	NC
4	Chromium	35,445	0.12	0.01	0.16	0.12	0.03	NC	NC
5	Chromium	52,211	0.18	0.02	0.24	0.18	0.04	NC	NC
6	Chromium	28,539	0.10	<0.01	0.13	0.10	0.02	NC	NC
7	Chromium	37,717	0.13	0.01	0.17	0.13	0.03	NC	NC
8	Chromium	35,206	0.12	0.01	0.16	0.12	0.03	NC	NC
9	Chromium	35,026	0.12	0.01	0.16	0.12	0.03	NC	NC
1	Chrysene	1,968	0.22	<0.01	<0.01	<0.01	<0.01	0.11	NC
10	Chrysene	70	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Chrysene	534	0.06	<0.01	<0.01	<0.01	<0.01	0.03	NC
3	Chrysene	791	0.09	<0.01	<0.01	<0.01	<0.01	0.04	NC
4	Chrysene	791	0.09	<0.01	<0.01	<0.01	<0.01	0.04	NC
5	Chrysene	22,489	2.56	0.09	0.03	0.02	<0.01	1.25	NC
6	Chrysene	4,569	0.52	0.02	<0.01	<0.01	<0.01	0.25	NC
7	Chrysene	8,617	0.98	0.04	0.01	<0.01	<0.01	0.48	NC
8	Chrysene	498	0.06	<0.01	<0.01	<0.01	<0.01	0.03	NC
9	Chrysene	2,052	0.23	<0.01	<0.01	<0.01	<0.01	0.11	NC
1	Copper ¹	578,470	1.31, 0.17	0.08	1.77, 0.29	1.3, 0.22	0.30	3.83	3.29
10	Copper ¹	12,519	0.03, 0.05	0.01	0.04, 0.06	0.03, 0.04	0.03	0.08	0.07
2	Copper ¹	279,392	0.63, 0.12	0.05	0.85, 0.2	0.63, 0.14	0.18	1.85	1.59
3	Copper ¹	49,871	0.11, 0.07	0.02	0.15, 0.09	0.11, 0.07	0.06	0.33	0.28
4	Copper ¹	439,549	1, 0.15	0.07	1.34, 0.25	0.99, 0.18	0.25	2.91	2.50

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
5	Copper ¹	380,373	0.86, 0.14	0.06	1.16, 0.23	0.86, 0.17	0.22	2.52	2.17
6	Copper ¹	337,188	0.76, 0.13	0.06	1.03, 0.22	0.76, 0.16	0.20	2.23	1.92
7	Copper ¹	4,227,758	9.59, 0.52	0.28	12.91, 1.26	9.51, 0.93	1.61	28.00	24.08
8	Copper ¹	270,989	0.61, 0.12	0.05	0.83, 0.19	0.61, 0.14	0.17	1.79	1.54
9	Copper ¹	277,704	0.63, 0.12	0.05	0.85, 0.19	0.62, 0.14	0.18	1.84	1.58
1	Dibenzo(a,h)anthracene	294	0.03	<0.01	<0.01	<0.01	<0.01	0.02	NC
10	Dibenzo(a,h)anthracene	30	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Dibenzo(a,h)anthracene	96	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
3	Dibenzo(a,h)anthracene	169	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	NC
4	Dibenzo(a,h)anthracene	213	0.02	<0.01	<0.01	<0.01	<0.01	0.01	NC
5	Dibenzo(a,h)anthracene	2,789	0.32	0.01	<0.01	<0.01	<0.01	0.15	NC
6	Dibenzo(a,h)anthracene	1,147	0.13	<0.01	<0.01	<0.01	<0.01	0.06	NC
7	Dibenzo(a,h)anthracene	1,523	0.17	<0.01	<0.01	<0.01	<0.01	0.08	NC
8	Dibenzo(a,h)anthracene	106	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
9	Dibenzo(a,h)anthracene	335	0.04	<0.01	<0.01	<0.01	<0.01	0.02	NC
1	Fluoranthene	6,025	0.69	0.03	<0.01	<0.01	<0.01	0.33	NC
10	Fluoranthene	127	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Fluoranthene	922	0.11	<0.01	<0.01	<0.01	<0.01	0.05	NC
3	Fluoranthene	1,295	0.15	<0.01	<0.01	<0.01	<0.01	0.07	NC
4	Fluoranthene	876	0.10	<0.01	<0.01	<0.01	<0.01	0.05	NC
5	Fluoranthene	90,217	10.28	0.35	0.11	0.08	<0.01	5.01	NC
6	Fluoranthene	11,103	1.26	0.05	0.01	0.01	<0.01	0.62	NC
7	Fluoranthene	22,050	2.51	0.09	0.03	0.02	<0.01	1.22	NC
8	Fluoranthene	1,064	0.12	<0.01	<0.01	<0.01	<0.01	0.06	NC
9	Fluoranthene	6,901	0.79	0.03	<0.01	<0.01	<0.01	0.38	NC
1	HPAHs	20,052	2.28	0.08	0.02	0.02	<0.01	1.11	NC
10	HPAHs	725	0.08	<0.01	<0.01	<0.01	<0.01	0.04	NC
2	HPAHs	4,671	0.53	0.02	<0.01	<0.01	<0.01	0.26	NC
3	HPAHs	6,263	0.71	0.03	<0.01	<0.01	<0.01	0.35	NC

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
4	HPAHs	7,259	0.83	0.03	<0.01	<0.01	<0.01	0.40	NC
5	HPAHs	265,540	30.25	0.97	0.33	0.24	0.02	14.75	NC
6	HPAHs	46,241	5.27	0.18	0.06	0.04	<0.01	2.57	NC
7	HPAHs	84,645	9.64	0.33	0.10	0.08	<0.01	4.70	NC
8	HPAHs	5,445	0.62	0.02	<0.01	<0.01	<0.01	0.30	NC
9	HPAHs	22,549	2.57	0.09	0.03	0.02	<0.01	1.25	NC
1	Indeno(1,2,3-cd)pyrene	1,264	0.14	<0.01	<0.01	<0.01	<0.01	0.07	NC
10	Indeno(1,2,3-cd)pyrene	84	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Indeno(1,2,3-cd)pyrene	346	0.04	<0.01	<0.01	<0.01	<0.01	0.02	NC
3	Indeno(1,2,3-cd)pyrene	630	0.07	<0.01	<0.01	<0.01	<0.01	0.03	NC
4	Indeno(1,2,3-cd)pyrene	890	0.10	<0.01	<0.01	<0.01	<0.01	0.05	NC
5	Indeno(1,2,3-cd)pyrene	12,409	1.41	0.05	0.02	0.01	<0.01	0.69	NC
6	Indeno(1,2,3-cd)pyrene	3,155	0.36	0.01	<0.01	<0.01	<0.01	0.18	NC
7	Indeno(1,2,3-cd)pyrene	5,278	0.60	0.02	<0.01	<0.01	<0.01	0.29	NC
8	Indeno(1,2,3-cd)pyrene	573	0.07	<0.01	<0.01	<0.01	<0.01	0.03	NC
9	Indeno(1,2,3-cd)pyrene	1,346	0.15	<0.01	<0.01	<0.01	<0.01	0.07	NC
1	Lead	919,942	0.60	0.07	1.74	1.28	0.70	0.54	3.75
10	Lead	22,045	0.03	<0.01	0.08	0.06	0.03	0.01	0.09
2	Lead	530,295	0.38	0.04	1.09	0.80	0.42	0.31	2.16
3	Lead	176,914	0.15	0.02	0.43	0.32	0.16	0.10	0.72
4	Lead	478,214	0.35	0.04	1.00	0.73	0.38	0.28	1.95
5	Lead	861,164	0.57	0.06	1.65	1.21	0.66	0.51	3.51
6	Lead	465,530	0.34	0.04	0.97	0.72	0.38	0.27	1.90
7	Lead	1,255,225	0.78	0.08	2.27	1.67	0.93	0.74	5.12
8	Lead	1,299,971	0.80	0.09	2.34	1.72	0.96	0.76	5.31
9	Lead	250,978	0.20	0.02	0.58	0.43	0.22	0.15	1.02
1	Manganese	878,503	0.11	0.09	0.03	0.02	0.04	1.95	3.99
10	Manganese	169,320	0.03	0.02	<0.01	<0.01	<0.01	0.38	0.77
2	Manganese	450,365	0.06	0.04	0.02	0.01	0.02	1.00	2.05

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
3	Manganese	227,519	0.04	0.02	0.01	<0.01	0.01	0.51	1.03
4	Manganese	511,725	0.07	0.05	0.02	0.02	0.03	1.14	2.33
5	Manganese	916,497	0.11	0.09	0.03	0.02	0.05	2.04	4.17
6	Manganese	421,943	0.06	0.04	0.02	0.01	0.02	0.94	1.92
7	Manganese	547,100	0.07	0.05	0.02	0.02	0.03	1.22	2.49
8	Manganese	516,268	0.07	0.05	0.02	0.02	0.03	1.15	2.35
9	Manganese	331,921	0.05	0.03	0.01	0.01	0.02	0.74	1.51
1	Mercury	209	0.43	0.08	0.22	0.16	0.06	NC	NC
10	Mercury	65	0.29	0.04	0.14	0.11	0.03	NC	NC
2	Mercury	1,212	0.78	0.20	0.40	0.29	0.17	NC	NC
3	Mercury	97	0.33	0.05	0.17	0.12	0.04	NC	NC
4	Mercury	3,763	1.17	0.38	0.61	0.45	0.34	NC	NC
5	Mercury	407	0.54	0.11	0.27	0.20	0.09	NC	NC
6	Mercury	316	0.49	0.10	0.25	0.18	0.08	NC	NC
7	Mercury	237	0.45	0.08	0.22	0.17	0.07	NC	NC
8	Mercury	158	0.39	0.07	0.20	0.14	0.05	NC	NC
9	Mercury	492	0.57	0.12	0.29	0.21	0.10	NC	NC
1	Nickel	80,174	1.55	0.04	0.93	0.68	0.05	0.29	0.82
10	Nickel	5,418	0.10	<0.01	0.06	0.05	<0.01	0.02	0.06
2	Nickel	62,175	1.20	0.03	0.72	0.53	0.04	0.22	0.63
3	Nickel	20,710	0.40	0.01	0.24	0.18	0.02	0.07	0.21
4	Nickel	58,197	1.12	0.03	0.67	0.50	0.04	0.21	0.59
5	Nickel	46,991	0.91	0.03	0.54	0.40	0.04	0.17	0.48
6	Nickel	34,192	0.66	0.02	0.40	0.29	0.03	0.12	0.35
7	Nickel	59,101	1.14	0.03	0.68	0.50	0.04	0.21	0.60
8	Nickel	44,025	0.85	0.03	0.51	0.37	0.03	0.16	0.45
9	Nickel	38,402	0.74	0.02	0.44	0.33	0.03	0.14	0.39
1	PCBs, Total	5,141	7.5	0.1	1.4	1.1	0.0	NC	0.0
2	PCBs, Total	366	0.2	<0.01	0.0	0.0	<0.01	NC	<0.01
3	PCBs, Total	488	0.3	<0.01	0.06	0.04	<0.01	NC	<0.01

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
4	PCBs, Total	698	0.5	0.01	0.1	0.07	<0.01	NC	<0.01
5	PCBs, Total	1,976	2.0	0.0	0.4	0.3	0.0	NC	<0.01
6	PCBs, Total	1,464	1.4	0.0	0.3	0.2	0.0	NC	<0.01
7	PCBs, Total	831	0.6	0.0	0.1	0.1	<0.01	NC	<0.01
8	PCBs, Total	129	0.1	<0.01	<0.01	<0.01	<0.01	NC	<0.01
9	PCBs, Total	372	0.2	<0.01	0.0	0.0	<0.01	NC	<0.01
1	Phenanthrene	2,883	<0.01	<0.01	<0.01	<0.01	<0.01	0.16	NC
10	Phenanthrene	75	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Phenanthrene	523	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	NC
3	Phenanthrene	1,137	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	NC
4	Phenanthrene	722	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	NC
5	Phenanthrene	112,015	0.14	0.05	0.16	0.12	0.1	6.22	NC
6	Phenanthrene	9,623	0.01	<0.01	0.01	0.01	<0.01	0.53	NC
7	Phenanthrene	23,234	0.03	0.01	0.03	0.02	0.02	1.29	NC
8	Phenanthrene	544	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	NC
9	Phenanthrene	5,868	<0.01	<0.01	<0.01	<0.01	<0.01	0.33	NC
1	Pyrene	3,010	0.34	0.01	<0.01	<0.01	<0.01	0.17	NC
10	Pyrene	102	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	NC
2	Pyrene	685	0.08	<0.01	<0.01	<0.01	<0.01	0.04	NC
3	Pyrene	730	0.08	<0.01	<0.01	<0.01	<0.01	0.04	NC
4	Pyrene	928	0.11	<0.01	<0.01	<0.01	<0.01	0.05	NC
5	Pyrene	61,722	7.03	0.24	0.08	0.06	<0.01	3.43	NC
6	Pyrene	8,845	1.01	0.04	0.01	<0.01	<0.01	0.49	NC
7	Pyrene	15,187	1.73	0.06	0.02	0.01	<0.01	0.84	NC
8	Pyrene	650	0.07	<0.01	<0.01	<0.01	<0.01	0.04	NC
9	Pyrene	3,530	0.4	0.02	<0.01	<0.01	<0.01	0.2	NC
1	Selenium	1,616	0.32	0.15	0.4	0.29	0.32	0.39	1.12
10	Selenium	1,102	0.24	0.1	0.3	0.22	0.21	0.27	0.76
2	Selenium	1,343	0.28	0.12	0.35	0.26	0.26	0.33	0.93
3	Selenium	926	0.21	0.08	0.26	0.19	0.17	0.23	0.64

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
4	Selenium	1,022	0.23	0.09	0.28	0.21	0.19	0.25	0.71
5	Selenium	1,128	0.25	0.1	0.3	0.22	0.21	0.28	0.78
6	Selenium	1,261	0.27	0.12	0.33	0.24	0.24	0.31	0.87
7	Selenium	1,491	0.3	0.14	0.38	0.28	0.29	0.36	1.03
8	Selenium	1,847	0.35	0.18	0.44	0.33	0.37	0.45	1.28
9	Selenium	1,289	0.27	0.12	0.34	0.25	0.25	0.31	0.89
1	Silver	4,626	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
10	Silver	75	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
2	Silver	5,104	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
3	Silver	533	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
4	Silver	1,693	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
5	Silver	4,318	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
6	Silver	2,954	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
7	Silver	2,754	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
8	Silver	5,916	<0.01	<0.01	<0.01	<0.01	<0.01	NC	0.01
9	Silver	1,300	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
1	Vanadium	18,698	0.01	<0.01	0.17	0.13	0.05	NC	NC
10	Vanadium	11,823	<0.01	<0.01	0.11	0.08	0.03	NC	NC
2	Vanadium	12,880	<0.01	<0.01	0.12	0.09	0.04	NC	NC
3	Vanadium	10,594	<0.01	<0.01	0.1	0.07	0.03	NC	NC
4	Vanadium	17,625	0.01	<0.01	0.16	0.12	0.05	NC	NC
5	Vanadium	24,135	0.02	<0.01	0.22	0.16	0.07	NC	NC
6	Vanadium	11,889	<0.01	<0.01	0.11	0.08	0.03	NC	NC
7	Vanadium	15,396	0.01	<0.01	0.14	0.1	0.04	NC	NC
8	Vanadium	14,880	0.01	<0.01	0.14	0.1	0.04	NC	NC
9	Vanadium	13,000	<0.01	<0.01	0.12	0.09	0.04	NC	NC
1	Zinc ¹	1,142,686	1.12, 0.09	0.21	1.14, 0.12	0.84, 0.09	0.38	2.4	6.89
10	Zinc ¹	43,049	0.37, 0.03	0.03	0.37, 0.03	0.27, 0.02	0.05	0.09	0.26
2	Zinc ¹	902,777	1.03, 0.08	0.19	1.04, 0.1	0.77, 0.08	0.33	1.89	5.44
3	Zinc ¹	195,418	0.62, 0.05	0.08	0.62, 0.05	0.45, 0.04	0.13	0.41	1.18

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
4	Zinc ¹	2,253,510	1.41, 0.12	0.32	1.46, 0.18	1.07, 0.13	0.59	4.72	13.59
5	Zinc ¹	1,129,678	1.11, 0.09	0.21	1.13, 0.12	0.83, 0.09	0.38	2.37	6.81
6	Zinc ¹	845,979	1.01, 0.08	0.18	1.02, 0.1	0.75, 0.07	0.32	1.77	5.1
7	Zinc ¹	1,771,947	1.3, 0.11	0.27	1.33, 0.15	0.98, 0.11	0.51	3.71	10.69
8	Zinc ¹	962,055	1.05, 0.08	0.19	1.07, 0.11	0.79, 0.08	0.34	2.02	5.8
9	Zinc ¹	466,338	0.82, 0.06	0.13	0.83, 0.07	0.61, 0.05	0.22	0.98	2.81
1	1,1'-Biphenyl	36	<0.01	<0.01	NC	NC	NC	NC	NC
5	1,1'-Biphenyl	666	<0.01	<0.01	NC	NC	NC	NC	NC
9	1,1'-Biphenyl	27	<0.01	<0.01	NC	NC	NC	NC	NC
5	Aroclor 1248	1,430	1.31	0.03	0.25	0.19	0.01	NC	<0.01
6	Aroclor 1248	1,417	1.3	0.03	0.25	0.18	0.01	NC	<0.01
9	Aroclor 1248	189	0.08	<0.01	0.02	0.01	<0.01	NC	<0.01
7	Aroclor 1248	323	0.17	<0.01	0.03	0.02	<0.01	NC	<0.01
4	Aroclor 1260	606	0.41	0.01	0.08	0.06	<0.01	NC	<0.01
5	Aroclor 1260	470	0.29	<0.01	0.06	0.04	<0.01	NC	<0.01
6	Aroclor 1260	305	0.16	<0.01	0.03	0.02	<0.01	NC	<0.01
10	Bis(2-Ethylhexyl)Phthalate	189	<0.01	<0.01	<0.01	<0.01	<0.01	NC	0.05
5	Bis(2-Ethylhexyl)Phthalate	18,213	<0.01	<0.01	0.03	0.02	0.03	NC	<0.01
6	Bis(2-Ethylhexyl)Phthalate	1,961	<0.01	<0.01	<0.01	<0.01	<0.01	NC	0.02
7	Bis(2-Ethylhexyl)Phthalate	7,870	<0.01	<0.01	0.02	0.01	0.01	NC	<0.01
2	Butyl Benzyl Phthalate	147	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
3	Butyl Benzyl Phthalate	313	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
5	Butyl Benzyl Phthalate	1,928	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
7	Butyl Benzyl Phthalate	3,629	<0.01	<0.01	<0.01	<0.01	<0.01	NC	0.01
8	Butyl Benzyl Phthalate	384	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
9	Butyl Benzyl Phthalate	180	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
2	Carbazole	37	<0.01	<0.01	NC	NC	NC	NC	NC
3	Carbazole	84	<0.01	<0.01	NC	NC	NC	NC	NC
4	Carbazole	52	<0.01	<0.01	NC	NC	NC	NC	NC
8	Carbazole	24	<0.01	<0.01	NC	NC	NC	NC	NC

Table C-1
Summary of Hazard Quotients by Zone and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
9	Carbazole	432	<0.01	<0.01	NC	NC	NC	NC	NC
2	Dibenzofuran	19	NC	NC	NC	NC	NC	NC	NC
4	Dibenzofuran	45	NC	NC	NC	NC	NC	NC	NC
6	Dibenzofuran	982	NC	NC	NC	NC	NC	NC	NC
9	Dibenzofuran	233	NC	NC	NC	NC	NC	NC	NC
1	Di-n-butyl Phthalate	287	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
4	Di-n-butyl Phthalate	68	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
9	Di-n-butyl Phthalate	1,164	<0.01	<0.01	0.02	0.02	0.01	NC	<0.01

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

HPAH = high molecular weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

PCB = polychlorinated biphenyl

TRV = toxicity reference value

UCL = upper confidence limit

Table C-2a
Summary of HQs By Zones 1 to 9 With Outliers and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Metals									
Zones 1 to 9 combined with outliers	Antimony	10,405	0.28	0.05	NC	NC	NC	0.13	NC
Zones 1 to 9 combined with outliers	Barium	284,376	0.02	0.02	<0.01	<0.01	0.01	0.86	NC
Zones 1 to 9 combined with outliers	Cadmium ¹	7,189	2.35, 0.74	0.07	2.3, 0.73	1.69, 0.54	0.14	0.05	0.22
Zones 1 to 9 combined with outliers	Chromium (total)	31,768	0.11	0.01	0.15	0.11	0.02	NC	NC
Zones 1 to 9 combined with outliers	Copper ¹	598,696	1.36, 0.17	0.08	1.83, 0.30	1.35, 0.22	0.31	3.96	3.41
Zones 1 to 9 combined with outliers	Lead	532,803	0.38	0.04	1.09	0.80	0.42	0.31	2.17
Zones 1 to 9 combined with outliers	Manganese	448,702	0.06	0.04	0.02	0.01	0.02	1.00	2.04
Zones 1 to 9 combined with outliers	Mercury	519	0.58	0.13	0.30	0.22	0.10	NC	NC
Zones 1 to 9 combined with outliers	Nickel	44,012	0.85	0.03	0.51	0.37	0.03	0.16	0.45
Zones 1 to 9 combined with outliers	Selenium	1,069	0.24	0.10	0.29	0.22	0.20	0.26	0.74
Zones 1 to 9 combined with outliers	Silver	2,549	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 9 combined with outliers	Vanadium	13,418	<0.01	<0.01	0.12	0.09	0.04	NC	NC
Zones 1 to 9 combined with outliers	Zinc ¹	945,097	1.05, 0.08	0.19	1.06, 0.11	0.78, 0.08	0.34	1.98	5.70
Zones 1 to 9 combined with outliers	Hazard Index ²		7.29, 3.52	0.77	7.67, 3.62	5.65, 2.67	1.64	8.72	14.74
Organic Chemicals									
Zones 1 to 9 combined with outliers	Bis(2-ethylhexyl)phthalate	3,628	<0.01	<0.01	<0.01	<0.01	<0.01	NC	0.01
Zones 1 to 9 combined with outliers	Butyl benzyl phthalate	689	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 9 combined with outliers	Di-n-butyl phthalate	360	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 9 combined with outliers	HPAHs	49,284	5.61	0.20	0.06	0.04	<0.01	2.74	NC
Zones 1 to 9 combined with outliers	Total PCBs	861	0.66	0.02	0.13	0.09	<0.01	NC	<0.01
Zones 1 to 9 combined with outliers	Hazard Index		6.27	0.21	0.21	0.15	0.02	2.74	0.02

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

2 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches.

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

HPAH = high molecular weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

PCB = polychlorinated biphenyl

TRV = toxicity reference value

UCL = upper confidence limit

Table C-2b
Summary of HQs By Zones 1 to 9 Without Outliers and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Metals									
Zones 1 to 9 combined without outliers	Antimony	9,602	0.26	0.05	NC	NC	NC	0.12	NC
Zones 1 to 9 combined without outliers	Barium	284,376	0.02	0.02	<0.01	<0.01	0.01	0.86	NC
Zones 1 to 9 combined without outliers	Cadmium ¹	6,403	2.15, 0.68	0.07	2.09, 0.67	1.54, 0.50	0.13	0.05	0.20
Zones 1 to 9 combined without outliers	Chromium (total)	28,884	0.10	<0.01	0.13	0.10	0.02	NC	NC
Zones 1 to 9 combined without outliers	Copper ¹	270,020	0.61, 0.12	0.05	0.82, 0.19	0.61, 0.14	0.17	1.79	1.54
Zones 1 to 9 combined without outliers	Lead	532,803	0.38	0.04	1.09	0.80	0.42	0.31	2.17
Zones 1 to 9 combined without outliers	Manganese	448,702	0.06	0.04	0.02	0.01	0.02	1.00	2.04
Zones 1 to 9 combined without outliers	Mercury	519	0.58	0.13	0.30	0.22	0.10	NC	NC
Zones 1 to 9 combined without outliers	Nickel	44,012	0.85	0.03	0.51	0.37	0.03	0.16	0.45
Zones 1 to 9 combined without outliers	Selenium	1,069	0.24	0.10	0.29	0.22	0.20	0.26	0.74
Zones 1 to 9 combined without outliers	Silver	2,549	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 9 combined without outliers	Vanadium	12,947	<0.01	<0.01	0.12	0.09	0.04	NC	NC
Zones 1 to 9 combined without outliers	Zinc ¹	872,399	1.02, 0.08	0.18	1.03, 0.10	0.76, 0.07	0.32	1.83	5.26
Zones 1 to 9 combined without outliers	Hazard Index ²		6.28, 3.38	0.72	6.42, 3.44	4.73, 2.53	1.48	6.38	12.41

Table C-2b
Summary of HQs By Zones 1 to 9 Without Outliers and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Organic Chemicals									
Zones 1 to 9 combined without outliers	Bis(2-ethylhexyl)phthalate	2,518	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 9 combined without outliers	Butyl benzyl phthalate	689	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 9 combined without outliers	Di-n-butyl phthalate	360	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 9 combined without outliers	HPAHs	33,286	3.79	0.13	0.04	0.03	<0.01	1.85	NC
Zones 1 to 9 combined without outliers	Total PCBs	566	0.37	0.01	0.07	0.05	<0.01	NC	<0.01
Zones 1 to 9 combined without outliers	Hazard Index		4.17	0.15	0.13	0.10	0.02	1.85	0.01

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

2 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches.

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

HPAH = high molecular weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

PCB = polychlorinated biphenyl

TRV = toxicity reference value

UCL = upper confidence limit

Table C-2c
Summary of HQs For Zone 10 and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Metals									
Zone 10	Antimony	0.42	0.01	<0.01	NC	NC	NC	<0.01	NC
Zone 10	Barium	37	<0.01	<0.01	<0.01	<0.01	<0.01	0.11	NC
Zone 10	Cadmium ¹	0.43	0.25, 0.11	0.02	0.24, 0.11	0.18, 0.08	0.02	<0.01	0.01
Zone 10	Chromium (total)	8	0.03	<0.01	0.04	0.03	<0.01	NC	NC
Zone 10	Copper ¹	13	0.03, 0.05	0.01	0.04, 0.06	0.03, 0.04	0.03	0.08	0.07
Zone 10	Lead	22	0.03	<0.01	0.08	0.06	0.03	0.01	0.09
Zone 10	Manganese	169	0.03	0.02	<0.01	<0.01	<0.01	0.38	0.77
Zone 10	Mercury	0.07	0.29	0.04	0.14	0.11	0.03	NC	NC
Zone 10	Nickel	5	0.10	<0.01	0.06	0.05	<0.01	0.02	0.06
Zone 10	Selenium	1.1	0.24	0.10	0.30	0.22	0.21	0.27	0.76
Zone 10	Silver	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zone 10	Vanadium	11.8	<0.01	<0.01	0.11	0.08	0.03	NC	NC
Zone 10	Zinc ¹	43.0	0.37, 0.03	0.03	0.37, 0.03	0.27, 0.02	0.05	0.09	0.26
Zone 10	Hazard Index ²		1.40, 0.93	0.22	1.39, 0.94	1.03, 0.69	0.40	0.96	2.02
Organic Chemicals									
Zone 10	Bis(2-ethylhexyl)phthalate	189	<0.01	<0.01	<0.01	<0.01	<0.01	NC	0.05
Zone 10	Butyl benzyl phthalate	NC	NC	NC	NC	NC	NC	NC	NC
Zone 10	Di-n-butyl phthalate	NC	NC	NC	NC	NC	NC	NC	NC
Zone 10	HPAHs	724.9	0.08	<0.01	<0.01	<0.01	<0.01	0.04	NC
Zone 10	Total PCBs	NC	NC	NC	NC	NC	NC	NC	NC
Zone 10	Hazard Index		0.08	0.00	0.00	0.00	0.00	0.04	0.05

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

2 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches.

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

HPAH = high molecular weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

PCB = polychlorinated biphenyl

TRV = toxicity reference value

UCL = upper confidence limit

Table C-2d
Summary of HQs For Background and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Metals									
Michigan or Zone 10 Background	Antimony	370	0.07	<0.01	NC	NC	NC	<0.01	NC
Michigan or Zone 10 Background	Barium	75,000	<0.01	<0.01	<0.01	<0.01	<0.01	0.23	NC
Michigan or Zone 10 Background	Cadmium ¹	1,200	0.57, 0.22	0.03	0.55, 0.22	0.41, 0.16	0.04	<0.01	0.04
Michigan or Zone 10 Background	Chromium (total)	18,000	0.06	<0.01	0.08	0.06	0.01	NC	NC
Michigan or Zone 10 Background	Copper ¹	32,000	0.07, 0.06	0.02	0.1, 0.08	0.07, 0.06	0.05	0.21	0.18
Michigan or Zone 10 Background	Lead	21,000	0.03	<0.01	0.07	0.05	0.03	0.01	0.09
Michigan or Zone 10 Background	Manganese	440,000	0.06	0.04	0.02	0.01	0.02	0.98	2.00
Michigan or Zone 10 Background	Mercury	130	0.36	0.06	0.18	0.13	0.05	NC	NC
Michigan or Zone 10 Background	Nickel	20,000	0.39	0.01	0.23	0.17	0.02	0.07	0.20
Michigan or Zone 10 Background	Selenium	410	0.12	0.03	0.14	0.11	0.07	0.10	0.28
Michigan or Zone 10 Background	Silver	1,000	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Michigan or Zone 10 Background	Vanadium	9,400	<0.01	<0.01	0.09	0.06	0.03	NC	NC
Michigan or Zone 10 Background	Zinc ¹	47,000	0.39, 0.03	0.03	0.38, 0.03	0.28, 0.02	0.06	0.10	0.28
Michigan or Zone 10 Background	Hazard Index ²		2.12, 1.41	0.25	1.85, 1.15	1.36, 0.85	0.38	1.71	3.08

Table C-2d
Summary of HQs For Background and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Organic Chemicals									
Michigan or Zone 10 Background	Bis(2-ethylhexyl)phthalate	11	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Michigan or Zone 10 Background	Butyl benzyl phthalate	12	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Michigan or Zone 10 Background	Di-n-butyl phthalate	5	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Michigan or Zone 10 Background	HPAHs	550	0.06	<0.01	<0.01	<0.01	<0.01	0.03	NC
Michigan or Zone 10 Background	Total PCBs	31	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Michigan or Zone 10 Background	Hazard Index		0.07	<0.01	<0.01	<0.01	<0.01	0.03	<0.01

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

2 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches.

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

HPAH = high molecular weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

PCB = polychlorinated biphenyl

TRV = toxicity reference value

UCL = upper confidence limit

Table C-2e

Summary of HQs By Zones 1 to 10 Without Outliers and with Area Weighting for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Metals									
Zones 1 to 10 with area-weighted averaging, without outliers	Antimony	6,474	0.17	0.03	NC	NC	NC	0.08	NC
Zones 1 to 10 with area-weighted averaging, without outliers	Barium	199,960	0.01	0.02	<0.01	<0.01	<0.01	0.61	NC
Zones 1 to 10 with area-weighted averaging, without outliers	Cadmium ¹	4,367	1.58, 0.53	0.06	1.54, 0.52	1.14, 0.38	0.10	0.03	0.14
Zones 1 to 10 with area-weighted averaging, without outliers	Chromium (total)	21,844	0.07	<0.01	0.10	0.07	0.02	NC	NC
Zones 1 to 10 with area-weighted averaging, without outliers	Copper ¹	182,345	0.41, 0.10	0.04	0.56, 0.16	0.41, 0.12	0.13	1.21	1.04
Zones 1 to 10 with area-weighted averaging, without outliers	Lead	358,925	0.27	0.03	0.78	0.58	0.30	0.21	1.46
Zones 1 to 10 with area-weighted averaging, without outliers	Manganese	352,019	0.05	0.03	0.02	0.01	0.02	0.78	1.60
Zones 1 to 10 with area-weighted averaging, without outliers	Mercury	364	0.52	0.10	0.26	0.19	0.08	NC	NC

Table C-2e

Summary of HQs By Zones 1 to 10 Without Outliers and with Area Weighting for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Zones 1 to 10 with area-weighted averaging, without outliers	Nickel	30,836	0.59	0.02	0.36	0.26	0.02	0.11	0.31
Zones 1 to 10 with area-weighted averaging, without outliers	Selenium	1,070	0.24	0.10	0.29	0.22	0.20	0.26	0.74
Zones 1 to 10 with area-weighted averaging, without outliers	Silver	1,707	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 10 with area-weighted averaging, without outliers	Vanadium	12,446	<0.01	<0.01	0.11	0.08	0.04	NC	NC
Zones 1 to 10 with area-weighted averaging, without outliers	Zinc ¹	589,990	0.89, 0.07	0.15	0.9, 0.08	0.66, 0.06	0.25	1.24	3.56
Zones 1 to 10 with area-weighted averaging, without outliers	Hazard Index ²		4.84, 2.65	0.59	4.93, 2.69	3.63, 1.98	1.17	4.53	8.86
Organic Chemicals									
Zones 1 to 10 with area-weighted averaging, without outliers	Bis(2-ethylhexyl)phthalate	1,733	<0.01	<0.01	<0.01	<0.01	<0.01	NC	NC
Zones 1 to 10 with area-weighted averaging, without outliers	Butyl benzyl phthalate	459	<0.01	<0.01	<0.01	<0.01	<0.01	NC	NC

Table C-2e

Summary of HQs By Zones 1 to 10 Without Outliers and with Area Weighting for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Zones 1 to 10 with area-weighted averaging, without outliers	Di-n-butyl phthalate	239	<0.01	<0.01	<0.01	<0.01	<0.01	NC	NC
Zones 1 to 10 with area-weighted averaging, without outliers	HPAHs	22,208	2.53	0.09	0.03	0.02	<0.01	1.23	NC
Zones 1 to 10 with area-weighted averaging, without outliers	Total PCBs	384	0.22	<0.01	0.04	0.03	<0.01	NC	<0.01
Zones 1 to 10 with area-weighted averaging, without outliers	Hazard Index		2.75	0.10	0.08	0.06	0.01	1.23	<0.01

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

2 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches.

Notes:

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

HPAH = high molecular weight polycyclic aromatic hydrocarbon

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

PCB = polychlorinated biphenyl

TRV = toxicity reference value

UCL = upper confidence limit

Table C-2f
Summary of HQs By Zones 1 to 10 Without Outliers, With Area Weighting with Slag Adjustment
for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Metals									
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Antimony	3,305	0.09	0.02	NC	NC	NC	0.04	NC
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Barium	106,116	<0.01	<0.01	<0.01	<0.01	<0.01	0.32	NC
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Cadmium ¹	2,254	0.94, 0.34	0.04	0.91, 0.34	0.67, 0.25	0.07	0.02	0.07
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Chromium (total)	12,313	0.04	<0.01	0.06	0.04	<0.01	NC	NC
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Copper ¹	93,238	0.21, 0.08	0.03	0.28, 0.12	0.21, 0.09	0.09	0.62	0.53
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Lead	183,100	0.16	0.02	0.44	0.33	0.16	0.11	0.75

Table C-2f
Summary of HQs By Zones 1 to 10 Without Outliers, With Area Weighting with Slag Adjustment
for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Manganese	203,947	0.04	0.02	0.01	<0.01	0.01	0.45	0.93
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Mercury	193	0.42	0.07	0.21	0.15	0.06	NC	NC
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Nickel	16,312	0.31	0.01	0.19	0.14	0.01	0.06	0.17
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Selenium	717	0.18	0.06	0.22	0.16	0.13	0.17	0.50
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Silver	866	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Vanadium	8,174	<0.01	<0.01	0.07	0.06	0.02	NC	NC

Table C-2f
Summary of HQs By Zones 1 to 10 Without Outliers, With Area Weighting with Slag Adjustment
for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Area	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Zinc ¹	302,098	0.71, 0.05	0.10	0.71, 0.06	0.53, 0.04	0.17	0.63	1.82
Zones 1 to 10 with area-weighted averaging, no outliers and slag adjustment	Hazard Index ²		3.1, 1.72	0.39	3.11, 1.72	2.29, 1.26	0.74	2.42	4.76

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

2 = Two HIs are presented for the shrew, robin, and woodcock to present the range in HIs for the two modeling approaches.

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

TRV = toxicity reference value

UCL = upper confidence limit

Table C-2g

Summary of Hazard Quotients by Zone with Slag Adjustment and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
1	Antimony	9,247	0.25	0.05	NC	NC	NC	0.12	NC
10	Antimony	208	<0.01	<0.01	NC	NC	NC	<0.01	NC
2	Antimony	5,136	0.14	0.03	NC	NC	NC	0.07	NC
3	Antimony	1,355	0.04	<0.01	NC	NC	NC	0.02	NC
4	Antimony	4,451	0.12	0.02	NC	NC	NC	0.06	NC
5	Antimony	6,967	0.19	0.04	NC	NC	NC	0.09	NC
6	Antimony	8,147	0.22	0.04	NC	NC	NC	0.10	NC
7	Antimony	7,048	0.19	0.04	NC	NC	NC	0.09	NC
8	Antimony	12,887	0.34	0.06	NC	NC	NC	0.17	NC
9	Antimony	3,430	0.09	0.02	NC	NC	NC	0.04	NC
1	Barium	204,260	0.01	0.02	<0.01	<0.01	<0.01	0.62	NC
10	Barium	18,593	<0.01	<0.01	<0.01	<0.01	<0.01	0.06	NC
2	Barium	130,490	<0.01	<0.01	<0.01	<0.01	<0.01	0.40	NC
3	Barium	34,457	<0.01	<0.01	<0.01	<0.01	<0.01	0.10	NC
4	Barium	115,234	<0.01	<0.01	<0.01	<0.01	<0.01	0.35	NC
5	Barium	287,786	0.02	0.02	<0.01	<0.01	0.01	0.87	NC
6	Barium	107,657	<0.01	<0.01	<0.01	<0.01	<0.01	0.33	NC
7	Barium	176,876	0.01	0.01	<0.01	<0.01	<0.01	0.54	NC
8	Barium	269,526	0.02	0.02	<0.01	<0.01	0.01	0.82	NC
9	Barium	299,781	0.02	0.02	<0.01	<0.01	0.01	0.91	NC
1	Cadmium ¹	5,388	1.87, 0.61	0.06	1.82, 0.6	1.34, 0.44	0.11	0.04	0.17
10	Cadmium ¹	214	0.14, 0.07	0.01	0.14, 0.07	0.1, 0.05	0.02	<0.01	<0.01
2	Cadmium ¹	4,680	1.67, 0.55	0.06	1.63, 0.55	1.2, 0.4	0.10	0.03	0.15
3	Cadmium ¹	1,169	0.55, 0.22	0.03	0.54, 0.22	0.4, 0.16	0.04	<0.01	0.04
4	Cadmium ¹	3,276	1.26, 0.44	0.05	1.23, 0.43	0.9, 0.32	0.08	0.02	0.10
5	Cadmium ¹	5,259	1.83, 0.6	0.06	1.79, 0.59	1.32, 0.44	0.11	0.04	0.16
6	Cadmium ¹	3,660	1.38, 0.47	0.05	1.34, 0.46	0.99, 0.34	0.09	0.03	0.11
7	Cadmium ¹	9,172	2.86, 0.87	0.08	2.79, 0.86	2.05, 0.63	0.16	0.07	0.29

Table C-2g

Summary of Hazard Quotients by Zone with Slag Adjustment and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
8	Cadmium ¹	11,331	3.38, 1	0.10	3.3, 0.99	2.43, 0.73	0.18	0.08	0.35
9	Cadmium ¹	1,555	0.7, 0.27	0.03	0.68, 0.26	0.5, 0.19	0.05	0.01	0.05
1	Chromium	41,396	0.14	0.01	0.19	0.14	0.03	NC	NC
10	Chromium	4,214	0.01	<0.01	0.02	0.01	<0.01	NC	NC
2	Chromium	16,267	0.06	<0.01	0.08	0.06	0.01	NC	NC
3	Chromium	6,046	0.02	<0.01	0.03	0.02	<0.01	NC	NC
4	Chromium	17,723	0.06	<0.01	0.08	0.06	0.01	NC	NC
5	Chromium	26,106	0.09	<0.01	0.12	0.09	0.02	NC	NC
6	Chromium	14,269	0.05	<0.01	0.07	0.05	0.01	NC	NC
7	Chromium	18,859	0.06	<0.01	0.09	0.06	0.01	NC	NC
8	Chromium	17,603	0.06	<0.01	0.08	0.06	0.01	NC	NC
9	Chromium	17,513	0.06	<0.01	0.08	0.06	0.01	NC	NC
1	Copper ¹	289,235	0.66, 0.12	0.05	0.88, 0.88	0.65, 0.15	0.18	1.92	1.65
10	Copper ¹	6,260	0.01, 0.04	0.01	0.02, 0.01	0.01, 0.04	0.02	0.04	0.04
2	Copper ¹	139,696	0.32, 0.09	0.04	0.43, 0.04	0.31, 0.1	0.11	0.93	0.80
3	Copper ¹	24,936	0.06, 0.06	0.02	0.08, 0.01	0.06, 0.05	0.04	0.17	0.14
4	Copper ¹	219,774	0.5, 0.11	0.05	0.67, 0.06	0.49, 0.13	0.15	1.46	1.25
5	Copper ¹	190,186	0.43, 0.11	0.04	0.58, 0.05	0.43, 0.12	0.14	1.26	1.08
6	Copper ¹	168,594	0.38, 0.1	0.04	0.51, 0.05	0.38, 0.11	0.13	1.12	0.96
7	Copper ¹	2,113,879	4.79, 0.33	0.17	6.46, 0.51	4.76, 0.53	0.87	14.00	12.04
8	Copper ¹	135,494	0.31, 0.09	0.04	0.41, 0.04	0.3, 0.1	0.11	0.90	0.77
9	Copper ¹	138,852	0.31, 0.09	0.04	0.42, 0.04	0.31, 0.1	0.11	0.92	0.79
1	Lead	459,971	0.34	0.04	0.96	0.71	0.37	0.27	1.88
10	Lead	11,023	0.02	<0.01	0.04	0.03	0.02	<0.01	0.04
2	Lead	265,147	0.21	0.03	0.60	0.45	0.23	0.16	1.08
3	Lead	88,457	0.09	0.01	0.24	0.18	0.09	0.05	0.36
4	Lead	239,107	0.20	0.02	0.55	0.41	0.21	0.14	0.98
5	Lead	430,582	0.32	0.04	0.91	0.67	0.35	0.25	1.76

Table C-2g

Summary of Hazard Quotients by Zone with Slag Adjustment and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
6	Lead	232,765	0.19	0.02	0.54	0.40	0.20	0.14	0.95
7	Lead	627,612	0.44	0.05	1.26	0.93	0.49	0.37	2.56
8	Lead	649,986	0.45	0.05	1.29	0.95	0.51	0.38	2.65
9	Lead	125,489	0.12	0.02	0.32	0.24	0.12	0.07	0.51
1	Manganese	439,252	0.06	0.04	0.02	0.01	0.02	0.98	2.00
10	Manganese	84,660	0.02	<0.01	<0.01	<0.01	<0.01	0.19	0.38
2	Manganese	225,182	0.04	0.02	0.01	<0.01	0.01	0.50	1.02
3	Manganese	113,759	0.02	0.01	<0.01	<0.01	<0.01	0.25	0.52
4	Manganese	255,863	0.04	0.02	0.01	<0.01	0.01	0.57	1.16
5	Manganese	458,249	0.07	0.04	0.02	0.01	0.02	1.02	2.08
6	Manganese	210,971	0.04	0.02	0.01	<0.01	0.01	0.47	0.96
7	Manganese	273,550	0.04	0.03	0.01	<0.01	0.01	0.61	1.24
8	Manganese	258,134	0.04	0.03	0.01	<0.01	0.01	0.57	1.17
9	Manganese	165,960	0.03	0.02	<0.01	<0.01	<0.01	0.37	0.75
1	Mercury	104	0.34	0.05	0.17	0.12	0.04	NC	NC
10	Mercury	33	0.23	0.03	0.11	0.08	0.02	NC	NC
2	Mercury	606	0.62	0.14	0.31	0.23	0.11	NC	NC
3	Mercury	48	0.26	0.03	0.13	0.10	0.03	NC	NC
4	Mercury	1,882	0.91	0.26	0.47	0.34	0.22	NC	NC
5	Mercury	203	0.42	0.07	0.21	0.16	0.06	NC	NC
6	Mercury	158	0.39	0.07	0.20	0.14	0.05	NC	NC
7	Mercury	118	0.35	0.06	0.18	0.13	0.04	NC	NC
8	Mercury	79	0.31	0.04	0.15	0.11	0.04	NC	NC
9	Mercury	246	0.45	0.08	0.23	0.17	0.07	NC	NC
1	Nickel	40,087	0.77	0.02	0.46	0.34	0.03	0.14	0.41
10	Nickel	2,709	0.05	<0.01	0.03	0.02	<0.01	<0.01	0.03
2	Nickel	31,087	0.60	0.02	0.36	0.26	0.02	0.11	0.32
3	Nickel	10,355	0.20	<0.01	0.12	0.09	0.01	0.04	0.11
4	Nickel	29,098	0.56	0.02	0.34	0.25	0.02	0.10	0.30
5	Nickel	23,495	0.45	0.02	0.27	0.20	0.02	0.08	0.24

Table C-2g

Summary of Hazard Quotients by Zone with Slag Adjustment and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
6	Nickel	17,096	0.33	0.01	0.20	0.15	0.02	0.06	0.17
7	Nickel	29,550	0.57	0.02	0.34	0.25	0.02	0.11	0.30
8	Nickel	22,013	0.42	0.02	0.25	0.19	0.02	0.08	0.22
9	Nickel	19,201	0.37	0.01	0.22	0.16	0.02	0.07	0.20
1	Selenium	808	0.19	0.07	0.24	0.17	0.15	0.2	0.56
10	Selenium	551	0.14	0.05	0.18	0.13	0.1	0.13	0.38
2	Selenium	671	0.17	0.06	0.21	0.15	0.12	0.16	0.47
3	Selenium	463	0.13	0.04	0.16	0.12	0.08	0.11	0.32
4	Selenium	511	0.14	0.04	0.17	0.12	0.09	0.12	0.35
5	Selenium	564	0.15	0.05	0.18	0.13	0.1	0.14	0.39
6	Selenium	631	0.16	0.05	0.2	0.15	0.11	0.15	0.44
7	Selenium	745	0.18	0.07	0.22	0.16	0.14	0.18	0.52
8	Selenium	924	0.21	0.08	0.26	0.19	0.17	0.23	0.64
9	Selenium	644	0.16	0.06	0.2	0.15	0.12	0.16	0.45
1	Silver	2,313	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
10	Silver	38	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
2	Silver	2,552	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
3	Silver	267	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
4	Silver	847	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
5	Silver	2,159	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
6	Silver	1,477	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
7	Silver	1,377	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
8	Silver	2,958	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
9	Silver	650	<0.01	<0.01	<0.01	<0.01	<0.01	NC	<0.01
1	Vanadium	9,349	<0.01	<0.01	0.09	0.06	0.03	NC	NC
10	Vanadium	5,912	<0.01	<0.01	0.05	0.04	0.02	NC	NC
2	Vanadium	6,440	<0.01	<0.01	0.06	0.04	0.02	NC	NC
3	Vanadium	5,297	<0.01	<0.01	0.05	0.04	0.02	NC	NC
4	Vanadium	8,812	<0.01	<0.01	0.08	0.06	0.03	NC	NC
5	Vanadium	12,068	<0.01	<0.01	0.11	0.08	0.03	NC	NC

Table C-2g

Summary of Hazard Quotients by Zone with Slag Adjustment and Chemical for Avian, Mammals, Earthworm, and Plant Receptors

Surface Soil Zone	Chemical	Midpoint, 95% UCL (µg/kg)	Shrew, LOAEL TRV HQ	Vole, LOAEL TRV HQ	Robin, LOAEL TRV HQ	Woodcock, LOAEL TRV HQ	Dove, LOAEL TRV HQ	Earthworm, EC10 and MATC, HQ	Plants, EC10 and MATC, HQ
6	Vanadium	5,945	<0.01	<0.01	0.05	0.04	0.02	NC	NC
7	Vanadium	7,698	<0.01	<0.01	0.07	0.05	0.02	NC	NC
8	Vanadium	7,440	<0.01	<0.01	0.07	0.05	0.02	NC	NC
9	Vanadium	6,500	<0.01	<0.01	0.06	0.04	0.02	NC	NC
1	Zinc ¹	571,343	0.88, 0.07	0.14	0.89, 0.08	0.66, 0.06	0.25	1.2	3.45
10	Zinc ¹	21,525	0.3, 0.02	0.02	0.3, 0.02	0.22, 0.02	0.04	0.05	0.13
2	Zinc ¹	451,388	0.82, 0.06	0.12	0.82, 0.07	0.6, 0.05	0.21	0.95	2.72
3	Zinc ¹	97,709	0.49, 0.04	0.05	0.49, 0.04	0.36, 0.03	0.09	0.2	0.59
4	Zinc ¹	1,126,755	1.11, 0.09	0.21	1.13, 0.12	0.83, 0.09	0.38	2.36	6.8
5	Zinc ¹	564,839	0.88, 0.07	0.14	0.89, 0.08	0.65, 0.06	0.25	1.18	3.41
6	Zinc ¹	422,989	0.8, 0.06	0.12	0.8, 0.07	0.59, 0.05	0.21	0.89	2.55
7	Zinc ¹	885,974	1.02, 0.08	0.18	1.04, 0.1	0.76, 0.08	0.33	1.86	5.34
8	Zinc ¹	481,028	0.83, 0.06	0.13	0.84, 0.08	0.62, 0.06	0.22	1.01	2.9
9	Zinc ¹	233,169	0.65, 0.05	0.09	0.65, 0.05	0.48, 0.04	0.14	0.49	1.41

Notes:

1 = Two HQs are presented for the shrew, robin, and woodcock; the first, Approach 1, is based on Eco-SSL earthworm uptake assumptions presented in Table 4, and the second, Approach 2, is based on the approaches presented in Table 4.

µg/kg = micrograms per kilogram

EC = effective concentration

HQ = hazard quotient

LOAEL = lowest observed adverse effect level

MATC = maximum acceptable toxicant concentration

NC = not calculated as no TRV available

TRV = toxicity reference value

UCL = upper confidence limit

APPENDIX D

ProUCL OUTPUT

DRAFT

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Outlier Tests for Selected Uncensored Variables

User Selected Options

Date/Time of Computation 10/13/2016 9:55:31 AM
 From File Zone_95_UCL_Incremental_Source_c.xls
 Full Precision OFF

Rosner's Outlier Test for Result_MDL (1,1'-biphenyl***z19***soil)

Mean 44.58
 Standard Deviation 97.08
 Number of data 27
 Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	44.58	95.26	520	23	4.991	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 520

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 520

Rosner's Outlier Test for Result_MDL (antimony***z19***soil)

Mean 7.978
 Standard Deviation 4.256
 Number of data 27
 Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	7.978	4.177	20	4	2.878	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 20

For 1% Significance Level, there is no Potential Outlier

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (aroclor 1248***z19***soil)

Mean 157.4
Standard Deviation 290.6
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	157.4	285.2	1100	22	3.305	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1100

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1100

Rosner's Outlier Test for Result_MDL (aroclor 1254***z19***soil)

Mean 310.2
Standard Deviation 632.4
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	310.2	620.6	3400	14	4.979	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3400

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3400

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (barium***z19***soil)

Mean 223.3
Standard Deviation 106.9
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	223.3	104.9	450	7	2.161	2.86	3.18

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Result_MDL (benzo(a)anthracene***z19***soil)

Mean 2261
Standard Deviation 3375
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	2261	3312	15000	23	3.846	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 15000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 15000

Rosner's Outlier Test for Result_MDL (benzo(a)pyrene***z19***soil)

Mean 1861
Standard Deviation 2655
Number of data 27
Number of suspected outliers 1

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	1861	2605	12000	23	3.892	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 12000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 12000

Rosner's Outlier Test for Result_MDL (benzo(b)fluoranthene***z19***soil)

Mean 2610
Standard Deviation 3563
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	2610	3497	16000	23	3.829	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 16000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 16000

Rosner's Outlier Test for Result_MDL (benzo(g,h,i)perylene***z19***soil)

Mean 1431
Standard Deviation 1895
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	1431	1860	8400	23	3.747	2.86	3.18

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 8400

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 8400

Rosner's Outlier Test for Result_MDL (benzo(k)fluoranthene***z19***soil)

Mean 1121
Standard Deviation 1527
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential	Obs.	Test	Critical	Critical
			outlier	Number	value	value (5%)	value (1%)
1	1121	1498	6900	23	3.858	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 6900

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 6900

Rosner's Outlier Test for Result_MDL (bis(2-ethylhexyl)phthalate***z19***soil)

Mean 1988
Standard Deviation 2942
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential	Obs.	Test	Critical	Critical
			outlier	Number	value	value (5%)	value (1%)
1	1988	2887	14000	23	4.161	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 14000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 14000

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (butyl benzyl phthalate***z19***soil)

Mean 353.7
Standard Deviation 604.1
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	353.7	592.8	2800	1	4.127	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2800

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2800

Rosner's Outlier Test for Result_MDL (cadmium***z19***soil)

Mean 5.274
Standard Deviation 3.37
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	5.274	3.307	16	4	3.243	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 16

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 16

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (carbazole***z19***soil)

Mean 571.3
Standard Deviation 1051
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	571.3	1031	4900	23	4.198	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 4900

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 4900

Rosner's Outlier Test for Result_MDL (chromium***z19***soil)

Mean 25.81
Standard Deviation 10.4
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	25.81	10.2	62	15	3.547	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 62

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 62

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (chrysene***z19***soil)

Mean 2473
Standard Deviation 3712
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	2473	3642	17000	23	3.989	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 17000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 17000

Rosner's Outlier Test for Result_MDL (copper***z19***soil)

Mean 304.3
Standard Deviation 530.4
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	304.3	520.5	2900	2	4.987	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2900

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2900

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (dibenzo(a,h)anthracene***z19***soil)

Mean 394.5
Standard Deviation 532.7
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	394.5	522.7	2200	23	3.454	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2200

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2200

Rosner's Outlier Test for Result_MDL (dibenzofuran***z19***soil)

Mean 527.2
Standard Deviation 1008
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	527.2	988.9	4700	23	4.22	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 4700

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 4700

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (di-n-butyl phthalate***z19***soil)

Mean 166.6
Standard Deviation 349.9
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	166.6	343.4	1500	4	3.883	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1500

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1500

Rosner's Outlier Test for Result_MDL (fluoranthene***z19***soil)

Mean 7190
Standard Deviation 13495
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	7190	13242	66000	23	4.441	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 66000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 66000

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (high molecular weight pahs***z19***soil)

Mean 25967
Standard Deviation 41926
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	25967	41142	198100	23	4.184	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 198100

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 198100

Rosner's Outlier Test for Result_MDL (indeno(1,2,3-cd)pyrene***z19***soil)

Mean 1622
Standard Deviation 2157
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	1622	2117	9600	23	3.769	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 9600

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 9600

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (lead***z19***soil)

Mean 402.7
Standard Deviation 228.4
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential	Obs.	Test	Critical	Critical
			outlier	Number	value	value (5%)	value (1%)
1	402.7	224.1	1000	1	2.665	2.86	3.18

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Result_MDL (manganese***z19***soil)

Mean 377.4
Standard Deviation 124.1
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential	Obs.	Test	Critical	Critical
			outlier	Number	value	value (5%)	value (1%)
1	377.4	121.8	720	15	2.812	2.86	3.18

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (mercury***z19***soil)

Mean 0.256
Standard Deviation 0.474
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	0.256	0.465	2.5	18	4.828	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2.5

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 2.5

Rosner's Outlier Test for Result_MDL (nickel***z19***soil)

Mean 36.89
Standard Deviation 12.4
Number of data 27
Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	36.89	12.17	11	11	2.127	2.86	3.18

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (pcbs, total***z19***soil)

Mean 490.4
Standard Deviation 663.8
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	490.4	651.4	3400	14	4.467	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3400

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 3400

Rosner's Outlier Test for Result_MDL (phenanthrene***z19***soil)

Mean 7093
Standard Deviation 15649
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	7093	15357	79000	23	4.682	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 79000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 79000

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (pyrene***z19***soil)

Mean 5036
Standard Deviation 9272
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	5036	9098	45000	23	4.392	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 45000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 45000

Rosner's Outlier Test for Result_MDL (selenium***z19***soil)

Mean 103.3
Standard Deviation 321.2
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	103.3	315.2	1446	21	4.261	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1446

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1446

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (silver***z19***soil)

Mean 1.919
Standard Deviation 1.107
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	1.919	1.086	4.4	4	2.285	2.86	3.18

For 5% Significance Level, there is no Potential Outlier

For 1% Significance Level, there is no Potential Outlier

Rosner's Outlier Test for Result_MDL (vanadium***z19***soil)

Mean 11.98
Standard Deviation 2.49
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	11.98	2.443	19	24	2.873	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 19

For 1% Significance Level, there is no Potential Outlier

Appendix D-1

ProUCL Statistics, Outliers for Zones 1 to 9

Rosner's Outlier Test for Result_MDL (zinc***z19***soil)

Mean 735.9
Standard Deviation 366.4
Number of data 27
Number of suspected outliers 1

			Potential	Obs.	Test	Critical	Critical
#	Mean	sd	outlier	Number	value	value (5%)	value (1%)
1	735.9	359.5	1800	20	2.96	2.86	3.18

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 1800

For 1% Significance Level, there is no Potential Outlier