UPPER COLUMBIA RIVER

FINAL

Soil Amendment Technology Evaluation Study Phase IA Test Plot Selection and Characterization Data Summary Report

Prepared for

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CONTENTS

LIST OF FIGURES

LIST OF MAPS

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

ALS	ALS Environmental Kelso
ASTM	American Society for Testing and Materials
bgs	below ground surface
CCT	Confederated Tribes of the Colville Reservation
COC	chain-of-custody
CRCP	Cultural Resources Coordination Plan
CV	coefficient of variation
DQO	data quality objective
DSR	data summary report
DU	decision unit
EPA	U.S. Environmental Protection Agency
GPS	global positioning system
GSD	geometric standard deviation
HWA	HWA GeoSciences, Inc.
IC	incremental composite
IDW	investigation-derived wastes
ITRC	Interstate Technology and Regulatory Council
LCS	laboratory control sample
MS	matrix spike
MSD	matrix spike duplicate
No./N	number
OSU	Ohio State University
QA/QC	quality assurance and quality control
QC	quality control
RI/FS	remedial investigation and feasibility study
RPD	relative percent difference
RSD	relative standard deviation
SATES	Soil Amendment Technology Evaluation Study
SDG	sample delivery group
SOP	standard operating procedure
SPLP	synthetic precipitation leaching procedure
TAI	Teck American Incorporated
TAL	target analyte list
UCR	Upper Columbia River

UNITS OF MEASURE

bgs	below ground surface
°C	degrees Celsius
cm	centimeter(s)
cm/sec	centimeter(s) per second
dw	dry weight
ft	foot or feet
ft^2	square foot or square feet
gal	gallon(s)
in.	inch(es)
mg/kg	milligram(s) per kilogram
mg/l	milligram(s) per liter
mm	millimeter(s)
mS/m	millisiemen(s) per meter
pcf	pound(s) per cubic foot
µm	micrometer(s)

1 INTRODUCTION AND BACKGROUND

This data summary report (DSR) presents the results of test plot selection and characterization (Phase IA) for the Upper Columbia River (UCR) Soil Amendment Technology Evaluation Study (SATES). Data collection and analyses for Phase IA were conducted on behalf of Teck American Incorporated (TAI) in accordance with the following U.S. Environmental Protection Agency (EPA)-approved documents, which detail the scope of work, methods, procedures, and other requirements for SATES Phase I:

- *Final Work Plan for the Soil Amendment Technology Evaluation Study (SATES), Phase I: Test Plot Characterization and Initial Amendment Alternatives Evaluation* (hereinafter the Work Plan; Ramboll 2017a)
- *Addendum - Soil Amendment Technology Evaluation Study (SATES) Final Work Plan for the Soil Amendment Technology Evaluation Study, Phase I: Test Plot Characterization and Initial Amendment Alternatives Evaluation* (hereinafter the Work Plan Addendum; Ramboll 2017b).

This study is part of the ongoing UCR remedial investigation and feasibility study (RI/FS) TAI is conducting under EPA oversight, as required by the settlement agreement between TAI and EPA, dated June 2, 2006.

1.1 BACKGROUND

The background, purpose, and description of the SATES program and the participants are detailed in the Work Plan and the Work Plan Addendum. The objective is to identify and field test a soil amendment technology or technologies that could appropriately and cost-effectively reduce the long-term potential for human exposure to lead in shallow soils in the UCR area (USEPA 2016).

Field testing of the selected soil treatment or treatments will occur at specific locations (test plots) on one or more of three tribal allotments sampled during the 2014 residential soil sampling study (CH2M HILL 2016). These allotments are referred to as decision units (DUs) 258, 401, and 441 (see Map 1-1). Six initial test plot areas within these DUs were selected based on criteria described in Section 4.3.1.1 of the Work Plan. The test plot locations are shown in Maps 1-2, 1-3, and 1-4.

The SATES program is subdivided into four phases, with the scope of work for each phase being dependent upon the outcomes of the preceding phases. These are:

- Phase I – test plot characterization and amendment alternatives screening
  - Phase IA – test plot screening and selection (Part 1) and baseline soil characterization (Part 2)
  - Phase IB – soil amendment technology screening and design

- Phase II – bench-scale treatability studies
- Phase III – test plot field implementation
- Phase IV – test plot monitoring.

This DSR presents the following data collected during Phase IA:

- Part 1 – Initial soil screening and selection of test plots for pilot testing of selected soil amendment technology options.
- Part 2 – Characterization of selected test plots to establish substantive soil and vegetation baseline conditions. The baseline data will be referenced in later SATES phases as a basis for monitoring the effects of the soil amendment alternatives and to evaluate their effectiveness in meeting the SATES data quality objectives (DQOs).

The design of the soil sampling plans for Parts 1 and 2 is described in Section 4.3 (Study Approach) of the Work Plan.

This report summarizes Phase IA procedures (i.e., field, laboratory analytical, and quality assurance and quality control [QA/QC]), analytical chemistry results, and geotechnical analysis (soil physical properties) results. The results of Phase IA will inform Phase IB, which includes development of initial soil amendment technology options, and a prescreening step to evaluate alternative soil amendments and mixtures and eliminate alternatives that have clear drawbacks or are unlikely to meet the DQOs. Amendment selection and elimination of ineffective or undesirable amendments in Phase IB will be conducted jointly by TAI, EPA, and other SATES participants. The results of Phase I will support the design and completion of SATES Phases II through IV.

1.2 REPORT ORGANIZATION

This DSR is organized into the following sections:

- Section 1 — Introduction and Background
- Section 2 — Phase IA Study Design
- Section 3 — Phase IA Part 1 Test Plot Screening and Selection
- Section 4 — Phase IA Part 2 Test Plot Baseline Soil Characterization
- Section 5 — References.

Sections 3 and 4 include descriptions of the data collection and analysis methods, laboratory results for chemical and physical soil analyses, and data validation assessments for the data generated during Phase IA. Appendices containing additional supporting information are provided electronically. Phase IA data may be obtained from the UCR RI/FS project database, accessible to registered users at http://teck-ucr.exponent.com.

Mineralogical and elemental analyses, which were also performed during the test plot characterization step (Part 2), will be provided in two stand-alone reports, one prepared by Hazen Research, Inc. (Hazen) and one prepared by the EPA's National Risk Management Research Laboratory.

Results for Phases IB through IV will be provided in subsequent sequential reports.

2 PHASE IA STUDY DESIGN

2.1 PURPOSE OF THE STUDY

The objectives of Phase IA include data collection to screen, characterize, and evaluate conditions at the test plots within DUs 258, 401, and 441 (Maps 1-2, 1-3, and 1-4). The data generated establish the baseline conditions at each test plot and support the design of appropriate soil amendment options for pilot testing in subsequent SATES phases. The baseline data are necessary for the evaluation of the effectiveness and overall effects of the soil amendment options selected for the bench-scale testing.

2.2 DATA QUALITY OBJECTIVES

The SATES DQOs, and hence those for Phase IA, are summarized in the Work Plan, and a copy is included in Appendix A of the Work Plan. The DQOs were developed by EPA (USEPA 2016) and guided development of the Work Plan.

2.3 PHASE IA DESIGN

A comprehensive understanding of soil chemical, mineralogical, and physical properties at each test plot and the baseline vegetation conditions is important to identify the appropriate amendment deployment methods and to monitor effects of each amendment after application. Tables 2-1 and 2-2 summarize the data required for the Phase IA Parts 1 and 2 initial soil screening and baseline soil characterization steps. The vegetation baseline survey was conducted by the Confederated Tribes of the Colville Reservation (CCT) before the Phase IA soil sampling was performed. The rationale for the Phase IA soil screening and baseline characterization approach and soil sampling plan is detailed in the Work Plan. Results and observations for the vegetation survey will be documented in a separate report.

2.3.1 Phase IA Part 1 Test Plot Screening and Selection

Six initial test plot locations within the three DUs were defined by Ramboll and presented to the SATES program participants during a meeting on May 9, 2017 (Ramboll 2017c).

The Phase IA Part 1 screening effort included delineating each test plot in the field, conducting the initial test plot screening, and selecting test plots for additional characterization in Phase IA Part 2 based on the initial screening results. Each test plot covers an area approximately 100 ft by 100 ft (0.23 acre) and is designated by the DU number followed by a sequential number (e.g., test plot

258-2 is the second test plot established on DU-258). The Phase IA Part 1 initial soil screening was conducted at each of following test plots:

- DU-401 – test plots 401-1 and 401-2 (Map 1-2)
- DU-258 – test plots 258-1, 258-2, and 258-3 (Map 1-3)
- DU-441 – test plot 441-1 (Map 1-4).

In August 2017, discrete near-surface soil samples were collected to identify the distribution of lead and arsenic concentrations in shallow soils across each test plot, and to screen for variations in soil pH and forest litter (duff) thickness.

SATES participants reviewed the Phase IA Part 1 results and jointly selected four test plots for detailed characterization in Phase IA Part 2, as described in the Work Plan Addendum.

2.3.2 Phase IA Part 2 Test Plot Soil Characterization

The Phase IA Part 2 effort was conducted at the four test plots selected for detailed characterization. This effort involved delineating four subplot areas within each test plot, depth-discrete soil sampling and analysis, incremental composite (IC) sampling and analysis, soil classification, and mineralogical analyses, as described in the Work Plan and Work Plan Addendum. This sampling was completed in October 2017.

3 PHASE IA PART 1 TEST PLOT SCREENING AND SELECTION

Phase IA Part 1 test plot screening was designed to evaluate the spatial variation of arsenic, lead, and pH in near-surface soil and to assess duff thickness within the six initial test plots. Table 2-1 summarizes the analyses performed for the initial test plot screening. This section describes the screening methods (Section 3.1), the data collected and data quality assessment (Section 3.2), and results (Section 3.3).

3.1 METHODS

Methods used for test plot screening and selection were consistent with the Work Plan and the standard operating procedures (SOPs) specified for the SATES program (presented in Appendix C of the Work Plan), except for the deviations described herein in Sections 3.1.1.4 and 3.1.2.2. The following sections describe the field and laboratory methods (Sections 3.1.1 and 3.1.2, respectively).

3.1.1 Field Methods

Prior to implementation of field activities, TAI obtained permits from the U. S. Bureau of Indian Affairs and the CCT, the tribal allotment landowners' representative. The initial test plot screening field activities were conducted by Arcadis, with oversight by Ramboll and TAI. Sampling was conducted from August 16 through August 22, 2017 and included the following activities: 1) demarcation of the six test plots within DU-401, DU-258, and DU-441; and 2) collection of 105 shallow (near-surface) discrete soil samples from each test plot, including co-located field duplicate samples at randomly-selected locations.

CCT cultural resource monitors and/or archaeologists were present during the soil sampling activities to ensure the protection of cultural artifacts in accordance with the Cultural Resources Coordination Plan (CRCP) (Work Plan Appendix D) and the Cultural Resource Monitoring Protocol (SOP-3 of the Work Plan, in Appendix C).

3.1.1.1 Test Plot Delineation

On August 15, 2017, the six test plots were delineated using a hand-held global positioning system (GPS) unit using horizontal spatial coordinates provided in the Work Plan[1] and by using

[1] Test plot 258-3 was relocated from the location shown in the Work Plan, as described in Section 3.1.1.4 and Appendix E-2.

measuring tapes. The corners of each test plot were marked with fluorescent orange, flush-mounted galvanized steel survey stakes. These corner stakes will remain in place for the duration of the SATES program.

3.1.1.2 Discrete Soil Sample Collection

In accordance with the Work Plan, each test plot was divided into a grid of 100 sampling squares measuring 10 ft x 10 ft. Each square was assigned a unique alphanumeric location identifier consisting of a horizontal row letter (A through J) and a column number (01 through 10). At each test plot, the datum was established as the northwest corner of the grid, with grid square A01 positioned the northwest corner and J10 positioned in the southeast corner. Maps 3-1 through 3-6 show the sampling grid layouts for the six test plots.

Within each grid, discrete surface soil sample locations were located at the approximate center of each grid square. Each grid square was measured using two measuring tapes placed orthogonally across the square, and the centers were marked with temporary pin flags. The field team used measuring tapes instead of GPS because there was poor satellite response in the area. Arcadis, Ramboll, and TAI field personnel agreed that surveying the test plots by measuring multiple transects would produce an accurate orthogonal sampling domain.

Discrete soil samples were collected from each grid cell consistent with steps and procedures described in the Work Plan. For the purpose of measuring soil sample depths, zero begins at the base of the loose duff layer. Samples were collected using a decontaminated 2-in.-diameter stainless steel soil punch inserted into the soil approximately 0 to 3 in. below ground surface (bgs). Following sample collection, a portable pH meter was used to measure the soil pH at a depth of 1 in. in the immediate vicinity of the discrete sample location (less than approximately 2 in. [5 cm] from the sample location).

A total of 630 discrete samples (including field duplicate samples) were collected from the six test plots for lead and arsenic analyses. Field sampling activities and observations were recorded by Arcadis' field personnel in photographs, on sampling forms, and in field notebooks. Appendix A contains photographs of the sample locations. Appendix B contains field notes and forms.

Sample labeling and custody management were conducted in accordance with the Sample Labeling procedure (SOP-5) and Sample Custody procedure (SOP-9) included in Appendix C of the Work Plan. The soil samples were packaged for shipping in accordance with the Sample Storage, Packaging, and Shipping Procedure (SOP-10 in Appendix C of the Work Plan) and shipped to ALS Environmental Kelso (ALS) in Kelso, Washington. Completed chain-of-custody (COC) forms are included in Appendix C.

After sampling, the sample holes were backfilled with local soil and plugged with 2-in.-diameter wooden plugs, and lightly covered with soil and surficial vegetative material. These plugs are buried approximately 0.5 in. bgs. The plugs were used to mark the screening sample locations and prevent resampling at the same locations during Phase IA Part 2 and subsequent SATES phases.

3.1.1.3 Investigation-Derived Waste

Approximately 45 gal of decontamination water were produced during the Phase IA Part 1 field work. Decontamination water was stored in three 30-gal steel drums that were temporarily staged at a field supply and storage area located at 105 Center Avenue, in Northport, Washington. This investigation-derived waste (IDW) was transported and disposed of by Big Sky Industrial in Spokane, Washington, under an existing waste profile for the UCR site. Big Sky Industrial solidified the IDW using bentonite pellets, and then disposed of it as solid waste at the Graham Road Landfill in Medical Lake, Washington. The manifest for the IDW disposal is included with field documentation as Appendix D.

3.1.1.4 Deviations from Planned Field Activities

Work Plan procedures were followed to the extent practicable during Phase IA Part 1. Modifications and deviations that had the potential to impact the ability to meet the SATES DQOs were communicated to EPA for approval prior to implementation. Corrective action forms are included in Appendix E-1. As discussed in Section 3.2, with the exception of four results from two samples, none of these deviations affect the data quality or usability.

The following changes and deviations occurred during the Phase IA Part 1 field work (see Appendix E-2):

- Test plot 258-3 was laid out as a non-square rhombus (see Map 3-5). The test plot location was adjusted because excessive brushy vegetation was present in one part of the planned test plot area; however, the angles between the side lines were mistakenly not confirmed when the adjustment was made.
- The discrete sample locations at each test plot were laid out using measuring tapes instead of a hand-held GPS unit that was specified in the Work Plan.
- SOP-10, Sample Storage, Packaging, and Shipping, (Work Plan Appendix C) was updated to clarify the requirement to affix shipping labels and airbills to one side of sample-filled coolers for shipping to the laboratory, and then implemented during the Part 1 field work.
- A review of sample packing methods found that sample jars were not consistently packaged in individual sealable plastic bags before being placed into the coolers with wet ice, as specified in SOP-10. The SOP and the field quality control (QC) form were updated to ensure that soil samples were placed and sealed in individual plastic bags before being placed in coolers for storage and shipping.

3.1.2 Laboratory Methods

ALS prepared and analyzed soil samples collected during Phase IA Part 1 in accordance with the protocols and procedures specified in the Work Plan and consistent with ALS's Quality Control Manual. Sample preparation and analysis methods for Phase IA Part 1 are summarized in Table 2-1. Method detection limits and method reporting limits are detailed in the Work Plan and presented in Table 3-1.

3.1.2.1 Sample Handling and Processing

Upon receipt by ALS, soil samples were stored in a refrigerator at 4 °C. To prepare the samples for chemical analyses, ALS sieved the samples using a 2-mm sieve, retaining the ≤ 2-mm fraction for further analysis. Samples were analyzed by standard EPA methods (Table 2-1). Laboratory QC analyses were performed as required, and the results are discussed in the data validation memos provided in Appendix F-1.

3.1.2.2 Deviations from Planned Laboratory Activities

Only one minor deviation from the Work Plan occurred during laboratory activities for Phase IA Part 1. Several sample delivery groups (SDGs) were received outside of the temperature range specified in the Work Plan for inorganic analytes (4 ± 2°C). Although these samples were received out of the specified temperature range, the results for lead and arsenic were not impacted because these are not temperature-sensitive analytes in soils. Details related to this deviation are provided in Appendix E-2. This deviation did not affect the data quality or usability for the SATES program.

3.2 DATA SUMMARY AND QUALITY ASSESSMENT

This section presents an assessment of the quality and usability of the data collected for Phase IA Part 1 based on the implementation of data documentation, data validation, and field QC.

The soil screening data collected during Phase IA Part 1 are presented in Table 3-2, with data qualifiers that were assigned during the data review and validation process. Summary statistics for lead concentrations in the Phase IA Part 1 soil samples are shown in Table 3-3. Full laboratory reports are provided in Appendix G.

3.2.1 Data Documentation

The Work Plan describes procedures for the documentation of field and laboratory methods (Section 6, Documentation and Records) and provides detailed information related to the storage and handling of the project data (Section 14, Data Management). Field and laboratory documentation was reviewed, and no issues were found that could impact overall data quality. Minor changes or modifications to data documentation procedures are described in Appendix E-2.

3.2.2 Data Validation

Ramboll performed Stage 2 data validation for the Phase IA Part 1 data in accordance with the Work Plan and the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017). The data validation reports are provided in Appendix F-1.

Data were qualified based on established field and laboratory QC criteria. This included checking COC forms, sample holding times, analyses performed, method detection and reporting limits, matrix spike (MS) and matrix spike duplicate (MSD) analysis results, laboratory control sample (LCS) analyses, and analytical results for field and laboratory duplicates and blanks.

A memo summarizing the data review findings and the reasons qualifiers were applied to certain results during the review is provided in Appendix F-1.

3.2.3 Field QC Summary

Five field duplicates were collected from each of the six test plots (total of 30 field duplicate samples) to assess field data precision during the test plot screening (see Table 2-1). Two immediately adjacent soil samples were collected from the top 3 in. of soil using a soil punch, placed into one dedicated plastic zippered storage bag, and homogenized in the field. Each co-located duplicate sample was collected approximately 2 in. (5 cm) from the original sample in the direction of the top line of the test plot. The homogenized soil was then split into two aliquots and placed in separate sample jars to be analyzed for total solids, arsenic, and lead as two separate samples.[2] Field pH measurements were not replicated in the field; however, field records indicate that the pH meters used were calibrated and used in accordance with Work Plan requirements.

The relative percent difference (RPD) was calculated for each set of parent and duplicate samples (30 total) and compared with the +/-50 percent data quality indicator specified in the Work Plan. The results are summarized in Appendix F-2. Of the 30 field duplicate samples (total of 90 analytical results), the RPD for lead analyses exceeded 50 percent for only two duplicate samples (401-2-C09-081617 and 258-3-B10-082117; Table F-2-1). Variability in soil lead concentrations is common under normal field conditions as a result of soil heterogeneity; therefore, the RPDs for lead in the test plot soil samples could be related to residual sample matrix

[2] According to the Work Plan, field duplicate samples were collected to evaluate the precision of the discrete soil sampling process. However, upon further review, the description of the field duplicate sampling process from field activities and in the Work Plan is more representative of field split sample collection than a co-located field duplicate. Thus, the results of these duplicate samples provide an evaluation of the precision of the field homogenization process and the laboratory analysis rather than an evaluation of the field sample collection procedures.

heterogeneity remaining after field and laboratory homogenization. RPDs for arsenic results for the field duplicate samples were within +/- 50 percent (see Table F-2-1).

3.2.4 Overall Data Quality Assessment

Of the 630 samples analyzed for lead, arsenic, and total solids, 60 lead results were "J+" qualified to indicate that those results are estimated, but may be biased high; 115 lead results were "J-" qualified to indicate that those results are estimated, but may be biased low. Lead and arsenic results for two samples (401-2-J04-081717 and 441-1-B01-082217) were rejected and flagged with an "R" qualifier. These samples were received at the laboratory with liquid in the sample containers. Upon review of laboratory sample acknowledgement forms, it was observed that these samples were apparently inundated with ice meltwater during transport to the laboratory and, because of the possibility of cross-contamination, arsenic and lead results for both samples 401-2-J04-081717 and 441-1-B01-082217 were rejected. A field duplicate was collected for sample 401-2-J04-081717, so this result will be used in place of the parent sample result in the data analysis. No other qualifiers were assigned to the Phase IA Part 1 screening data.

Based on the Stage 2 data review, all data collected and analyzed for the test plot screening are acceptable except the four rejected results for samples 401-2-J04-081717 and 441-1-B01-082217. Therefore, 99 percent completeness was achieved for the Phase IA Part 1 initial test plot screening.

3.3 TEST PLOT SCREENING, SELECTION, AND SAMPLING PLAN FOR PHASE IA PART 2 CHARACTERIZATION

Phase IA Part 1 field measurements (for pH and duff thickness) and laboratory analytical results (for total solids, arsenic, and lead) for discrete soil samples collected from the six test plots are presented in Table 3-2. Summary statistics for soil lead concentrations at each test plot are shown in Table 3-3. Figures 3-1 and 3-2 show the relative spatial distribution of lead and arsenic concentrations in the surficial soil in each test plot, by grid cell, and Figures 3-3 and 3-4 show the distribution of pH values and duff thicknesses within the test plots.

Based on the Phase IA Part 1 initial soil screening, four test plots were selected for the baseline soil characterization in Part 2, as described in the Work Plan Addendum: 258-3, 401-1, 401-2, and 441-1. Only test plots 401-1 and 401-2 have mean soil lead concentrations greater than the 500 mg/kg screening criterion specified in the Work Plan. Although the mean soil lead concentrations in 258-3 and 441-1 were below the 500 mg/kg screening criterion, the highest soil lead concentrations in these test plots (2,350 mg/kg in 258-3C; 1,910 mg/kg and 2,150 mg/kg in 441-1A and -1B, respectively) were among the highest measured in the six initial test plots (Table 3-3 and Figure 3-1). In addition to these results, test plots 258-3, 401-1, 401-2, and 441-1 and the subplot treatment areas each had soil and vegetation characteristics that will allow pilot testing of up to four amendment options in a variety of soil and vegetation conditions common to the study area. Thus, test plots 258-3 and 441-1 were selected for inclusion in Phase IA Part 2, along with 401-1 and 401-2.

In accordance with the Work Plan, the maximum lead concentrations in surficial soil within each test plot and each subplot (see Figure 3-1) were used to select discrete soil sample and test pit locations for further analysis during Phase IA Part 2 of the SATES program. Locations were presented to the SATES participants in a call on September 26, 2017. Sixteen discrete sample and test pit locations were selected; these are shown on Maps 3-7 through 3-10.

The Phase IA Part 1 lead data were also used to confirm an appropriate frequency for collection of the triplicate IC samples for Phase IA Part 2 IC sampling based on the coefficient of variation (CV) or geometric standard deviation (GSD) of lead concentrations in the initial screening samples (see Table 3-3). Based on this evaluation, it was decided that one triplicate set of samples was required consequent to the low CV or GSD of the lead concentrations within the test plots.

4 PHASE IA PART 2 TEST PLOT BASELINE SOIL CHARACTERIZATION

The Phase IA Part 2 approach was designed to characterize the chemical, mineralogical, and physical soil properties at the four selected test plots (258-3, 401-1, 401-2, and 441-1) to establish substantive soil baseline conditions. The baseline data will be used in later SATES phases as a basis for monitoring the effects of the soil amendment alternatives and to evaluate their effectiveness in meeting the DQOs. This section describes the characterization methods (Section 4.1), the data collected and data quality assessment (Section 4.2), and the results (Section 4.3).

4.1 METHODS

The following sections describe the field and laboratory methods (Sections 4.1.1 and 4.1.2) used for the Phase IA Part 2 work.

4.1.1 Field Methods

Arcadis conducted the test plot characterization field work from October 2 through October 18, 2017. The work was conducted with oversight by Ramboll and TAI, and in general accordance with the Work Plan. The Phase IA Part 2 field work involved the following tasks:

- Subdividing the test plots 258-3, 401-1, 401-2, and 441-1 into four subplots approximately 2,500 ft^2 each (see Maps 3-7 through 3-10)
- Collecting discrete soil samples from 16 test pits, one in each subplot, at the locations with the highest lead concentration in initial screening soil samples
- Collecting IC near-surface soil samples (0 to 3 in. bgs) from 30 increment locations in each subplot.

Soil samples were collected in accordance with the Work Plan and applicable SOPs, or approved field changes, when necessary, to obtain representative samples or the volume required for the analyses specified for Phase IA Part 2. Field changes are summarized in Section 4.1.1.5 and detailed in Appendix E-2.

Based on observations made during Phase IA Part 1, the CCT archaeologist indicated cultural monitoring oversight was not needed during Phase IA Part 2 field work. Instead, the field team and oversight personnel monitored sampling activities in accordance with the CRCP (Work Plan Appendix C and Appendix D).

4.1.1.1 Test Plot and Subplot Delineation

For the detailed soil characterization, test plots 401-1, 401-2, 441-1, and 258-3 were divided into four 50-by-50-ft quadrant subplots (2,500 ft^2 each). Subplots were manually surveyed and measured using multiple tape measure transits and the test plot corners, previously marked with flush-mounted steel survey stakes, as described in Section 3.1.1.1. The midpoints along each test plot edge and the center point in each test plot were marked using flush-mounted galvanized steel survey stakes that (in combination with the test plot corner stakes) serve as the fixed reference locations for measuring the discrete and IC sample locations within the subplots (see Maps 3-7 through 3-10 and Maps 4-1 through 4-4). Photographs of the sample locations are provided in Appendix A.

4.1.1.2 Test Pit Discrete Soil Sampling and Soil Profile Classification

Sixteen test pits approximately 2 ft wide, 2 ft long, and 18 in. deep were excavated and sampled. One test pit was dug in each subplot, positioned at the location with the highest lead concentration measured in surficial soil (0 to 3 in. bgs) screening samples collected in Phase IA Part 1, as shown in Maps 3-7 through 3-10. Test pits were excavated as close to the initial discrete sampling locations as feasible. The test pit locations were surveyed and mapped using measuring tapes.

Prior to sample collection, the duff thickness (inches) at each sample location was measured, then the duff and other loose material were removed to expose the soil surface. For the purpose of measuring depths, zero begins at the base of the loose duff layer. Soil samples were collected, as described below and outlined in Table 2-2, from each test plot and subplot before excavating the test pits, within the approximate 2-ft^2 footprint of the locations where the test pits were planned.

- One discrete soil sample (grab) was collected from each test plot (four samples) from 0 to 3 in. bgs for arsenic and lead mineralization and total soil mineralogy analyses (i.e., one sample from each test plot from the following locations: D-401-1B, D-401-2C, D-258-3C, and D-441-1B; see Maps 3-7 through 3-10). Samples were collected using a decontaminated stainless steel trowel.
- Two undisturbed soil samples for in situ bulk density analysis were collected from the same point from 0 to 3 in. bgs and from 6 to 9 in. bgs (32 samples). These samples were collected by pushing a 3-in.-diameter galvanized steel Shelby tube into the soil to the target depth interval. The Shelby tubes were pushed into the soil using an electric jackhammer.
- Two undisturbed soil samples were collected from 0 to 6 in. bgs for analysis of in situ permeability and soil moisture holding capacity (16 samples for each analysis; total of 32 samples). These samples were collected by pushing a 3-in.-diameter galvanized steel Shelby tube into the soil to the target depth.
- One undisturbed sample from 12 to 24 in. bgs was collected from each test pit and placed on hold at ALS for potential future analysis (16 samples). At locations with poor recovery, the sample depth was extended up to 30 in. bgs to retrieve sufficient soil volume. These

samples were collected in a 2-in.-diameter Macro-Core® sampler with a 1.5-in.-diameter acetate liner. The Macro-Core® was advanced using an electric jackhammer.

After test pit excavation, the following additional soil samples were collected for target analyte list (TAL) metals (except mercury) analyses (see Table 2-2):

- Depth-discrete soil samples were collected from the north sidewall of the test pit at 2-in. intervals (96 samples). These were collected as channelized samples with stainless steel trowels from 0 to 12 in. bgs.
- Field duplicate samples[3] were collected from the 2- to 4-in. interval at subplots 401-1B, 401-2C, 258-3C, and 441-1B (four samples).

Sample labeling and custody management were conducted in accordance with the Sample Labeling procedure (SOP-5) and Sample Custody procedure (SOP-9) included in Appendix C of the Work Plan. The soil samples were packaged for shipping in accordance with the Sample Storage, Packaging, and Shipping Procedure (SOP-10) and shipped to ALS. Completed COC forms are included in Appendix C. The Shelby tube samplers were packed with sealing wax and expansion caps on each end (top and bottom) to protect the undisturbed samples. Void space in each Shelby tube was filled with bubble wrap to the top of the tube. Shelby tubes were capped, taped, and appropriately labeled as the "top" and "bottom" to ensure proper orientation for selecting sample intervals for analysis. The Macro-Core® acetate liners were cut to correspond to the recovered soil interval and packaged using tape and Teflon caps prior to shipment.

On October 13, 2017, the exposed soil profile in each test pit was described by an experienced soil scientist. Following Schoeneberger et al. (2012), Jason James of the University of Washington prepared soil profile descriptions that included location, horizon, horizon depth, horizon boundary, color, redoximorphic features, texture, structure, and consistence.

After soil profile classification, each test pit was filled in with local soil and capped with an approximately 2-ft^2 untreated wood board buried approximately 0.5 in. below the surface.

4.1.1.3 Incremental Composite Sample Collection

The IC sampling method is described in detail by the Interstate Technology and Regulatory Council (ITRC) (ITRC 2012). IC sampling consists of single-point increment samples composited

[3] According to the Work Plan, field duplicate samples were collected to evaluate the precision of the discrete soil sampling process. However, upon further review, the description of the field duplicate sampling process from field activities and in the Work Plan is more representative of field split sample collection than a co-located field duplicate. Thus, the results of these duplicate samples provide an evaluation of the precision of the field homogenization process and the laboratory analysis rather than an evaluation of the field sample collection procedures.

and subsampled prior to laboratory analysis. ALS's IC processing SOP is detailed in Appendix C of the Work Plan (SOP-4).

Within each subplot, one IC soil sample was obtained by collecting soil from 0 to 3 in. bgs at 30 increment locations (Maps 4-1 through 4-4). To obtain sufficient volume for the required analyses, an aggregate of two or three co-located near-surface soil samples (0 to 3 in. bgs) was collected from each increment location. These samples were analyzed for total, leachable, and bioaccessible metals, and for other general soil chemistry parameters (Table 2-2). Nineteen IC soil samples were collected, including one triplicate sample and one duplicate sample. The 30 increment locations within each subplot were surveyed using measuring tapes referencing subplot datums.

After sampling was completed, the IC sample holes were restored as described in Section 3.1.1.2.

4.1.1.4 Investigation-Derived Waste

IDW generated during Phase IA Part 2 field activities consisted of decontamination water that was contained and stored in 30-gal steel drums, as described in Section 3.1.1.3. This water was disposed of with remediation waste generated during voluntary removal action excavation work that was being done at another location at the UCR site concurrently with the Part 2 sampling.

4.1.1.5 Deviations from Planned Field Activities

Procedures described in the Work Plan were followed to the extent possible during implementation of Phase IA Part 2. Modifications and deviations that had the potential to impact the ability to meet the DQOs for the SATES program were communicated to EPA for approval prior to implementation during the field work. Completed corrective action forms are included in Appendix E-1.

The following changes and deviations from the Work Plan occurred during the Phase IA Part 2 field work (see Appendix E-2):

Test Pit Discrete Sampling

- Instead of collecting soil for bulk density analysis as part of the IC sampling as proposed in the Work Plan, in situ discrete bulk density samples were collected from 0 to 3 in. and from 6 to 9 in. in the 16 test pits. IC samples are an aggregation of 30 increments that are composited and sieved, so the bulk density of IC samples would not be representative of near-surface soils on site. Therefore, the test method for in situ bulk density was changed from American Society for Testing and Materials (ASTM) E1109 to ASTM D7263.

IC Sampling

- IC samples were collected using 2-in.-diameter soil coring tools instead of 3-in.-diameter tools. Initially, three soil cores (pushes) at each increment were used to collect the soil mass required for analysis instead of two, as planned. This was later reduced to two pushes at each increment after it was found that the original calculations for the IC sample mass inadvertently included the mass required for an analysis (bulk density) that was removed from the IC sample analytical program, as listed above. Sufficient soil mass could be obtained with two pushes using the 2-in. coring tool.
- The Work Plan specified that increments for duplicate and triplicate QA/QC samples would be collected 5 cm north and east of the primary increment sample location, respectively. During sampling, duplicate and triplicate increments were collected approximately 4 in. (10 cm) from the primary increment location, relative to the bottom line and left line of the test plot, respectively. This was done to ensure all increments were collected inside the test plot boundaries.

These deviations did not impact the data quality or usability for the SATES program.

4.1.2 Laboratory Methods

The Phase IA Part 2 discrete and IC soil samples were distributed to several labs for the specified chemical, mineralogical, and physical analyses (Table 2-2 and Figure 4-1). The samples were processed and analyzed by ALS, Ohio State University (OSU), HWA GeoSciences, Inc. (HWA), Hazen, and EPA. Table 2-2 summarizes sample preparation and analysis methods, as well as the analyses performed by the different laboratories, and Figure 4-1 presents a flowchart showing types of preparation and analyses performed by each laboratory. Table 3-1 summarizes the method detection limits and reporting limits for the chemical analyses.

4.1.2.1 Sample Handling and Processing

Upon receipt by ALS and OSU, all of the discrete samples were stored in a refrigerator at 4°C. ALS prepared samples for mineralogical analyses using a number (No.) 10 sieve (2 mm) and shipped the ≤ 2-mm fraction to EPA for analysis. OSU prepared 2-in.-depth discrete interval samples for chemical analyses by sieving to obtain the < 2-mm fraction.

The IC samples were sent to ALS for processing. The processed samples were maintained or managed by ALS for analysis or shipped to the OSU or EPA laboratory, consistent with the Work Plan. Upon receipt by ALS and OSU, all IC samples were stored in a refrigerator at 4°C.

IC samples were processed using the incremental sample compositing methodology described in ITRC guidance and the ALS SOP provided in Appendix C of the Work Plan. IC samples were homogenized and dried, then sampled for bulk analyses or sieved. Sieved samples were passed through a No. 10 sieve (< 2 mm) or a No. 100 sieve (< 150 μm), according to the fraction specified in Table 2-2 for each analysis then subsampled.[4] Following incremental subsampling, IC samples were retained at ALS or shipped to the laboratory performing the analysis, as indicated in Table 2-2 and Figure 4-1.

After processing, both discrete and IC samples were analyzed by the designated laboratory according to analytical, preparation, and digestion methods specified in the Work Plan. The sample preparation and analysis method references are given in Table 2-2.

4.1.2.2 Deviations from Planned Laboratory Activities

Deviations from the laboratory methods specified in the Work Plan for sample processing and analysis are summarized below and detailed in Appendix E-2 and the associated data validation memos (Appendix F-1). Some of these deviations impacted data quality and resulted in assigning qualifiers to the affected data, as documented in the data validation memos.

- HWA used ASTM D2434 instead of ASTM D5084-16a to measure in situ permeability. ASTM D2434 is more appropriate to estimate the rate of infiltration of precipitation through porous vadose-zone soils. Additionally, in situ bulk density was measured using ASTM D7263 instead of ASTM E1109, because ASTM D7263 is more appropriate for measuring bulk density properties of soil. (ASTM E1109 is most appropriate to measure bulk density of waste.) These changes are documented in Corrective Action Forms 01 and 02 (Appendix E-1).
- OSU was designated to conduct the sulfide analyses, but ALS performed sulfide analysis to meet the 7-day hold time (see Corrective Action Record 08, Appendix E-1). Despite this effort, the hold time was exceeded for seven sulfide samples.
- The 28-day hold time specified for metals in the Work Plan is unnecessarily short. The hold time for metals in soil was revised to 180 days following communication with OSU, which is based on the recommendations in the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017). See Corrective Action Form 10, Appendix E-1.
- On October 17, 2017, due to a field team shipping error, OSU received 100 2-in. discrete samples that were meant for ALS to dry and sieve before sending to OSU. It was decided that OSU would keep these samples and perform the drying and sieving (< 2 mm) prior to analysis, as documented in Corrective Action Form 06 (Appendix E-1).
- Several IC samples had more volume than could be processed in the equipment specified in ALS's SOP for subsampling of IC samples. Instead of using a riffle-splitter to divide the sample into two trays for subsampling, laboratory technicians divided the homogenized

[4] Performed by dividing the homogenized and dried soil sample into 30 to 50 equal sections in a tray, collecting an approximately equal aliquot from each section, and combining all aliquots together to form the final sample.

and sieved (< 2 mm) samples into two to three large resealable plastic bags. One bag was used to subsample the < 2-mm soil fraction, and the second bag was sieved to < 150 µm, homogenized again, and subsampled at the < 150-µm fraction. The remaining soil was reserved for potential future analysis.

- The field duplicate and triplicate IC samples were sent to the laboratories for analyses as specified in Table 2-2; however, through laboratory error it was discovered that ALS and OSU performed all IC sample analyses on all IC samples. Analyses that were not originally planned for the triplicate IC samples (IC2-401-2A-101217, IC2-401-2A-101217, and IC3-401-2A-101217) include sulfide and total organic carbon at ALS, and Mehlich III extractable lead and phosphorus, electrical conductivity, chloride, sulfate, total carbon and nitrogen, and grain size at OSU. Analyses not originally planned for the duplicate IC sample (IC-401-1C-101117-D) include synthetic precipitation leaching procedure (SPLP) metals at ALS, and TAL metals (except mercury) for the < 2-mm and < 150-µm fraction, bioaccessibility for arsenic and lead at pH 1.5 and 2.5, and grain size analysis at OSU. These unintentional analyses provided additional QA/QC data.
- OSU measured and reported pH results for IC samples as part of standard laboratory analysis procedures; however, pH measurement was not specified for the Phase IA Part 2 samples.
- OSU measured and reported total phosphorus results for all discrete samples (< 2 mm) and IC samples (< 2 mm and < 150 µm), although total phosphorus analysis was not specified.
- IC sample processing was delayed at ALS, which resulted in samples being received by OSU close to or past hold times for multiple analyses, as documented in Appendix F-1. Chloride, sulfate, electrical conductivity, and total carbon and nitrogen were analyzed past hold times.

4.2 DATA SUMMARY AND QUALITY ASSESSMENT

This section presents an assessment of the quality and usability of the data collected for Phase IA Part 2 based on implementation of data documentation, data validation, and field QC.

The soil characterization data are summarized in Tables 4-1 through 4-8, with data qualifiers that were assigned during the data review and validation process. Full laboratory reports are provided in Appendix G. A list of the 16 undisturbed samples obtained from 12 to 30 in. bgs and placed on hold at ALS for potential future analysis is included in Appendix H.

4.2.1 Data Documentation

The Work Plan describes procedures for documenting field and laboratory methods (Section 6, Documentation and Records) and provides detailed information related to the storage and handling of the project data (Section 14, Data Management). Field and laboratory documentation was reviewed, and no issues were found that could impact overall data quality. Minor changes or modifications to data documentation procedures are described in Appendix E-2.

4.2.2 Data Validation

Ramboll performed Stage 2 data validation for Phase IA Part 2 data in accordance with the Work Plan and the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017), when applicable.[5] Data being validated were qualified, as appropriate, based on an evaluation of laboratory and field QC criteria. The QC information checked by Ramboll included COC forms, holding times, analysis performed, reporting limits, MS/MSD analyses, LCS analyses, certified reference materials analyses, field and laboratory duplicates, and blanks. Memos summarizing data review findings and the reasons for qualifiers applied during data validation or results of the QC assessment, when applicable, are provided by laboratory in Data Validation Reports, Appendix F-1.

4.2.3 Field QC Summary

4.2.3.1 Discrete Duplicate Soil Samples

One field duplicate sample for metals analysis was collected from one depth-discrete sample at each test plot to assess field data precision during test plot characterization. A total of four duplicates were collected in Phase IA Part 2. At each location, the soil from the target depth interval (2 to 4 in.) was placed into one dedicated plastic resealable storage bag and homogenized. The homogenized soil was then split into two aliquots and placed in separate sample jars to be analyzed for TAL metals (except mercury).[6]

The RPD was calculated for each set of parent and duplicate samples and compared to the +/- 50 percent data quality indicator specified in the Work Plan. The results are presented in Appendix F-2, Table F-2-2. Of the four field duplicate samples, the RPD for six out of 88 total analyte pairs exceeded 50 percent. Five of these were from sample D-401-2C-101317-2-4, and one was from sample D-258-3C-101317-2-4. The analytes exceeding control criteria were antimony,

[5] The National Function Guidelines do not specify data validation criteria for the geotechnical data produced by HWA. These data were reviewed for accuracy and completeness by Ramboll separately from the data validation.

[6] Field duplicate samples were collected in accordance with the Work Plan. However, upon further review, the description of the field duplicate sampling process from field activities and in the Work Plan is more representative of field split sample collection than a co-located field duplicate. Thus, the results of these duplicate samples provide an evaluation of the precision of the field homogenization process and the laboratory analysis rather than an evaluation of the field sample collection procedures.

arsenic, cadmium, lead, and zinc in sample D-401-2C-101317-2-4 and sodium in sample D-258-3C-101317-2-4.

4.2.3.2 IC Duplicate and Triplicate Soil Samples

One duplicate IC soil sample was collected from subplot 401-1C, which was selected randomly to represent the entire IC sample set. The one duplicate IC sample was collected by obtaining co-located increments for each of the 30 primary increment locations. The duplicate sample was collected within approximately 2 in. (5 cm) of the primary IC sample in the direction of the test plot bottom line. The bottom line for each test plot was defined as the bottom edge of the test plot containing respective sampling squares J01 through J10.

One set of triplicate IC soil samples was collected from subplot 401-2A by obtaining two additional co-located increments for each of the 30 primary increment sample locations (90 total increment sample locations). The first triplicate sample was collected within approximately 2 in. (5 cm) toward the bottom line from the original sample location, and the second triplicate approximately 2 in. (5 cm) toward the left line from each original increment sample. For reference, the left line was defined as the left edge of the test plot containing the respective vertical column of sampling squares A01 through J01.

IC duplicate and triplicate samples were analyzed by ALS and OSU for all analyses as discussed in Section 4.1.2.2. Although this resulted in more field precision analyses than planned, all of the results were retained and used to evaluate data.

Field duplicate and triplicate results for IC samples are presented in Appendix F-2 (see Table F-2-2). Duplicate results were compared to the RPD QC criteria specified in the Work Plan (i.e., 20 percent for electrical conductivity and grain size analysis, and 50 percent for all other specified analyses). Triplicate results were assessed for field precision following the ITRC guidance (2012) using the relative standard deviation (RSD). The RSD is calculated by dividing the standard deviation of the triplicate samples by the mean. An RSD control criterion of 30 percent was applied to triplicate IC samples. The ITRC guidance considers RSDs greater than 30 to 35 percent to be high and states that a result exceeding this limit "…*strongly suggests a substantial degree of heterogeneity in the DU contaminant concentrations*" (ITRC 2012, p. 160). Only one IC field duplicate analyte pair (chloride) exceeded the control criteria. Several IC triplicate analytes exceeded the RSD control criteria, including SPLP metals results for beryllium and silver and the < 2-mm fraction total metals result for selenium. However, in each of these instances none of the analytes were detected above the laboratory reporting limit. Therefore, it is unlikely that these results are indicative of substantial heterogeneity in the field for these analytes.

4.2.4 Overall Data Quality

The Level 2 data validation assessment reviewed 494 laboratory analyte results from ALS and 3,570 results from OSU. Of the ALS results, 221 were qualified by the laboratory, and 62 were further qualified during data validation, resulting in 257 of the results reported by ALS being qualified. The sulfide analysis for sample IC-441-1B-101617 was rejected due to hold time exceedance. Of the 3,570 OSU results, 1,476 were qualified during data validation. Each of the IC sample results for pH was rejected due to hold time exceedances. Although chloride, sulfate, electrical conductivity, total carbon and nitrogen, and several other sulfide samples also exceeded hold times, the analytical results were not rejected because the analyses occurred only slightly outside of hold times (i.e., in less than double the acceptable hold time). These analytical results were determined still to be useable by the data validators but were flagged as estimated (J). In contrast, sulfide analysis for sample IC-441-1B-101617 occurred 3 weeks after the specified hold time of 7 days, meaning the sample was held at the laboratory for over triple the specified hold time. The pH samples were analyzed 29 to 36 days after sample collection, when the generally accepted analysis time is within 24 hours. The 20 rejected results (19 pH results and one sulfide result) are unusable for future analysis.

The bulk density and permeability testing conducted by HWA was determined to be consistent with ASTM standard methods, with no notable exceptions. All other results are usable for future analysis and reporting. Ninety-nine percent completeness was achieved across the entire set of analyses, although it is noted that 100 percent of pH analyses (19 results) and 5 percent of sulfide analyses (1 result) were rejected because of exceeded sample hold time.

4.3 TEST PLOT CHARACTERIZATION RESULTS

Results for usable discrete and IC sample laboratory analytical data are presented in Tables 4-1 through 4-8 and include conventional parameters (i.e., total solids), TAL metals (except mercury), and soil nutrient and geotechnical data (soil structure and texture).

The Phase IA Part 2 baseline soil characterization was conducted to collect site-specific information on soil chemical, mineralogical, and physical properties for review by technical/subject matter team members to identify key stoichiometric, hydrometallurgical, and hydrogeological relationships within the soils. The goal of this review was to develop a site-specific understanding of mineral forms present, determine chemical reactions that could reduce reactivity of metal constituents, and identify appropriate amendments to drive those reactions. The study also sought to collect information regarding potential migration conditions of soluble amendments applied to the soil. Therefore, compliance and risk-based criteria such as action levels and cleanup levels are not provided in Tables 4-1 through 4-8.

Mineralogical and vegetation data will be reported separately.

4.3.1 Discrete Soil Samples

Discrete soil samples were collected from each test plot within each of the four subplots. The subplot grid cell with the maximum lead concentration, as discussed in Section 3.3, was selected for sampling the soil at depths from the ground surface up to 30 in. bgs. Depth intervals targeted at each location were 0 to 3 in., 6 to 9 in., 0 to 6 in., and 0 to 12 in. (in 2-in. increments). Summary results for discrete soil samples are presented in Tables 4-1 and 4-3 and Appendix G. Data tables are organized by analysis group (i.e., geotechnical data and TAL metals [except mercury]).

4.3.2 Soil Profile Classifications

Soil profile descriptions and classifications are provided in Appendix I. According to the soil scientist's assessment, soils in each of the test plots are in very early stages of development, with "barely formed B horizons"[7] present only in some locations. Generally, the soils are loamy sand to sand with a coarse to fine texture. The soil classifications are generally consistent with previous observations for soil conditions at the test plots.

4.3.3 IC Soil Samples

Samples were collected using IC soil sampling methods from each of the four subplots within each test plot selected for the Phase IA Part 2 baseline soil characterization. Summary results for IC soil samples are presented in Table 4-2, Tables 4-4 through 4-8, and Appendix G. Data are organized by analyte group (i.e., soil physical properties, TAL metals [except mercury], leachability, bioaccessibility, and general soil chemistry).

[7] In soil, B horizons are one of five soil horizons that can form. The B horizon is a layer of subsurface accumulation where mineral and other soil components can accumulate.

5 REFERENCES

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FIGURES

Test Plot 258-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	159	97.4	320	328	246	381	125	185	79.4	306
B	79.4	61.1	195	101	368	112	308	178	179	120
C	122	151	98.8	129	214	216	210	161	211	204
D	33.5	273	191	243	826	168	569	243	244	193
E	324	76.6	225	381	230	201	143	403	229	194
F	129	99.4	121	217	739	530	228	346	195	153
G	315	164	172	270	312	252	94.7	294	179	128
H	225	173	120	201	398	330	169	174	312	198
I	284	333	434	315	95.5	82.7	190	153	248	385
J	231	237	199	407	210	211	184	141	163	266

Test plot mean: 230

Standard deviation as percent of mean: 55%

Test Plot 258-2

Grid Number	1	2	3	4	5	6	7	8	9	10
A	193	208	718	214	249	109	138	303	240	450
B	132	308	242	227	296	262	282	121	291	350
C	294	145	213	560	351	234	112	222	208	198
D	411	281	186	400	247	71.2	635	289	182	229
E	161	170	161	183	110	289	304	183	262	307
F	218	254	166	192	197	216	248	207	139	46.6
G	343	173	195	178	245	276	220	191	177	27.4
H	95.0	266	308	156	468	160	223	305	144	60
I	239	232	226	186	191	262	119	220	136	120
J	301	268	265	243	156	143	126	272	308	75.6

Test plot mean: 231

Standard deviation as percent of mean: 47%

Test Plot 258-3

Grid Number	1	2	3	4	5	6	7	8	9	10
A	157	78.5	79.7	165	109	205	126	245	170	290
B	145	61.9	137	86.5	98.4	371	133	688	383	96.3
C	23.9	24.4	54.7	217	71.6	91.3	115	108	111	284
D	297	54.6	26.2	51	67.4	101	143	153	130	146
E	139	170	216	146	59.1	156	51.1	87	87.3	130
F	116	178	142	226	114	206	137	121	224	216
G	178	2350	91.9	90.3	170	109	249	154	27.5	74.9
H	999	342	198	169	155	225	188	150	85.4	85
I	532	223	598	231	124	31.9	426	249	516	412
J	796	364	548	231	179	211	237	192	297	142

Test plot mean: 216

Standard deviation as percent of mean: 124%

Test Plot 401-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	574	219	512	277	290	435	495	235	433	970
B	767	1160	198	206	348	306	176	548	376	134
C	265	730	322	304	785	648	565	365	539	258
D	369	343	273	719	492	819	381	718	2060	1190
E	305	241	822	313	416	423	348	756	416	634
F	671	279	1020	282	238	354	595	377	578	657
G	391	311	409	385	231	588	301	1360	309	1740
H	444	508	693	360	333	566	336	190	1350	1190
I	486	767	684	656	708	831	797	527	1430	684
J	480	470	300	805	591	266	419	947	721	486

Test plot mean: 556

Standard deviation as percent of mean: 60%

Test Plot 401-2*

Grid Number	1	2	3	4	5	6	7	8	9	10
A	273	495	377	788	1130	1020	451	445	222	450
B	329	326	674	916	419	839	371	723	488	287
C	534	393	1210	291	858	507	666	550	298	494
D	913	665	558	459	661	1430	340	572	499	1020
E	745	684	943	586	1040	1020	1010	580	1080	1370
F	304	155	701	1800	703	706	402	347	478	809
G	117	368	1030	1060	423	907	357	641	551	646
H	1100	1280	1110	420	337	1000	466	974	580	475
I	837	544	572	251	287	533	384	1100	472	287
J	298	1100	394	839	893	288	926	1300	574	317

Test plot mean: 654

Standard deviation as percent of mean: 50%

Test Plot 441-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	115	1310	1910	549	571	1130	96.8	1360	248	554
B	--	160	544	803	550	2150	222	237	277	932
C	239	747	61.6	115	367	60.8	376	21.7	231	1770
D	199	151	171	267	140	596	562	339	1150	361
E	195	203	893	368	608	809	831	594	434	306
F	204	255	434	556	325	280	123	78.2	1060	613
G	437	453	272	417	248	323	225	151	649	32.4
H	316	541	346	178	77.4	475	165	453	690	393
I	257	174	550	207	347	591	569	941	144	248
J	351	143	216	533	245	635	328	160	206	352

Test plot mean: 453

Standard deviation as percent of mean: 85%

Legend:

Lead Concentration (mg/kg)

- 0-250
- >250-500
- >500-1000
- >1000-1500
- >1500

Notes:

Maximum concentration is shown for sample locations where field duplicates were collected, except as noted below.

*The result for the duplicate sample collected at test plot 401-2 cell J04 is shown. The parent sample result (850 mg/kg) was rejected due to sample flooding after collection.

-- Sample result rejected due to sample flooding after collection.

Figure 3-1. Phase IA Part 1 Lead Concentrations in Soil (0 to 3-in. bgs) by Test Plot and Grid Identification Number

Test Plot 258-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	13.1	11.8	18.1	17.6	17.4	10.1	14.6	12.5	8.7	21.3
B	10.6	10.5	8.9	12.4	11	10.4	11.4	17.2	12.6	11.4
C	10.3	10.4	7.9	9.6	7	23.3	14.2	12.8	15.1	15
D	4.1	8.9	10.9	8.1	20.2	6.6	17.2	11.8	17	14.2
E	12.1	5.4	12.5	12.4	12.5	12	11.9	20.4	15.1	15.7
F	8.1	6.2	10	13.5	26	47.2	22.1	22.4	16.2	11.4
G	25.5	13.5	11.1	16.2	20.8	24.4	10	20.3	12.8	10.8
H	14.6	10.1	9.1	18.4	21.8	16.5	12.3	12.9	22.8	15.9
I	21.7	17.7	16.3	19.7	9.2	10.4	13.6	12	15.9	20.3
J	13.7	16.4	13.4	19.3	13.6	13.8	12.7	11.7	14.5	20.7

Test plot mean: 14

Standard deviation as percent of mean: 39%

Test Plot 258-2

Grid Number	1	2	3	4	5	6	7	8	9	10
A	12.6	14.8	29.1	13.4	15.6	7.9	12.7	21.3	15.2	25.3
B	8.5	13.2	14.4	11.7	15.6	15.5	17.2	11.9	15.6	14.9
C	10.4	10.4	7.5	21.8	16	15	10.9	18.9	16.1	9.3
D	11.5	8.4	13.1	12.3	16.2	4.4	15	20.4	10.6	11.7
E	7.8	8.2	9.9	10.3	7.5	11	14.3	11.4	9.5	8
F	11	12.2	10	10.3	15.3	14	14.3	12.5	8.3	10.5
G	13.4	11.6	12.4	11.8	17.9	10.9	13.1	11.5	18.9	7
H	7	8.7	14	10.7	26.4	10.7	15.6	22.3	22.8	17.4
I	13.8	13.4	17	11.8	15.5	14.8	10.4	15.8	18.3	14.6
J	15.6	33.3	11.2	14	10.9	10.5	9	14.4	10.7	10.7

Test plot mean: 14

Standard deviation as percent of mean: 35%

Test Plot 258-3

Grid Number	1	2	3	4	5	6	7	8	9	10
A	17.1	13.6	9.4	11.8	8.3	14.2	9.9	15.7	11.9	13.7
B	14.6	8.5	12.6	10.9	8.1	21.1	10.8	22.7	13.4	9.2
C	8.1	5.6	9	17.3	8.3	10.3	10.5	8.9	9.5	18.2
D	18.2	5.3	4.2	4.8	5.5	7.8	9.6	10.9	9.9	12.3
E	9.6	9.7	12.3	10	5.6	13.3	7.9	7.5	7.6	12.1
F	10.3	10.9	10.4	14.3	11	15.9	14.5	14.2	16.7	10.7
G	12.5	14.8	11.5	11.2	18.6	11.4	14.7	20.2	7.9	7.6
H	19.1	21.3	8	12.1	11.5	17	17.2	12.6	7.6	7.5
I	15.2	12.1	22.9	13.6	9.9	4.4	21	13.3	13.3	20.8
J	21.4	16.8	17.6	13.9	12.4	12.7	13.9	14.7	13.6	9.3

Test plot mean: 12

Standard deviation as percent of mean: 35%

Test Plot 401-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	48.7	12.5	27	19	20.1	54	33.1	15.9	29.6	26.9
B	40.2	27.3	15.6	14.5	18.2	19.9	19.2	32.8	23.4	13.6
C	24	33.3	22.2	25.5	28.6	34.2	32.8	32	30.2	34.3
D	26	37.1	25.2	29.6	28.7	48.1	29.6	41.9	71.6	84.9
E	23.1	22.1	21.8	22.9	32.2	39.2	27	36.8	53.8	82.3
F	40.1	23.7	29.5	31.3	27	43.5	38.8	32.6	38.4	50.3
G	27.6	20.7	30.9	28.7	19.9	43	26.7	90.5	41.3	59.6
H	38.4	32.9	37.4	25.8	26.2	45	33.8	43.7	41.1	36.2
I	23.7	29.8	29.8	33	37.2	37	42.1	67.3	54.3	38.9
J	24.9	26.3	21.5	39.4	37.4	18.8	23.2	60.8	44.6	32.8

Test plot mean: 34

Standard deviation as percent of mean: 42%

Test Plot 401-2*

Grid Number	1	2	3	4	5	6	7	8	9	10
A	18.3	32.8	38.7	68.9	76	58.2	24.1	36.6	23	28.1
B	18.1	20.7	62.1	55.1	53.9	54.3	42.4	35.8	45.6	32
C	19.6	26.4	43.1	22	40	55.5	62.8	34.5	19.3	81.6
D	43.8	53.2	54.5	40.2	53.2	65.3	49.8	48.1	45.2	53.1
E	37.4	98.2	43.1	31.6	48.6	73.2	71.8	35.2	49.9	55.4
F	40.2	33.3	57.3	65.3	41.1	45	13.8	39.7	29.4	77.8
G	10.3	32.1	60.4	61.8	42.3	84.3	63	35.2	41.8	54.8
H	45.2	68.3	44.1	48.8	25.9	82.8	53.7	29.5	15.7	22.7
I	36.8	29.3	28	19	23.7	49	65.7	82.6	37	29
J	34.5	36.1	20.2	62.7	79.8	26.4	44.7	36.9	37.4	28.8

Test plot mean: 45

Standard deviation as percent of mean: 41%

Test Plot 441-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	17	25.4	10.7	23.8	21.3	18.3	17.6	33	20.5	36.7
B	--	15.9	8.1	18.5	26.2	30	22.7	17.1	23.9	36
C	23.1	17.1	19.1	23.2	24.1	25.2	21.5	14.1	22.3	76.6
D	17.8	15.2	15	25.3	23.3	47.3	34.1	40.9	52.6	46
E	18.5	17.1	44	25.2	46.3	42.1	42.8	32.5	40.6	31.3
F	16.3	24.1	29.2	37.6	28.1	35.9	16.3	15.8	38.7	41.1
G	22.8	28.2	28.6	33.7	21.3	21.9	26.7	19.5	44.5	9.8
H	22.7	29.8	23.8	21.7	13.2	22.2	22.5	26.6	38	35
I	35.3	32.6	33.6	21.9	19.3	35.1	33.5	27.3	17.6	25.9
J	24.4	18.9	27	41	22.8	31.1	28.8	22.3	24.2	35.6

Test plot mean: 27

Standard deviation as percent of mean: 39%

Legend:

Arsenic Concentration (mg/kg)

- 0-20
- >20-40
- >40-60
- >60-80
- >80

Notes:
Maximum concentration is shown for sample locations where field duplicates were collected.
*The result for the duplicate sample collected at test plot 401-2 cell J04 is shown. The parent sample result (59.4 mg/kg) was rejected due to sample flooding after collection.
-- Sample result rejected due to sample flooding after collection.

Figure 3-2. Phase IA Part 1 Arsenic Concentrations in Soil (0 to 3-in. bgs) by Test Plot and Sample Grid Identification Number

Test Plot 258-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	4.81	4.60	4.05	4.11	3.98	4.00	4.96	5.63	5.36	5.11
B	4.39	4.29	4.82	4.72	4.13	4.94	5.43	5.28	5.60	6.02
C	5.62	4.69	4.80	4.96	4.90	5.05	5.53	5.97	5.86	6.25
D	5.89	5.84	5.55	5.08	4.28	5.58	5.26	5.72	5.43	5.81
E	4.88	6.20	5.33	4.71	5.01	4.99	5.26	6.08	5.58	5.51
F	5.29	5.86	6.05	5.46	4.40	4.45	5.86	5.20	6.41	6.10
G	4.08	5.48	5.48	4.81	4.73	4.14	4.52	5.17	5.20	5.97
H	6.03	5.62	5.92	6.04	5.64	5.92	5.81	6.10	5.28	5.03
I	6.12	6.30	5.62	5.53	6.13	6.16	6.31	5.97	5.98	5.34
J	5.66	6.11	5.95	6.17	6.28	5.78	5.70	5.86	4.97	4.74

Test plot mean: 5

Standard deviation as percent of mean: 12%

Test Plot 258-2

Grid Number	1	2	3	4	5	6	7	8	9	10
A	5.44	5.24	5.28	5.51	5.15	5.62	5.56	5.56	5.52	5.55
B	5.28	5.45	5.49	5.15	5.46	5.46	5.38	5.45	5.41	5.44
C	5.31	5.18	5.19	5.24	5.29	5.25	5.19	5.15	5.35	5.53
D	5.37	5.35	5.46	5.35	5.45	5.26	5.20	5.24	5.33	5.30
E	5.11	5.10	5.05	5.19	5.14	5.16	5.00	5.15	5.00	5.26
F	5.11	5.09	5.02	5.01	5.04	5.11	5.24	5.10	5.06	4.96
G	4.96	5.04	5.10	4.89	5.02	4.97	4.92	5.02	5.17	5.03
H	4.94	4.91	5.03	4.91	4.95	5.05	5.03	4.98	5.09	4.86
I	4.81	4.87	4.92	4.85	4.95	4.84	4.91	5.03	5.02	5.05
J	4.81	4.73	4.80	4.73	4.57	4.81	4.90	4.87	4.53	4.54

Test plot mean: 5

Standard deviation as percent of mean: 5%

Test Plot 258-3

Grid Number	1	2	3	4	5	6	7	8	9	10
A	5.72	5.61	5.74	5.93	5.88	6.30	5.80	6.04	5.77	6.34
B	6.31	6.17	5.83	5.86	6.23	5.87	6.00	5.92	5.86	5.76
C	6.06	5.33	4.88	5.42	5.56	5.66	5.46	6.16	6.63	6.33
D	6.69	6.51	5.71	5.75	5.93	6.09	6.22	6.21	5.90	5.04
E	6.10	5.93	6.35	6.02	6.22	6.78	5.73	5.66	5.38	5.27
F	6.16	6.29	6.54	6.18	6.60	6.04	6.44	6.06	5.11	5.74
G	6.26	6.40	6.22	6.28	6.31	5.80	6.29	5.76	5.30	5.93
H	5.31	5.16	4.72	5.17	6.14	6.01	6.04	5.97	5.41	5.66
I	5.93	5.65	4.92	6.38	6.58	6.14	4.61	5.55	5.93	5.97
J	5.99	5.66	6.19	6.10	6.14	5.82	5.65	6.11	5.95	6.15

Test plot mean: 6

Standard deviation as percent of mean: 7%

Test Plot 401-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	4.96	5.76	5.27	5.05	4.75	4.82	4.64	4.29	4.14	4.23
B	4.09	4.08	4.01	4.04	4.00	4.02	4.00	4.05	4.07	4.16
C	4.08	4.10	4.15	4.09	4.20	4.10	4.06	4.15	4.11	4.07
D	4.06	4.05	4.09	4.15	4.14	4.00	4.05	4.14	4.05	4.09
E	4.18	4.02	4.08	4.10	4.09	4.05	4.03	4.15	4.10	4.14
F	4.05	4.05	4.22	4.09	4.04	4.11	4.21	4.21	4.16	4.20
G	4.17	4.12	4.15	4.17	4.15	4.19	4.12	4.02	4.02	4.06
H	4.25	4.21	4.12	4.26	4.21	4.24	4.08	4.33	4.10	4.24
I	4.13	4.31	4.00	4.09	4.29	4.03	4.25	4.01	4.38	4.06
J	4.19	4.24	4.12	4.22	4.29	4.16	4.24	4.27	4.23	4.17

Test plot mean: 4

Standard deviation as percent of mean: 6%

Test Plot 401-2

Grid Number	1	2	3	4	5	6	7	8	9	10
A	4.88	4.72	4.42	4.12	4.06	5.22	6.53	5.20	4.29	4.10
B	4.02	4.09	4.19	4.26	4.34	4.80	6.39	5.49	4.13	4.13
C	5.01	4.06	4.05	4.19	4.79	5.35	6.50	5.53	4.51	4.03
D	4.10	4.80	4.71	4.34	4.40	5.32	6.18	5.35	4.19	4.19
E	5.19	4.77	4.67	4.46	4.50	4.20	6.03	4.96	4.13	4.13
F	4.62	4.80	4.83	4.66	4.70	4.30	5.90	4.80	4.31	4.30
G	4.05	4.27	4.08	4.04	4.12	4.97	5.24	5.17	4.56	4.11
H	4.40	4.03	4.12	4.18	4.27	4.16	5.61	5.02	4.53	4.87
I	4.26	4.25	4.02	4.03	4.32	4.34	4.86	4.62	4.02	4.40
J	4.16	4.01	4.07	4.00	4.05	5.10	5.11	4.60	4.30	4.77

Test plot mean: 5

Standard deviation as percent of mean: 13%

Test Plot 441-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	5.98	5.67	5.71	5.76	5.68	5.76	5.93	5.63	5.68	5.60
B	5.98	5.95	6.12	6.31	5.18	5.83	6.27	5.92	5.88	5.96
C	5.35	6.39	5.75	5.90	5.43	5.77	6.18	--	6.05	5.48
D	6.25	5.99	5.86	5.96	6.00	6.06	5.91	6.03	5.62	5.41
E	5.97	6.10	5.11	5.59	5.72	5.93	6.35	5.80	6.29	6.24
F	6.27	5.72	6.34	5.92	5.86	6.57	5.97	6.29	6.18	5.84
G	6.17	5.85	6.11	6.66	6.65	6.36	6.01	6.49	6.53	6.16
H	6.01	5.75	5.64	6.45	6.57	6.37	6.24	6.52	5.67	5.79
I	6.14	6.34	6.35	6.17	5.71	4.96	6.40	6.45	6.47	6.34
J	6.32	5.37	6.47	6.10	6.68	6.14	5.98	6.50	5.99	6.16

Test plot mean: 6

Standard deviation as percent of mean: 6%

Legend:

pH Value (S.U.)

- > 7.0
- >6.0 - 7.0
- >5.0 - 6.0
- >4.0 - 5.0
- 0 - 4.0

Notes:
One pH value was measured during sampling at each sample location, including locations where duplicate samples were collected for laboratory analyses.
-- = pH value not recorded in field notes

Figure 3-3. Phase IA Part 1 pH Values in Soil (0 to 3-in. bgs) by Test Plot and Sample Grid Identification Number

Test Plot 258-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	0.5	1	3	1	2	2	--	1	0.5	1
B	0.25	2	3	3	2	0.5	1	1	0.5	1
C	1	3	1	0.5	1	3	0.5	0.5	0.5	1
D	0.5	0.75	0.5	1	0.5	0.5	1	0.5	1	2
E	0.5	1.5	1	0.5	2	0.5	0.25	2	1	2
F	0.5	0.5	1	2	0.5	3	1.5	0.5	0.5	2
G	4.00	1	0.5	0.5	2	1	0.5	0.5	1	0.50
H	2	2	0.5	0.5	0.5	1	0.5	0.25	0.5	0.5
I	0.5	1	1	0.5	0.5	0.5	0.5	0.5	0.5	1
J	1.5	0.5	0.5	0.5	0.5	0.5	--	0.25	0.5	1

Test plot mean: 1.0

Standard deviation as percent of mean: 77%

Test Plot 258-2

Grid Number	1	2	3	4	5	6	7	8	9	10
A	0.5	2	1	1	0.5	1	0.5	0.5	0.5	0.5
B	0.5	1	1	0.5	1	1	1	0.5	0.5	0.5
C	0.5	0.5	0.5	2	2	1	0.25	0.5	1	3
D	0.5	2	0.25	0.5	2	0.5	0.25	1	2	2
E	1	0.5	0.25	0.5	0.5	0.25	0.25	0.25	0.5	3
F	0.5	0.25	0.5	0.5	0.5	0.25	0.25	0.5	2	2
G	0.50	0.25	0.5	0.25	0.25	0.5	0.5	0.5	0.5	0
H	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0
I	2	1	0.5	0.25	0.25	0.25	0.25	0.25	0	0
J	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0	0	0

Test plot mean: 0.66

Standard deviation as percent of mean: 96%

Test Plot 258-3

Grid Number	1	2	3	4	5	6	7	8	9	10
A	0.25	0	0	0	0	0.25	0.25	0.25	0.25	0
B	0	0	0	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	0	0	0	0	0	0	0
E	0	0.25	0	0	0	0.25	0	0	0	0
F	0.25	0.25	0.25	0	0.25	0	0	0	0	0
G	0.25	0.25	0.25	0.25	0	0	0.25	0	0	0.25
H	0.5	1	2	2	0.25	0	0	0.25	0.25	0.25
I	0.5	0.5	1.5	0.25	0	1	1	0.5	1	1
J	0.25	2.5	0.25	0.25	0.25	0.5	0.5	0.25	1	0.5

Test plot mean: 0.24

Standard deviation as percent of mean: 185%

Test Plot 401-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	2	1	1	0.5	1	2	1	0.5	0.5	0.5
B	1	1	0.5	2	2	2	0.5	0.5	1	0.5
C	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2
D	0.5	0.5	0.25	1	0.5	0.5	0.5	1	2.5	3
E	0.5	0.5	1	0.25	0.5	1	0.5	0.5	1	1
F	1	0.5	0.5	0.5	1	2	1	0.5	0.5	2.5
G	1.00	0.5	0.5	0.5	1	2	1	3	0.5	0.50
H	1	0.5	0.5	1	0.5	0.5	0.5	1	1	1
I	0.5	1	1	0.5	0.5	1	0.5	--	2	0.25
J	1	2	2	1	1	0.5	0.5	1	0.5	1

Test plot mean: 0.91

Standard deviation as percent of mean: 67%

Test Plot 401-2

Grid Number	1	2	3	4	5	6	7	8	9	10
A	1	0.5	1.5	2	--	1.5	1	0	0.5	0.5
B	1	0.5	2.5	1	3	1.5	0.5	0	0.5	1
C	1	1	2	2.5	1	1.5	0	0	0.5	2.5
D	0.5	1	2	1.5	1	1.5	0.5	0	0.5	1
E	0.5	2	1	0.5	0.5	0	0.5	0	0.5	0.5
F	1	1	0.5	2	0.25	0	0.5	1	2	0.5
G	0.50	1	0.5	2	1	0.5	1	0.5	0	0.50
H	1	2	2	--	0.5	1.5	0.5	0.5	0.5	0
I	0.5	0.5	0.5	0.5	0.25	0.5	2.5	2	0.5	0.5
J	0.25	0.25	0.5	0.25	0.5	0	1.5	0.5	0.5	0.5

Test plot mean: 0.85

Standard deviation as percent of mean: 81%

Test Plot 441-1

Grid Number	1	2	3	4	5	6	7	8	9	10
A	0	0.25	0.25	0.25	0.5	0.5	0.25	2	0.25	1
B	0.25	0.25	0.5	0.25	0.25	0.25	0.5	0.25	0.25	0.5
C	0.25	0.25	0.5	0.25	0.25	0.25	0.25	0.25	0.5	0.5
D	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1
E	0.25	0.25	1	0.25	0.5	0.25	0.25	0.5	0.25	0.25
F	0.25	0.25	1	1	0.5	0.25	1	0.5	0.5	0.25
G	0.25	1	1	1	0.5	0.25	0.5	0.5	0.5	0.50
H	1	2	1	1	1	0.25	0.5	0.5	0.5	0.5
I	0.5	0.5	0.5	0.5	1	0.25	0.25	0.5	2	1
J	1	1	0.5	0.5	0.25	0.5	2	0.5	0.25	1

Test plot mean: 0.53

Standard deviation as percent of mean: 77%

Legend:

Duff depth (inches)

Duff depth (inches)
0
>0 - 0.5
>0.5 - 1.0
>1.0 - 2.0
> 2.0

Notes:
Average thickness is shown where a range of duff thickness was recorded (e.g., 1 to 2 inches) or where duplicate samples were collected.
*Vegetation and surface debris (e.g., woody debris, undecomposed leaves and pine needles, and surficial rocks) cleared prior to sample collection at each sample point.
-- = duff thickness not recorded in field notes

Figure 3-4. Phase IA Part 1 Duff* Thickness Over Soil Surface by Test Plot and Sample Grid Identification Number

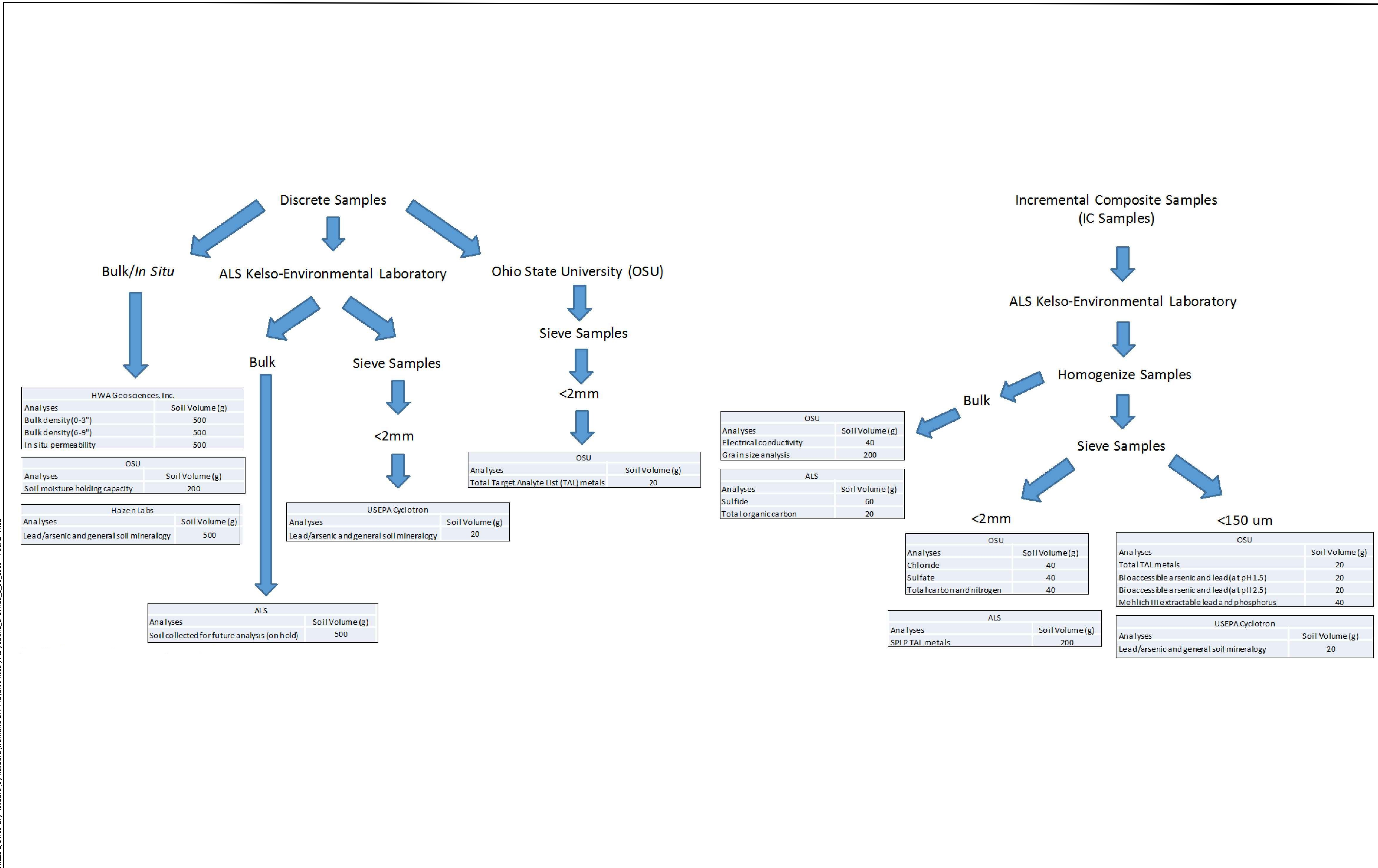

Figure 4-1. Test Plot Characterization Soil Sample Handling

MAPS

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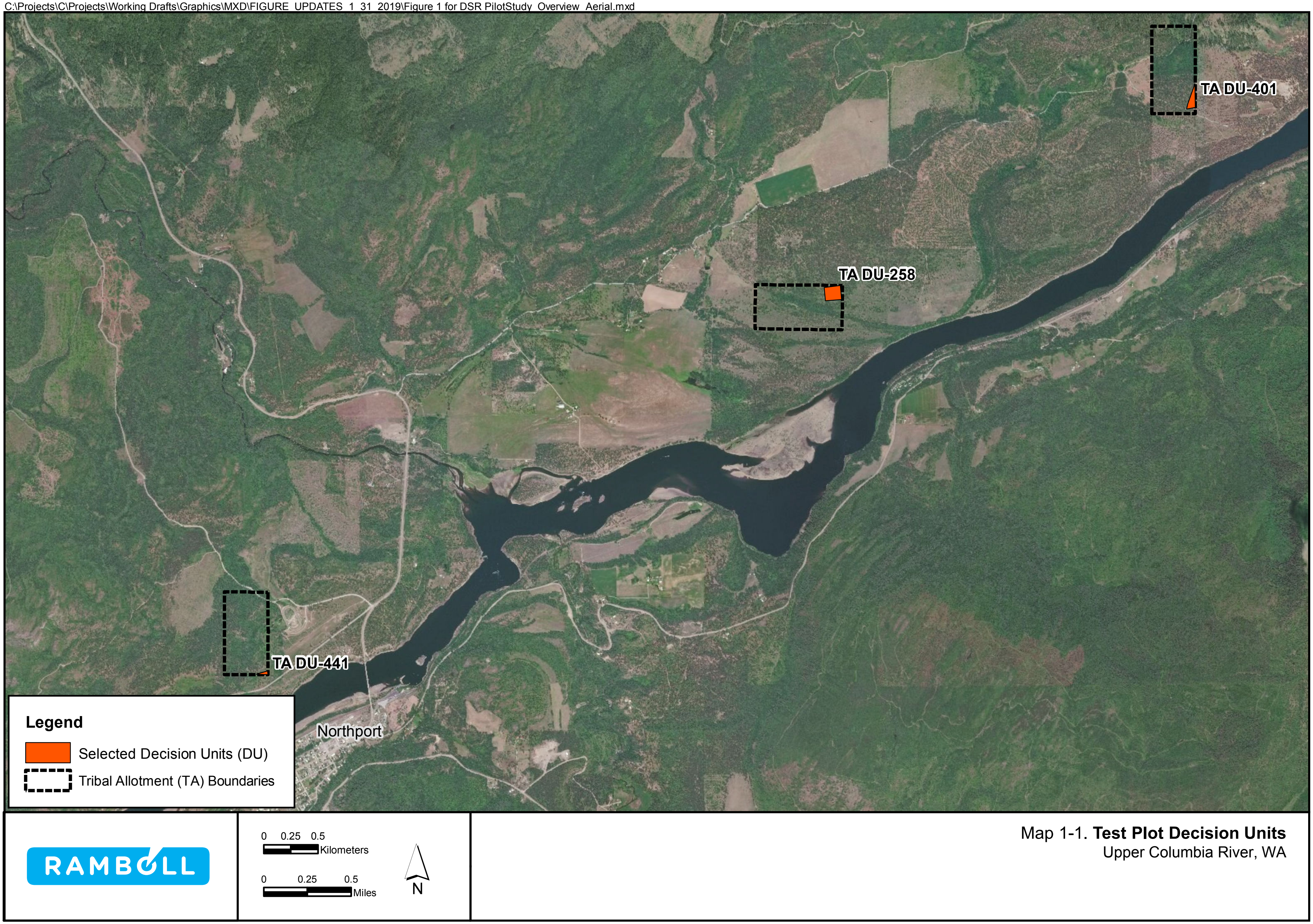
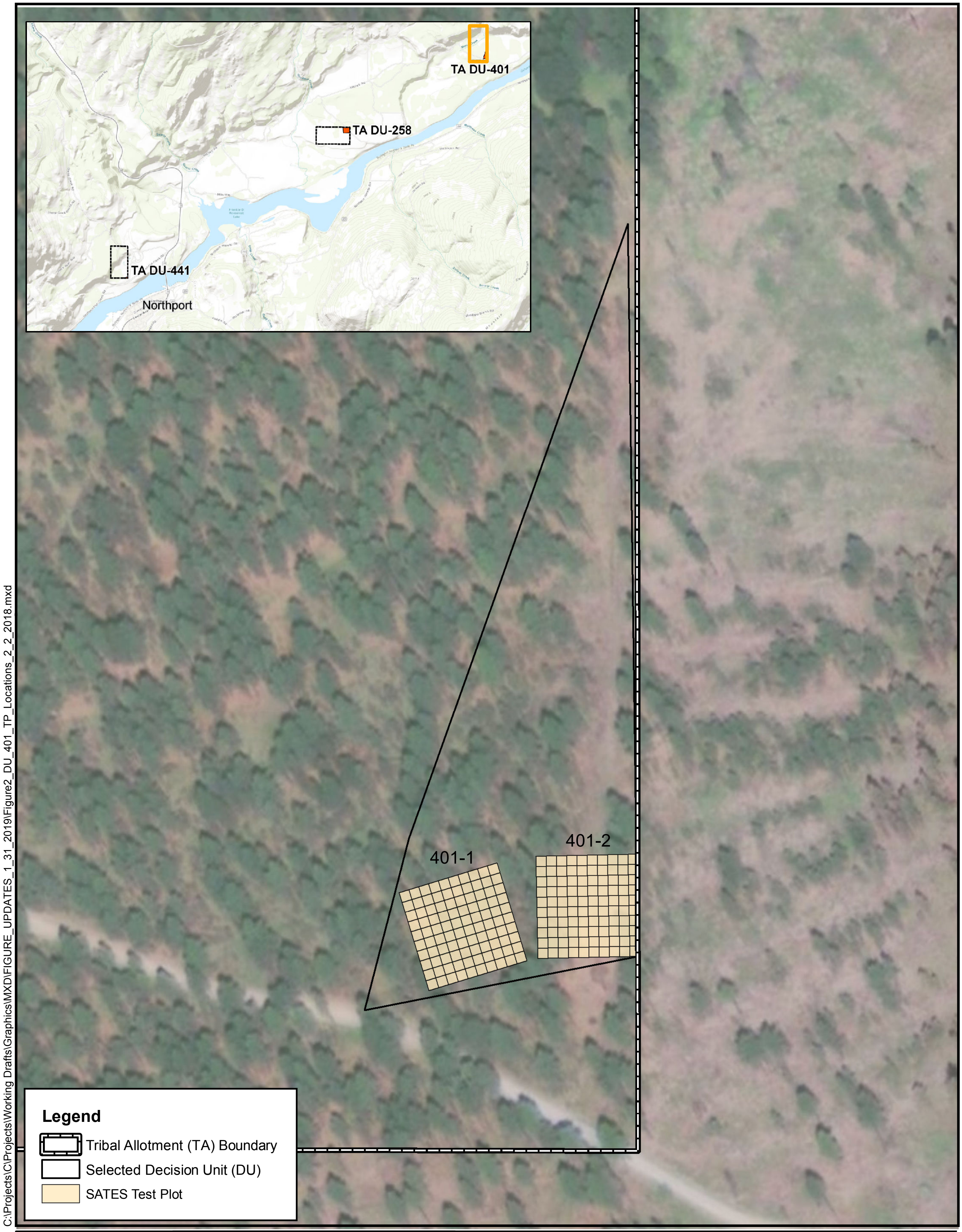


Map 1-1. **Test Plot Decision Units**
Upper Columbia River, WA



RAMBOLL

Map 1-2. **Decision Unit 401 Test Plot Locations**

Upper Columbia River, WA

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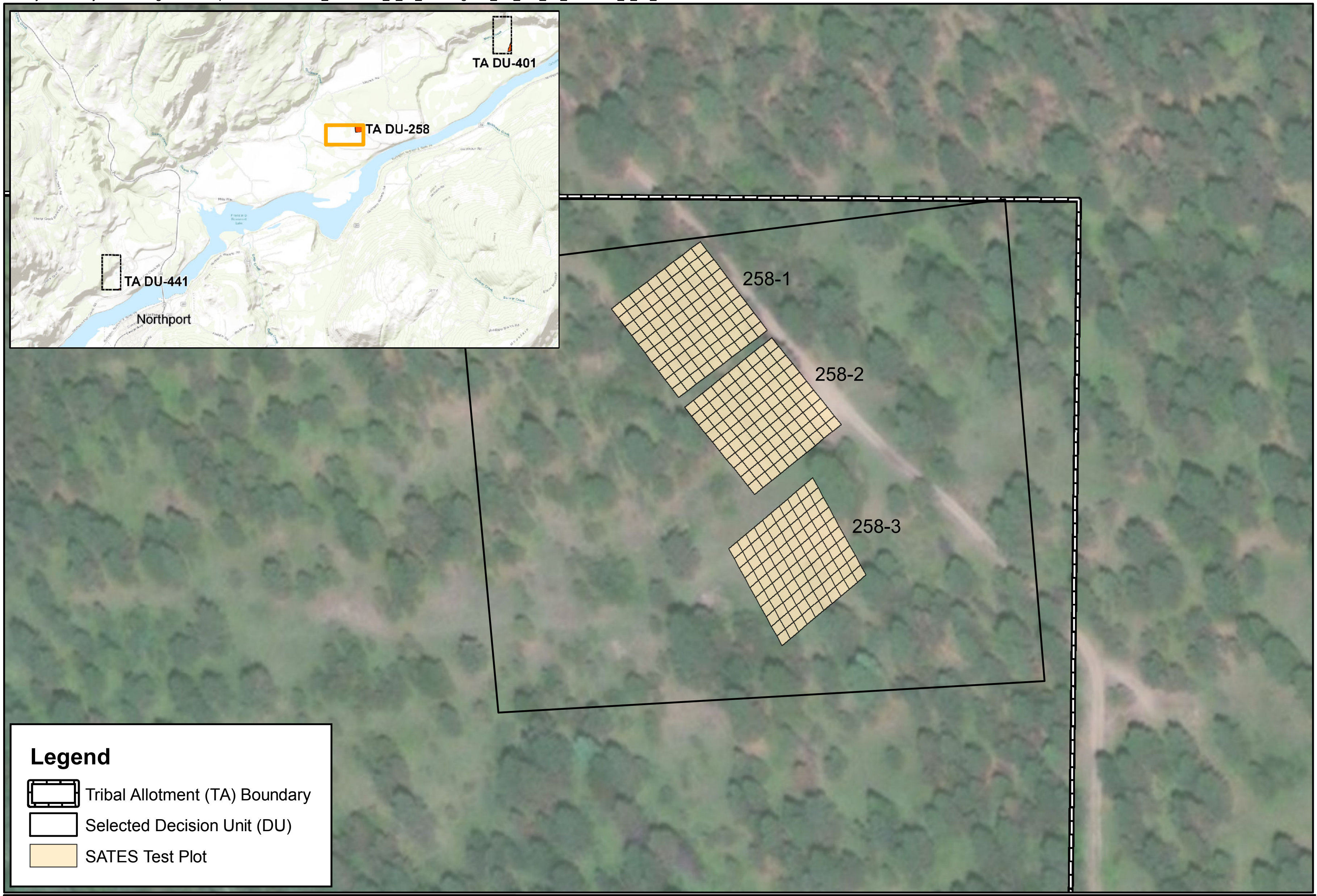
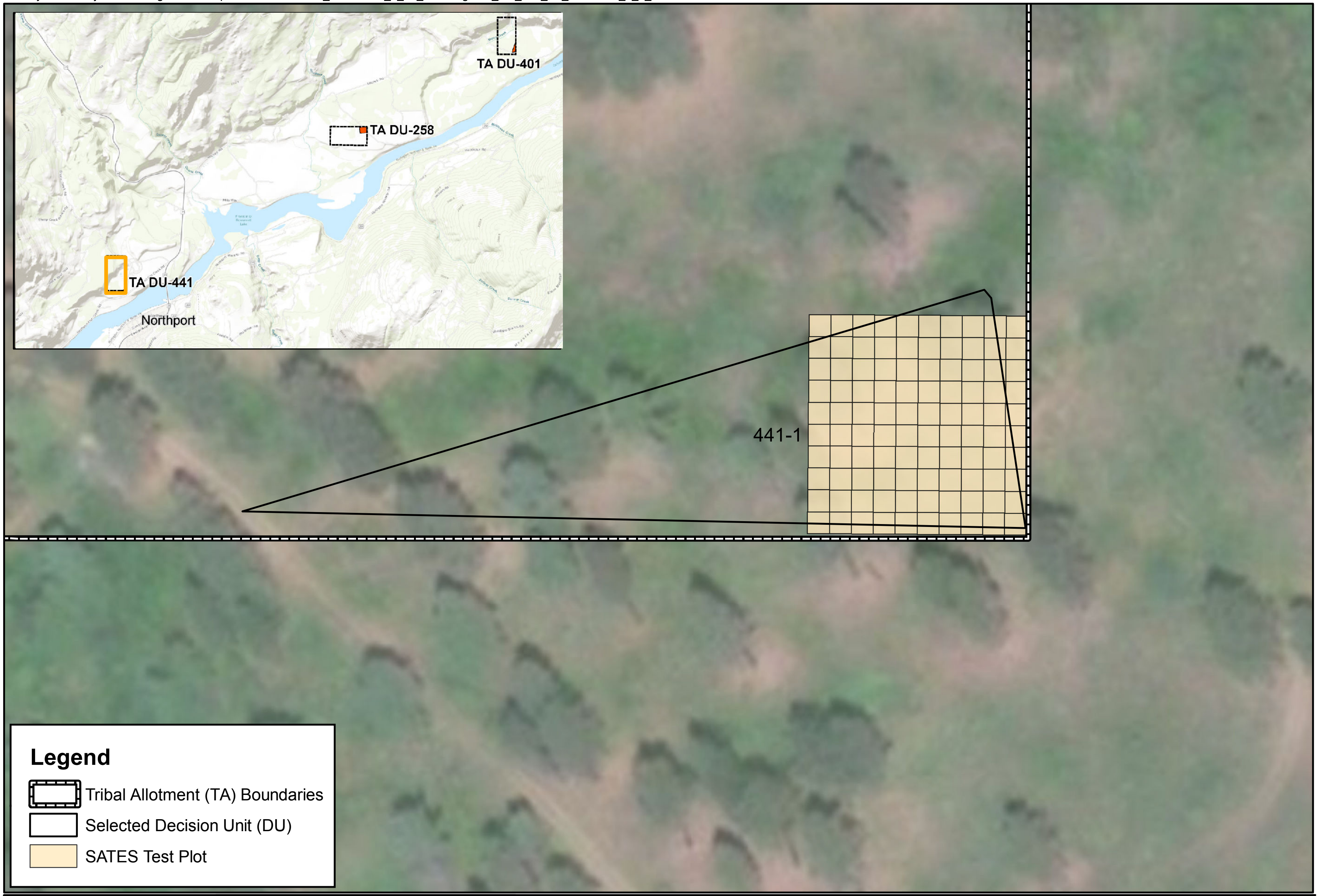


0 10 20 40 Meters
0 50 100 200 Feet
N

Map 1-3. **Decision Unit 258 Test Plot Locations**
Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure4_DU_441_TP_Locations_2_2_2018.mxd



RAMBOLL

0 5 10 20 Meters

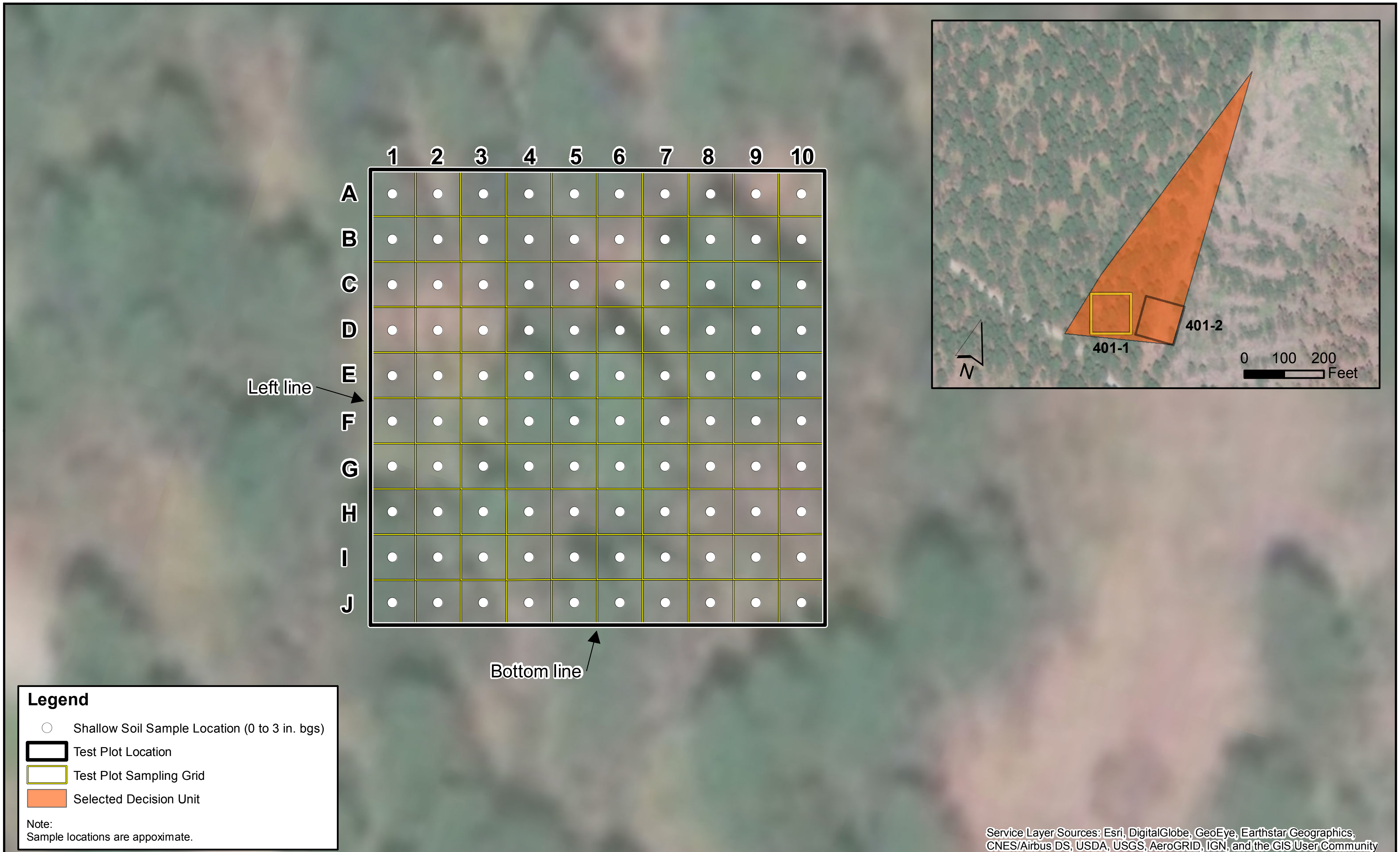
0 25 50 100 Feet

N

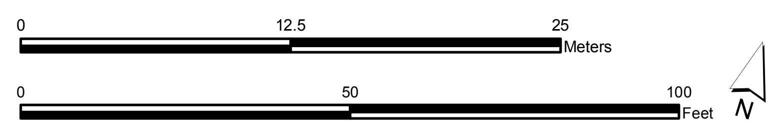
Map 1-4. **Decision Unit 441 Test Plot Location**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure5_DU401.1_10.3_2_2_2018.mxd



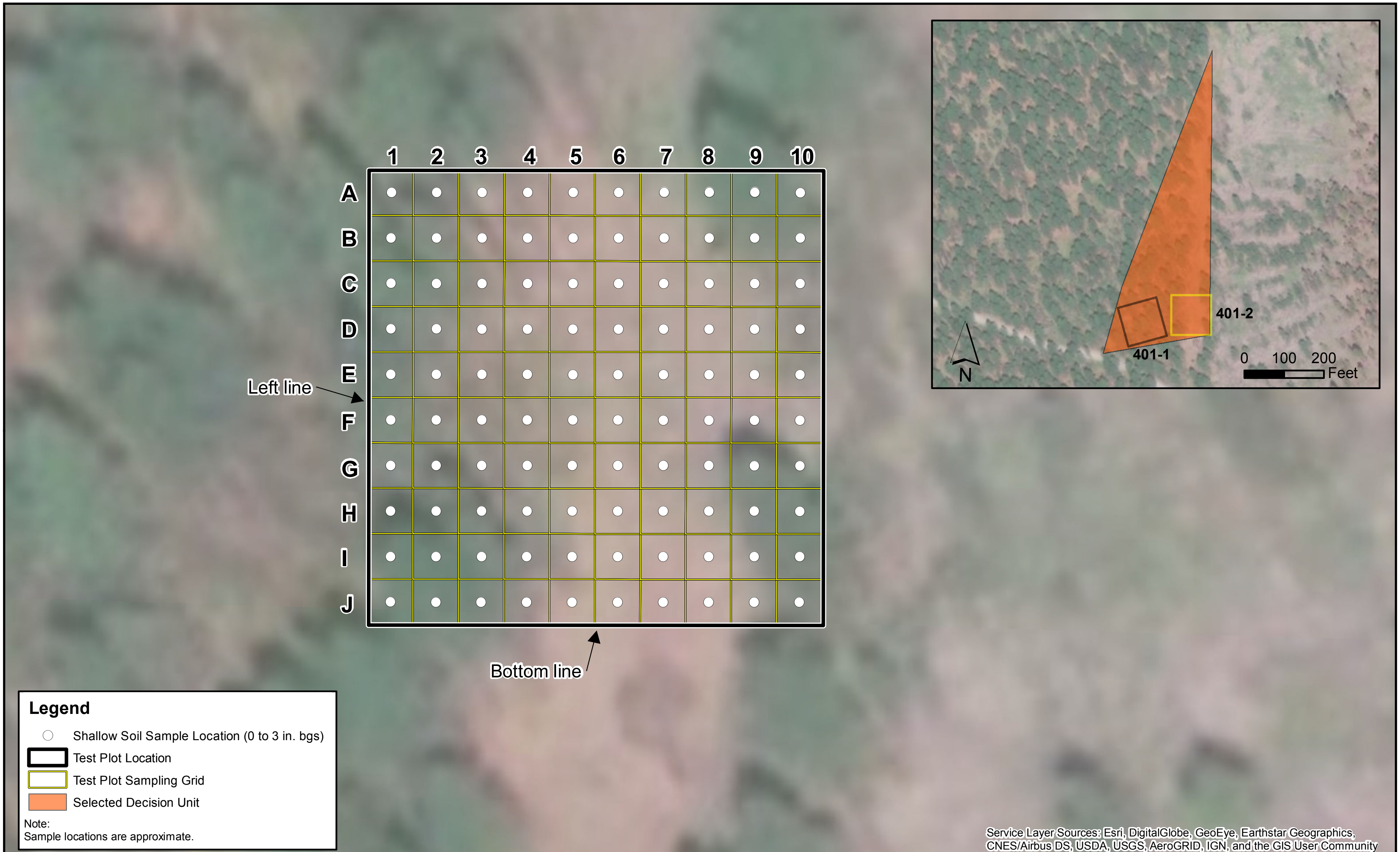
DRAFTED BY: JKing | Date: 1/31/2019



Map 3-1. **Phase IA Part 1 Discrete Soil Sample Locations for Test Plot 401-1**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure6_DU401.2_10.3 _2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

0 12.5 25 Meters

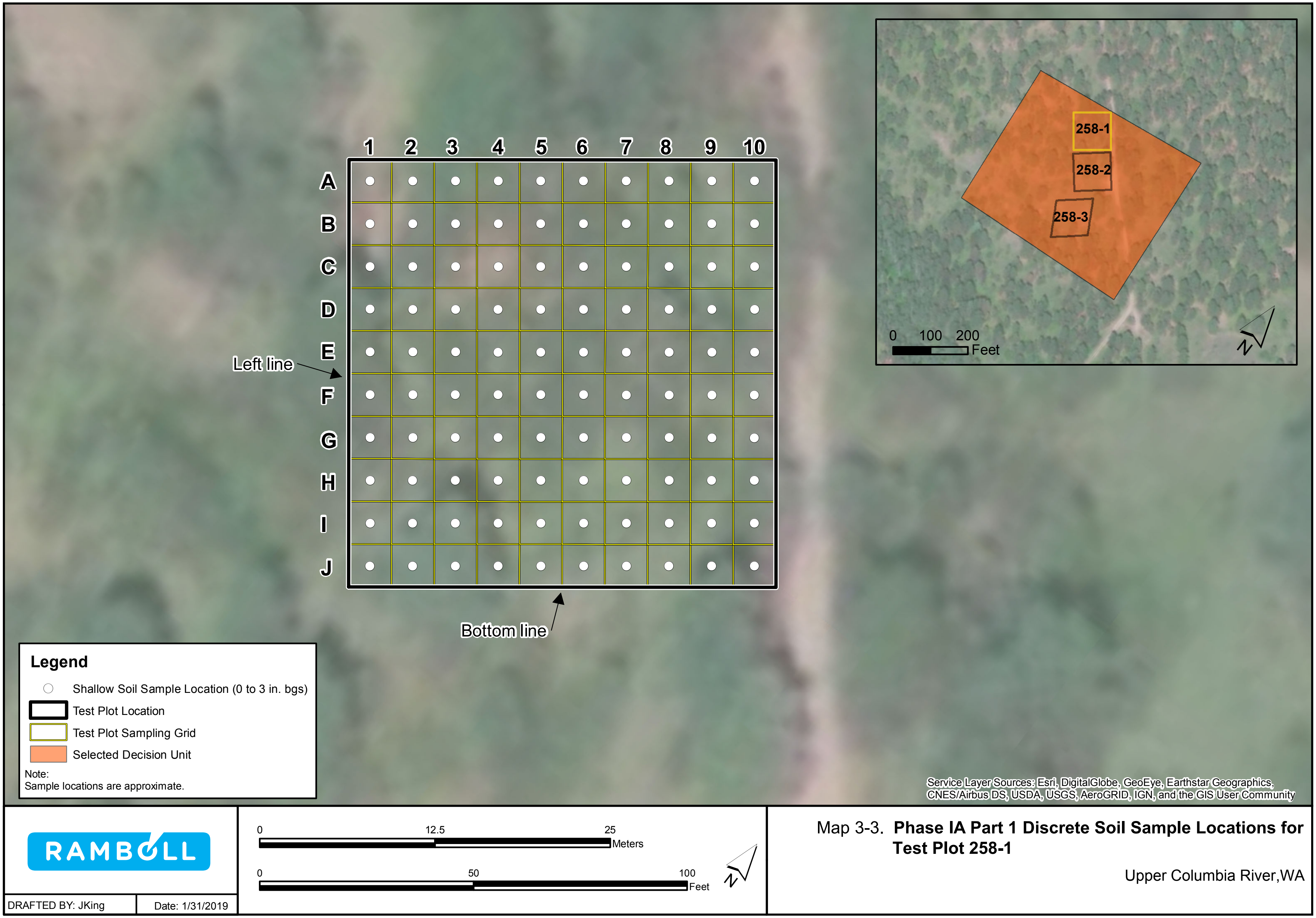
0 50 100 Feet

N

Map 3-2. **Phase IA Part 1 Discrete Soil Sample Locations for Test Plot 401-2**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure7_DU258.1_10.3_2_2_2018.mxd



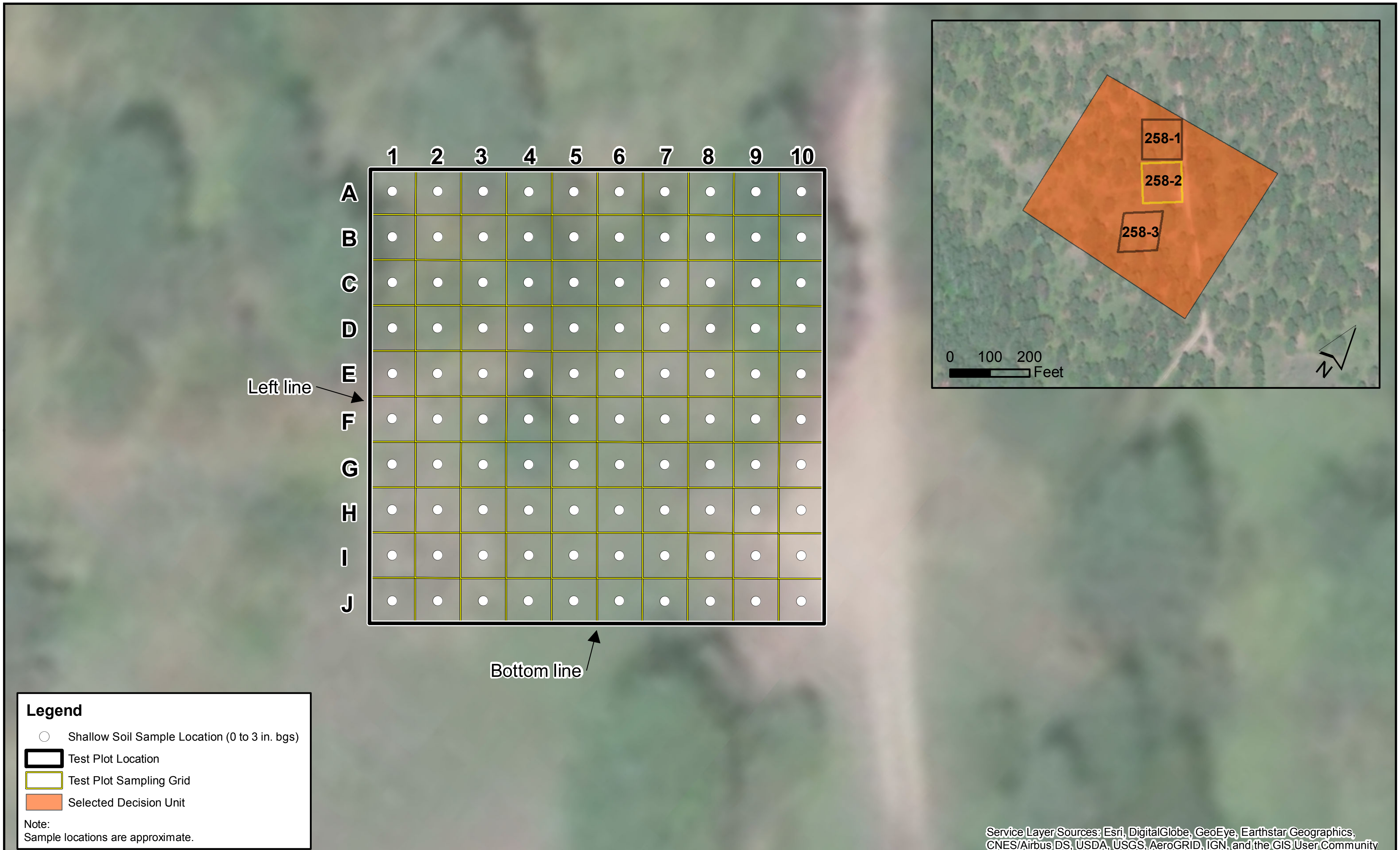
RAMBOLL

Map 3-3. **Phase IA Part 1 Discrete Soil Sample Locations for Test Plot 258-1**

Upper Columbia River, WA

DRAFTED BY: JKing | Date: 1/31/2019

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure8_DU258.2_10.3_2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

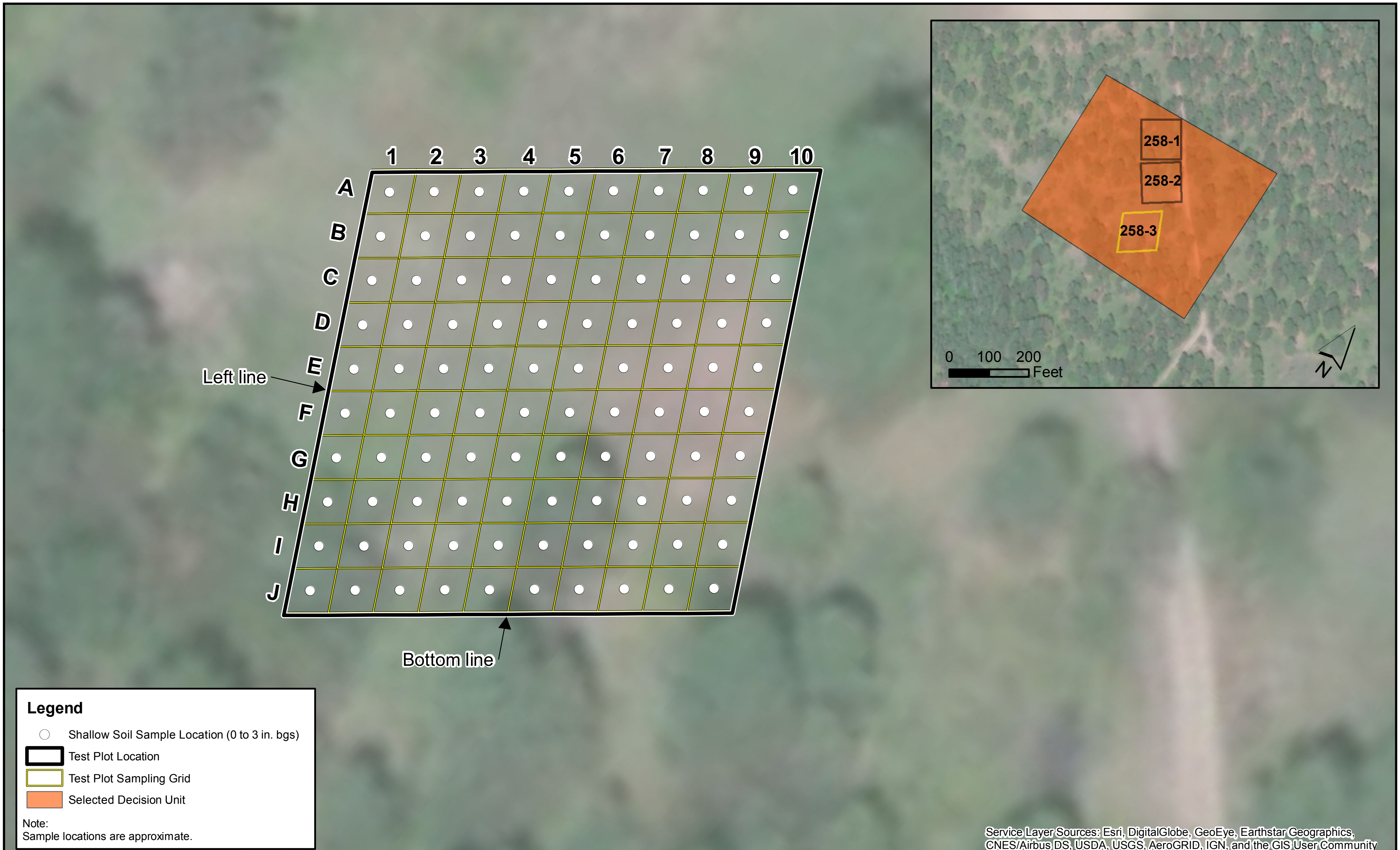
0 12.5 25 Meters

0 50 100 Feet

Map 3-4. **Phase IA Part 1 Discrete Soil Sample Locations for Test Plot 258-2**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure9_DU258.3_Adj_10.3_2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

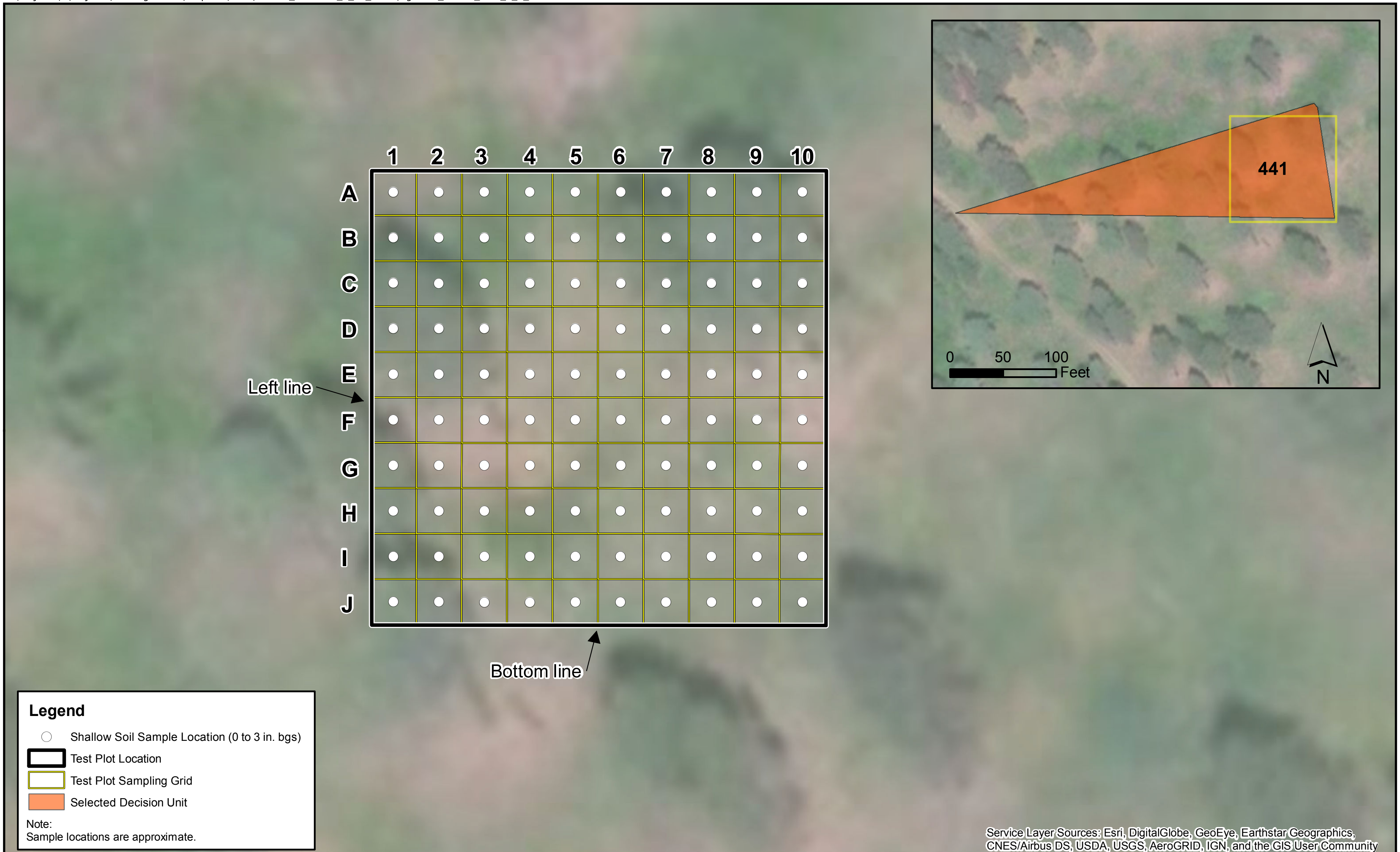
0 12.5 25 Meters

0 50 100 Feet

Map 3-5. **Phase IA Part 1 Discrete Soil Sample Locations for Test Plot 258-3**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure10_DU441_10.3_2_2_2018.mxd



Legend

- Shallow Soil Sample Location (0 to 3 in. bgs)
- Test Plot Location
- Test Plot Sampling Grid
- Selected Decision Unit

Note:
Sample locations are approximate.

RAMBOLL

0 12.5 25 Meters

0 50 100 Feet

N

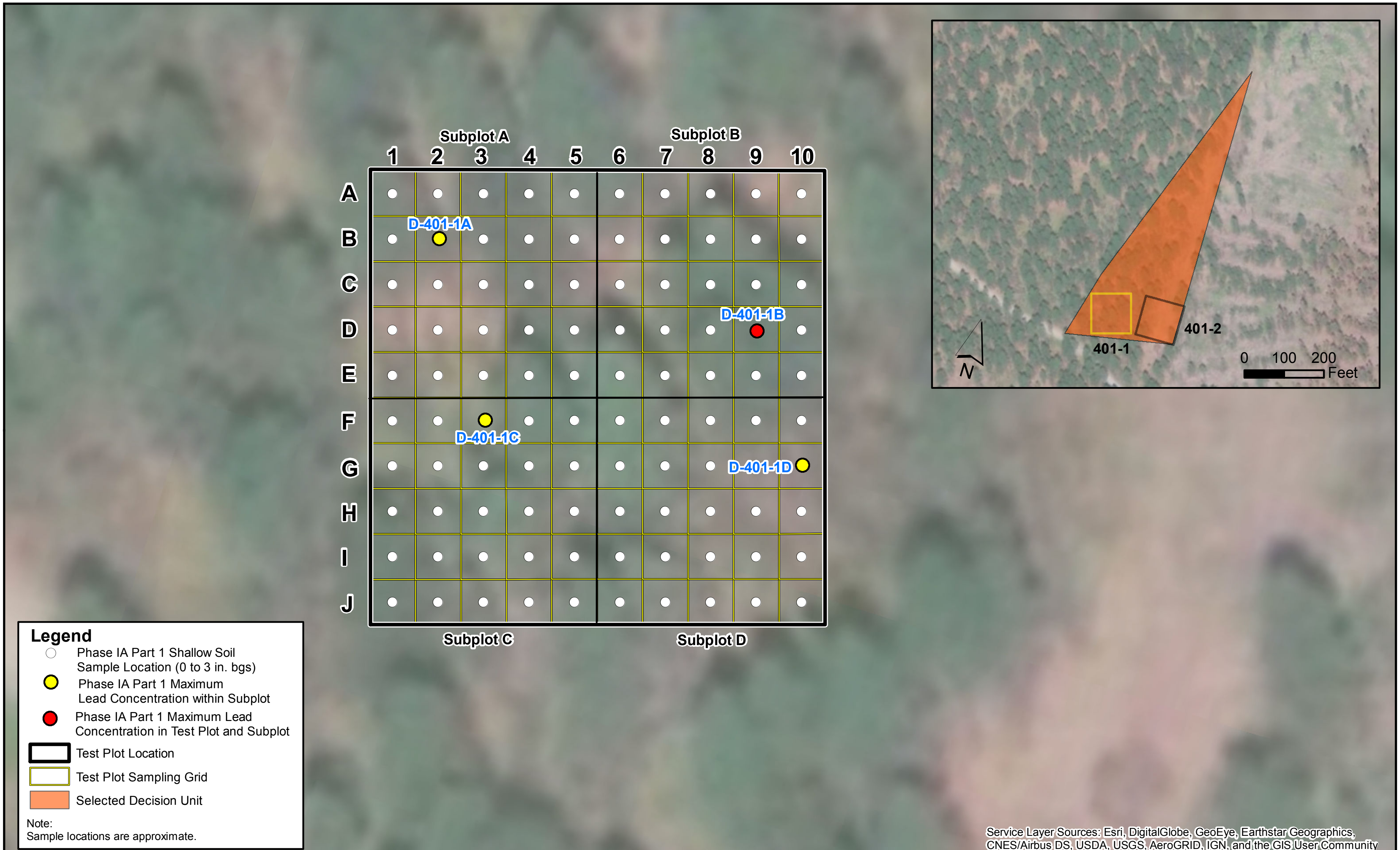
Map 3-6. **Phase IA Part 1 Discrete Soil Sample Locations for Test Plot 441-1**

Upper Columbia River, WA

DRAFTED BY: JKing

Date: 1/31/2019

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure15_DU401.1_TP_Characterization_2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

0 12.5 25 Meters

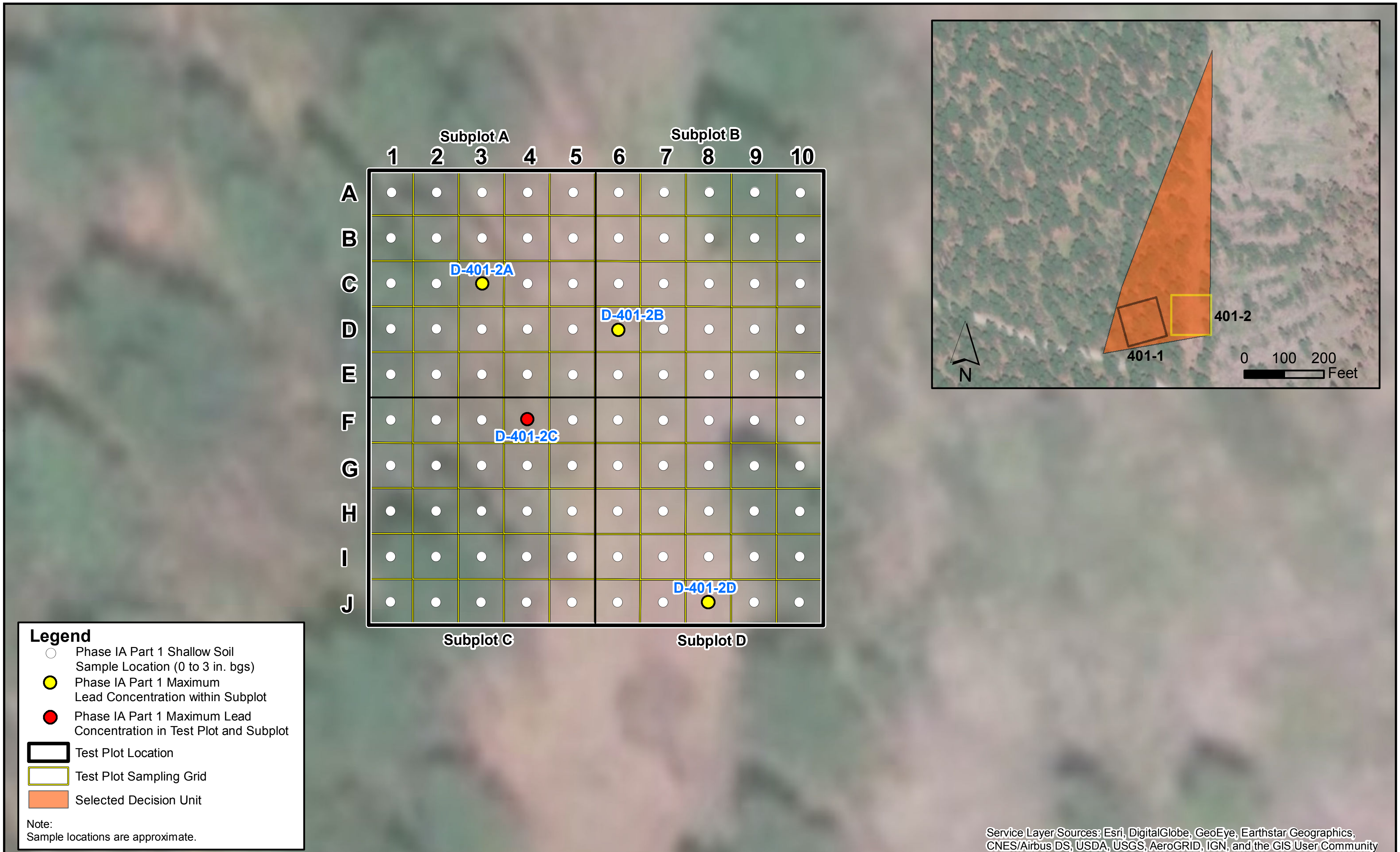
0 50 100 Feet

N

Map 3-7. **Phase IA Part 2 Discrete Soil Sample Locations for Test Plot 401-1**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure16_DU401.2_TP_Characterization_2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

0 12.5 25 Meters

0 50 100 Feet

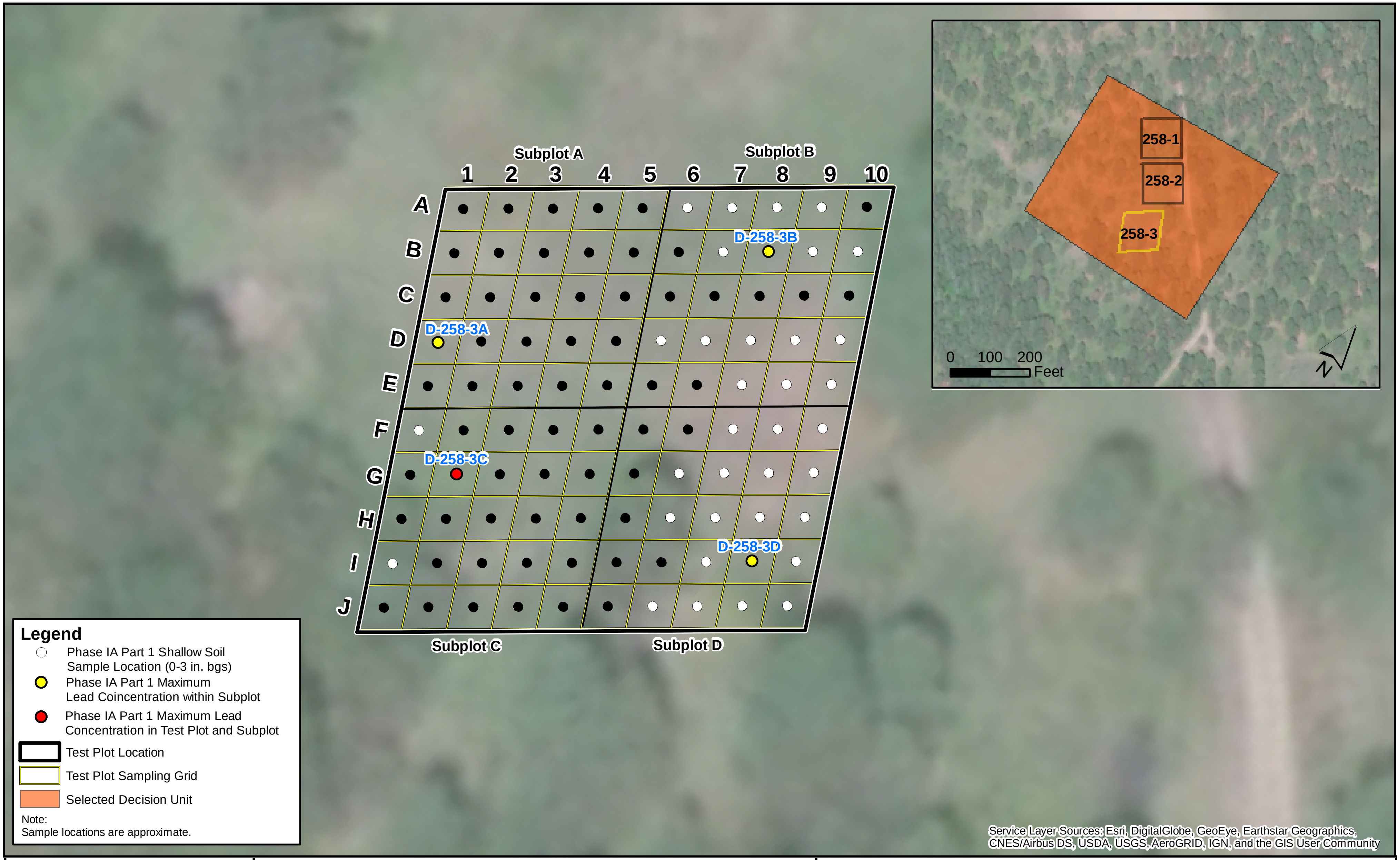
N

Map 3-8. **Phase IA Part 2 Discrete Soil Sample Locations for Test Plot 401-2**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure17_DU258.3_Adj_TP_Characterization_2_2_2018.mxd

DRAFT



RAMBOLL

0 12.5 25 Meters

0 50 100 Feet

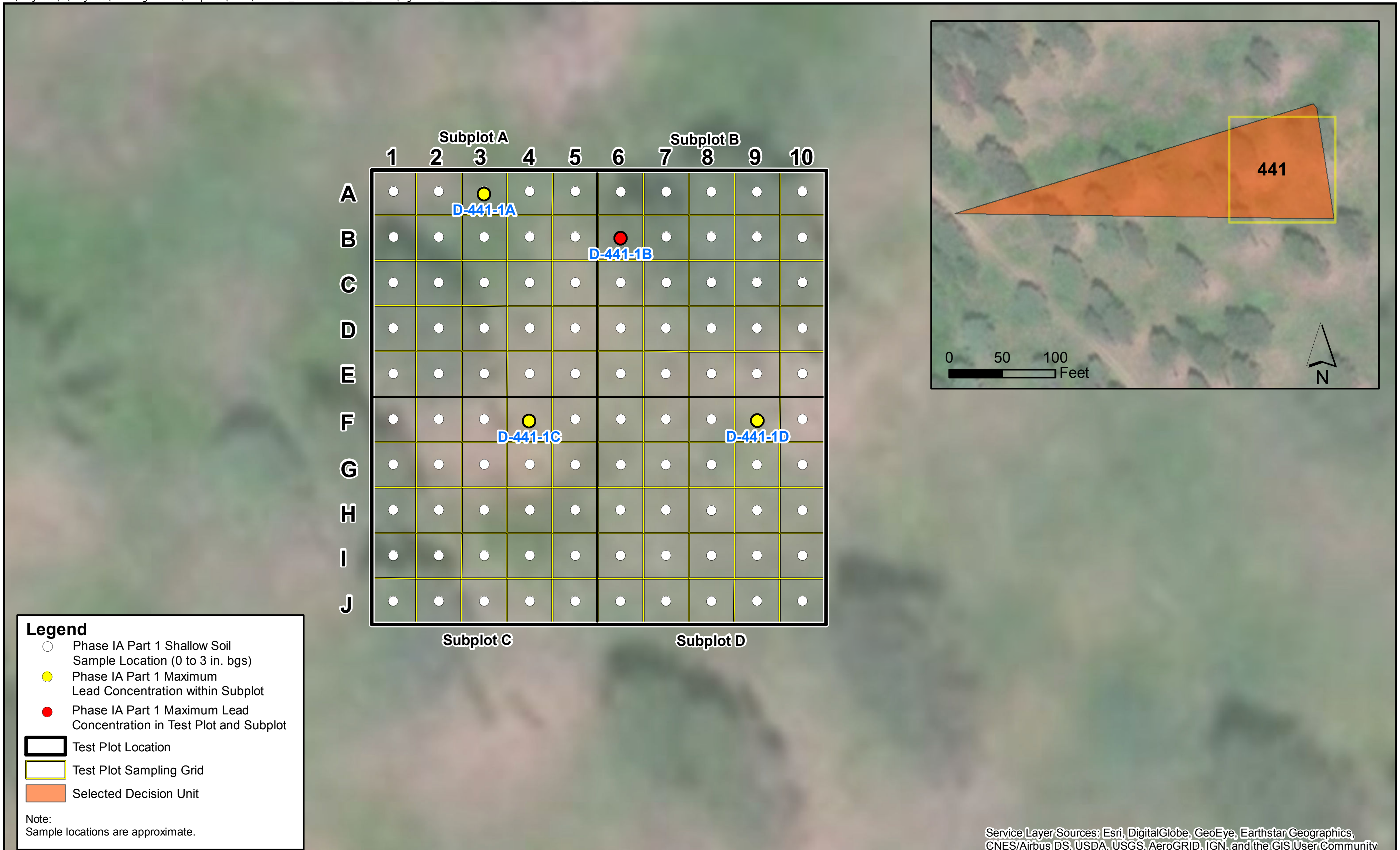
N

Map 3-9. **Phase IA Part 2 Discrete Soil Sample Locations for Test Plot 258-3**

Upper Columbia River, WA

DRAFTED BY: JKing | Date: 2/27/2019

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure18_DU441_TP_Characterization_2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

0 12.5 25 Meters

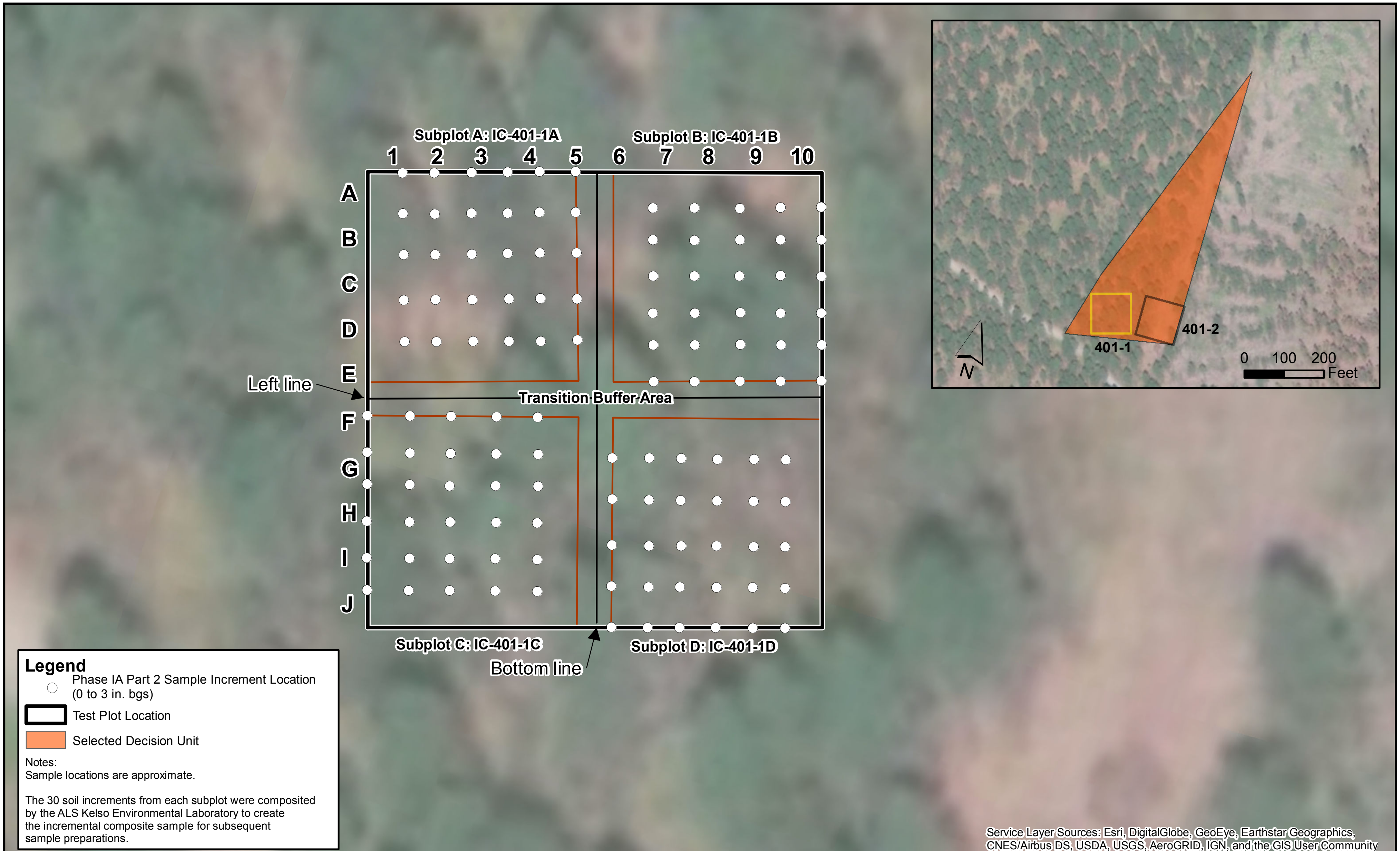
0 50 100 Feet

N

Map 3-10. **Phase IA Part 2 Discrete Soil Sample Locations for Test Plot 441-1**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure19_DU401.1_TP_Incremental_Characterization_2_2_2018.mxd



Legend

- Phase IA Part 2 Sample Increment Location (0 to 3 in. bgs)
- Test Plot Location
- Selected Decision Unit

Notes:
Sample locations are approximate.

The 30 soil increments from each subplot were composited by the ALS Kelso Environmental Laboratory to create the incremental composite sample for subsequent sample preparations.

RAMBOLL

0 12.5 25 Meters

0 50 100 Feet

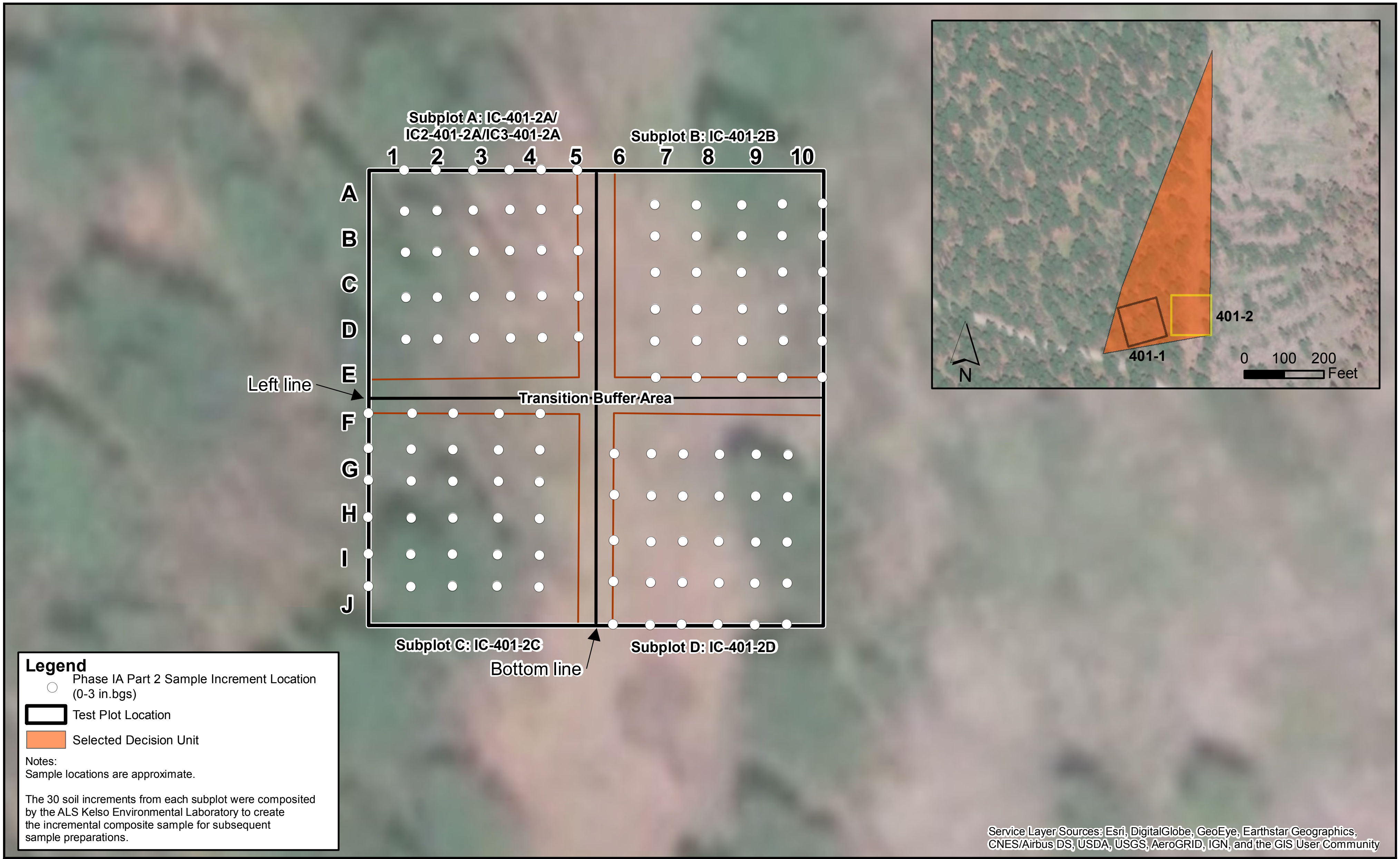
N

Map 4-1. **Phase IA Part 2 Soil Increment Sample Locations for Test Plot 401-1**

Upper Columbia River, WA

DRAFTED BY: JKing | Date: 1/31/2019

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure20_DU401.2_TP_Incremental_Characterization_2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

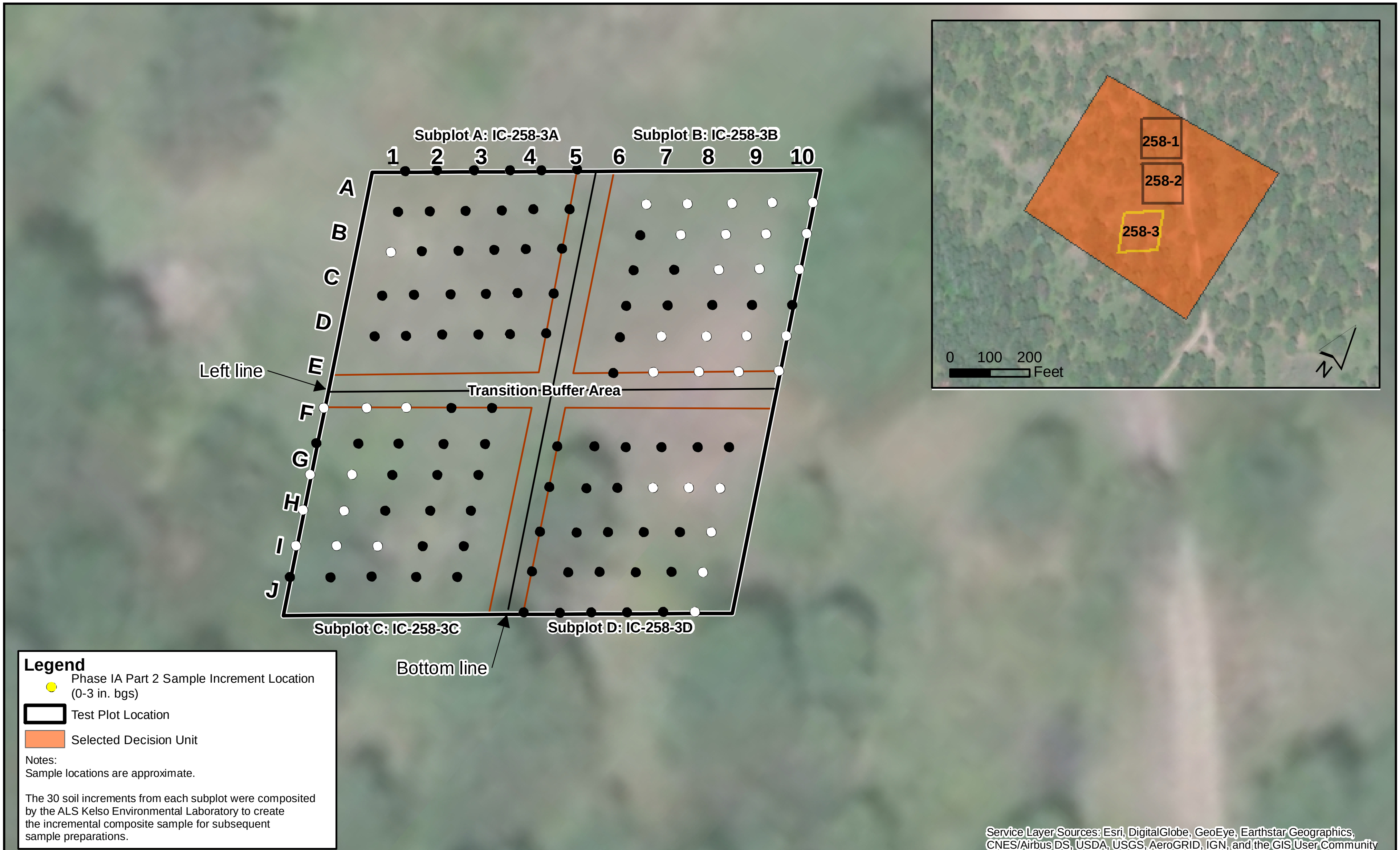
0 12.5 25 Meters
0 50 100 Feet
N

Map 4-2. **Phase IA Part 2 Soil Increment Sample Locations for Test Plot 401-2**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure21_DU258.3_Adj_TP_Incremental_Characterization_2_2_2018.mxd

DRAFT



Legend

- Phase IA Part 2 Sample Increment Location (0-3 in. bgs)
- Test Plot Location
- Selected Decision Unit

Notes:
Sample locations are approximate.

The 30 soil increments from each subplot were composited by the ALS Kelso Environmental Laboratory to create the incremental composite sample for subsequent sample preparations.

RAMBOLL

0 12.5 25 Meters

0 50 100 Feet

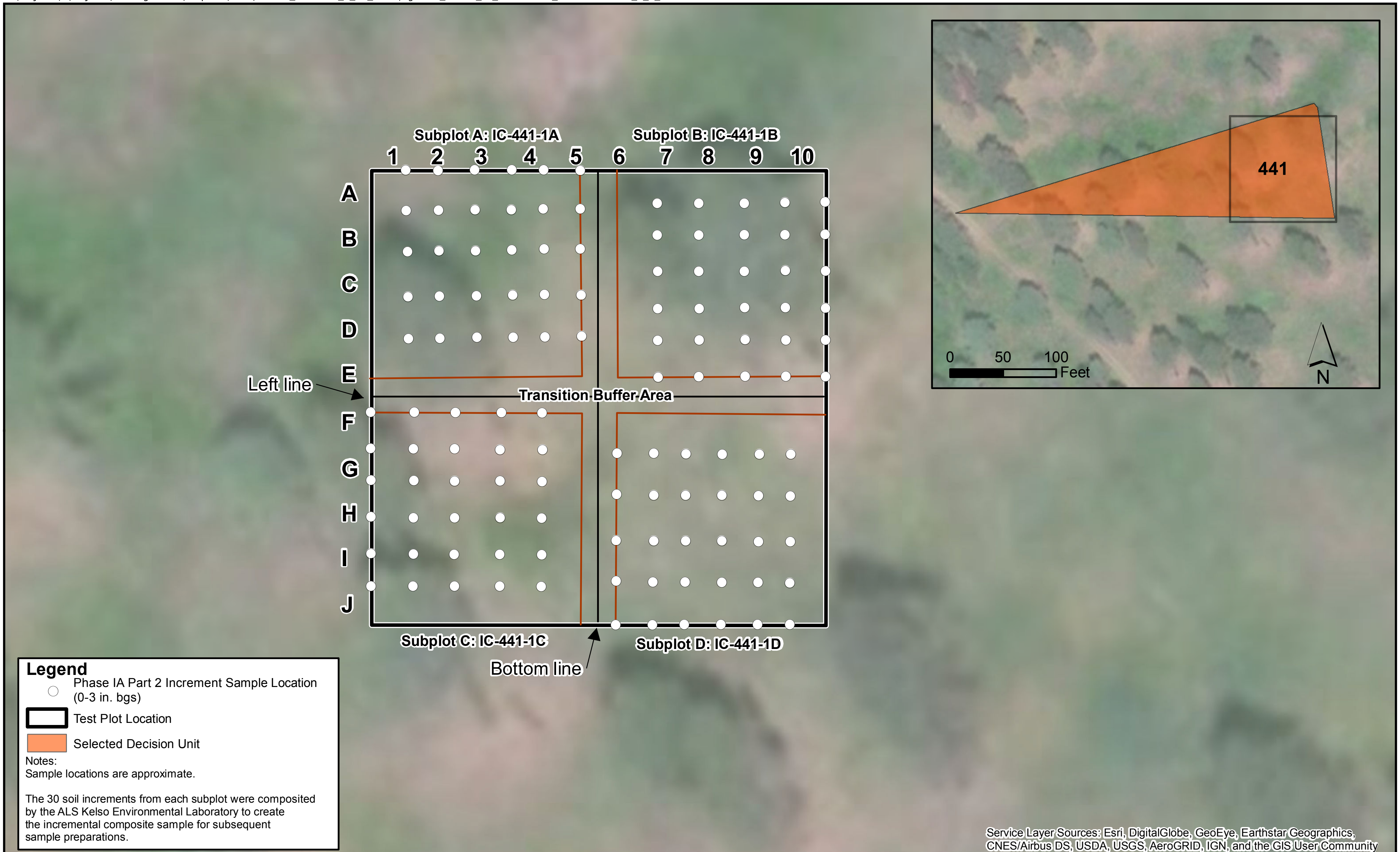
N

DRAFTED BY: JKing | Date: 2/27/2019

Map 4-3. **Phase IA Part 2 Soil Increment Sample Locations for Test Plot 258-3**

Upper Columbia River, WA

C:\Projects\C\Projects\Working Drafts\Graphics\MXD\FIGURE_UPDATES_1_31_2019\Figure22_DU441_TP_Incremental_Characterization_2_2_2018.mxd



RAMBOLL

DRAFTED BY: JKing | Date: 1/31/2019

0 12.5 25 Meters

0 50 100 Feet

N

Map 4-4. **Phase IA Part 2 Soil Increment Sample Locations for Test Plot 441-1**

Upper Columbia River, WA

TABLES

Table 2-1. Phase IA Part 1 Test Plot Initial Screening Soil Sampling and Analysis Scope

		Number of Samples per Test Plot				
Analysis	Soil Fraction	Grab Samples (0-3 in. bgs)	Field Duplicates (QA/QC Samples)	Method Reference	Analysis Procedure	Analyzed By
Total arsenic and lead	< 2 mm	100	5	USEPA 3050B, 6010[a]	Acid digestion, ICP-AES[a]	ALS Environmental[b]
pH	Bulk	100	NA	NA	NA	Field personnel
Soil description and classification	Bulk	100	NA	USCS	NA	Field personnel

Notes:

[a]EPA methods and analysis procedures, along with sample containment, preservation, and storage specifications are detailed in the Final Work Plan for the Soil Amendment Technology Evaluation Study (Ramboll 2017a).

[b]ALS Global Environmental Laboratory, Kelso, Washington.

ICP-AES - inductively-coupled plasma-atomic emission spectrometry

NA - not applicable

QA/QC - quality assurance and quality control

USCS - Unified Soil Classification System

Table 2-2. Phase IA Part 2 Test Plot Characterization Soil Sampling and Analysis Scope

		Number of Samples per Test Plot		Number of QA/QC Samples per Test Plot					
Analysis	Soil Fraction	Grab Samples (0-12 in. bgs)	IC Samples (0-3 in. bgs)	Field Duplicates (Grab Samples)	Field Duplicates (IC Samples)	Field Triplicates	Method Reference[a]	Analysis Procedure[a]	Analyzed By[b]
Analytical Chemistry Analyses[c]									
Electrical conductivity	Bulk	0	4	--	1[d]	0	SM2510B	Conductivity meter	OSU
Total organic carbon	Bulk	0	4	--	1[d]	0	EPA 9060A	IR/FID	ALS
Total carbon and nitrogen	< 2 mm	0	4	--	1[d]	0	Bremner and Mulvaney 1982, Nelson and Sommers 1982	Dry combustion at 900°C	OSU
Total TAL metals (except mercury)	< 2 mm	24	--	1	--	0	EPA 3051A, EPA 6010	Acid digestion, ICP-AES	OSU
	< 2 mm	--	4	--	0	1[e]			
	< 150 µm	--	4	--	0	1[e]			
SPLP TAL metals (except mercury)	< 2 mm	0	4	--	0	1[e]	EPA 1312, EPA 6010	SPLP, ICP-AES	ALS
Bioaccessible arsenic and lead	< 150 µm	0	4	--	0	1[e]	EPA 9200.2-86 modified, EPA 6010B	Glycine extraction (modified, pH=2.5), ICP-AES	OSU
	< 150 µm	0	4	--	0	1[e]	EPA 9200.2-86 modified, EPA 6010B	Glycine extraction (modified, pH=1.5), ICP-AES	
Mehlich III extractable lead and phosphorous	< 150 µm	0	4	--	1[d]	0	Mehlich 1984, EPA 6010	ICP-AES	OSU
Chloride	< 2 mm	0	4	--	1[d]	0	EPA 300.0	ICP	OSU
Sulfate	< 2 mm	0	4	--	1[d]	0	EPA 300.0	ICP	OSU
Sulfide	Bulk	0	4	--	1[d]	0	SM4500-52D	Probe	ALS
Arsenic, lead, and general mineralogy	< 150 µm	1	4	--	0	0	NRMRL QMP L18735, Althena software data analysis	Synchrotron X-rays	EPA National Risk Management Research Laboratory, Cyclotron
	< 2 mm	1	4	--	0	0			
	< 2 mm	1	0	--	0	0	QEMSCAN® Process	SEM / X-ray detectors	Hazen Research
Geotechnical Analyses									
Soil horizon description	Bulk	NA	NA	NA	NA	NA	Schoeneberger et al. 2012	NA	Field personnel
Soil moisture holding capacity	Bulk	4	0	--	0	0	ASTM 2216 / Cassel, D.K. and D.R. Nielsen 1986	Gravimetric	OSU
Grain size	Bulk	0	4	--	0	0	ASTM D422	Sieve, hydrometer	OSU
In situ bulk density	Bulk	4	0	--	--	--	ASTM E1109-86, D7263	Homogenization, weigh on scale	HWA
In situ permeability	Bulk	4	0	--	--	--	ASTM D2434	Permeameter	HWA
Other									
Soil samples collected for future analysis	Bulk	4[f]	0	0	0	0	To be determined	To be determined	ALS

Notes:

[a]EPA methods and analysis procedures, along with sample containment, preservation, and storage specifications are detailed in the Final Work Plan for the Soil Amendment Technology Evaluation Study (Ramboll 2017a).

[b]Laboratories used for this study and their locations are
- ALS Global (ALS), Environmental Laboratory, Kelso, Washington
- Ohio State University (OSU) laboratory, Cincinnati, Ohio
- EPA National Risk Management Research Laboratory, Cincinnati, Ohio
- Hazen Research, Inc., Golden, Colorado
- HWA GeoSciences, Inc. (HWA), Bothell, Washington

[c]OSU's laboratory also analyzed the Part 2 characterization samples it received for pH and phosphorus. This was not required by the Final Work Plan (see Ramboll 2017a).

[d]One field duplicate sample was collected at random from one of the four test plots sampled during test plot characterization.

[e]The frequency of triplicate incremental composite (IC) sample collection was determined based on the coefficient of variation or geometric standard deviation of the initial screening (Part 1) lead concentrations by test plot. One triplicate sample was collected at random from one of the four test plots sampled during test plot characterization.

[f]Within each test plot, soil samples were collected from 12 to 24 in. bgs and up to 30 in. bgs at locations where there was poor recovery.

ASTM - American Society for Testing and Materials
ICP-AES - inductively-coupled plasma-atomic emission spectrometry
IR/FID - infrared or flame ionization detector
NA - not applicable
NRMRL QMP - EPA National Risk Management Research Laboratory Quality Management Plan
QA/QC - quality assurance and quality control
QEMSCAN - qualitative evaluation of minerals by scanning electron microscopy
SEM - scanning electron microscope
SPLP - Synthetic Precipitation Leaching Procedure
TAL - target analyte list
-- - not required for the analyte or parameter indicated

Table 3-1. Phase IA Parameters, Methods, and Target Laboratory Reporting Limits

Analyte (units)	CAS Number	Laboratory MDL	Laboratory RL
TAL Metals (6010) (mg/kg dw)			
Aluminum	7429-90-5	30	30
Antimony	7440-36-0	2	4
Arsenic	7440-38-2	2	4
Barium	7440-39-3	0.3	0.8
Beryllium	7440-41-7	0.08	0.2
Cadmium	7440-43-9	0.09	0.2
Calcium	7440-70-2	1	100
Chromium	7440-47-3	0.3	0.8
Cobalt	7440-48-4	0.2	0.4
Copper	7440-50-8	0.4	0.8
Iron	7439-89-6	2	40
Lead	7439-92-1	0.7	2
Magnesium	7439-95-4	0.2	100
Manganese	7439-96-5	0.04	1.0
Nickel	7440-02-0	0.2	0.8
Potassium	7440-09-7	10	100
Selenium	7782-49-2	2	5
Silver	7440-22-4	0.3	0.8
Sodium	7440-23-5	5	100
Thallium	7440-28-0	1	2
Vanadium	7440-62-2	0.3	2
Zinc	7440-66-6	0.2	5
Other Analyses			
SPLP TAL metals (except mercury) (mg/L)	NA	0.7	1
Bioaccessible arsenic and lead (at pH 1.5 and pH 2.5) (%)	NA	NA	NA
Mehlich III extractable lead and phosphorous (mg/kg dw)	NA	NA	NA
pH (unitless)	NA	NA	NA
Electrical conductivity (mS/m)	NA	NA	NA
Chloride (mg/kg dw)	NA	0.5	2
Sulfate (mg/kg dw)	NA	10	10
Sulfide (mg/kg dw)	NA	5	5
Total carbon and nitrogen (%)[a]	NA	Equal to RL	Varies
Total organic carbon (%)	NA	1,000	1,000
Soil moisture capacity (%)	NA	NA	NA
Grain size analysis (%)	NA	NA	NA
Lead/arsenic and general soil mineralogy	NA	NA	NA
Bulk density (pcf)	NA	NA	NA
In situ permeability (cm/sec)	NA	NA	NA

Notes:

[a] Reporting limits (RLs) for carbon and nitrogen can vary depending on the amount of soil used in combustion. For example, for a 100 mg sample, typical RLs would be 0.7% for carbon and 0.05% for nitrogen.

The laboratory supplied the lowest method achievable method detection limit (MDLs) and RLs to meet the soil standards listed in the Final Work Plan for the Soil Amendment Technology Evaluation Study (Ramboll 2017a).

CAS - Chemical Abstracts Service

NA - not applicable

SPLP - synthetic precipitation leaching procedure

TAL - target analyte list

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]	pH Value[c]	Duff Thickness (in.)[c]
401-1-A01-081817	A	01	401-1	93.9	48.7	574	4.96	2
401-1-A02-081817	A	02	401-1	97.5	12.5	219	5.76	1
401-1-A03-081817	A	03	401-1	97.0	27.0	512	5.27	1
401-1-A04-081817	A	04	401-1	97.0	19.0	277	5.05	0.5
401-1-A05-081817	A	05	401-1	97.2	20.1	290	4.75	1
401-1-A06-081817	A	06	401-1	95.0	51.1	387	4.82	2
401-1-A06-081817-D	A	06	401-1	94.3	54.0	435	4.82	2
401-1-A07-081817	A	07	401-1	98.0	33.1	495	4.64	1
401-1-A08-081817	A	08	401-1	96.9	15.9	235	4.29	0.5
401-1-A09-081817	A	09	401-1	97.2	29.6	433	4.14	0.5
401-1-A10-081817	A	10	401-1	94.7	26.9	970	4.23	0.5
401-1-B01-081817	B	01	401-1	94.7	40.2	767	4.09	1
401-1-B02-081817	B	02	401-1	87.5	27.3	1160	4.08	1
401-1-B03-081817	B	03	401-1	97.4	15.6	198	4.01	0.5
401-1-B04-081817	B	04	401-1	97.1	14.5	206	4.04	2
401-1-B05-081817	B	05	401-1	96.3	18.2	348	4.00	2
401-1-B06-081817	B	06	401-1	96.6	19.9	306	4.02	2
401-1-B07-081817	B	07	401-1	96.9	19.2	176	4.00	0.5
401-1-B08-081817	B	08	401-1	97.2	32.8	548	4.05	0.5
401-1-B09-081817	B	09	401-1	97.3	23.4	376	4.07	1
401-1-B10-081817	B	10	401-1	97.7	13.6	134	4.16	0.5
401-1-C01-081817	C	01	401-1	96.5	24.0	265	4.08	1
401-1-C02-081817	C	02	401-1	95.2	33.3	730	4.10	0.5
401-1-C03-081817	C	03	401-1	97.8	22.2	322	4.15	0.5
401-1-C04-081817	C	04	401-1	97.5	25.5	304	4.09	0.5
401-1-C05-081817	C	05	401-1	95.5	28.6	785	4.20	0.5
401-1-C06-081817	C	06	401-1	95.9	34.2	648	4.10	0.5
401-1-C07-081817	C	07	401-1	95.4	32.8	565	4.06	0.5
401-1-C08-081817	C	08	401-1	94.7	32.0	365	4.15	0.5
401-1-C09-081817	C	09	401-1	95.5	28.2	405	4.11	0.5
401-1-C09-081817-D	C	09	401-1	95.5	30.2	539	4.11	0.5
401-1-C10-081817	C	10	401-1	96.9	34.3	258	4.07	2
401-1-D01-081817	D	01	401-1	97.3	26.0	369	4.06	0.5
401-1-D02-081817	D	02	401-1	97.4	37.1	343	4.05	0.5
401-1-D03-081817	D	03	401-1	97.0	25.2	273	4.09	0.25
401-1-D04-081817	D	04	401-1	94.3	29.6	719	4.15	1
401-1-D05-081817	D	05	401-1	96.0	28.7	492	4.14	0.5
401-1-D06-081817	D	06	401-1	95.8	48.1	819	4.00	0.5
401-1-D07-081817	D	07	401-1	96.3	29.6	381	4.05	0.5
401-1-D08-081817	D	08	401-1	93.4	41.9	718	4.14	1
401-1-D09-081817	D	09	401-1	89.4	71.6	2060	4.05	2-3

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]	pH Value[c]	Duff Thickness (in.)[c]
401-1-D10-081817	D	10	401-1	93.7	84.9	1190	4.09	3
401-1-E01-081817	E	01	401-1	96.7	23.1	305	4.18	0.5
401-1-E02-081817	E	02	401-1	95.4	22.1	241	4.02	0.5
401-1-E02-081817-D	E	02	401-1	95.0	20.8	235	4.02	0.5
401-1-E03-081817	E	03	401-1	94.3	21.8	822	4.08	1
401-1-E04-081817	E	04	401-1	97.5	22.9	313	4.10	0.25
401-1-E05-081817	E	05	401-1	97.6	32.2	416	4.09	0.5
401-1-E06-081817	E	06	401-1	96.8	39.2	423	4.05	1
401-1-E07-081817	E	07	401-1	97.1	27.0	348	4.03	0.5
401-1-E08-081817	E	08	401-1	93.8	36.8	756	4.15	0.5
401-1-E09-081817	E	09	401-1	95.3	53.8	416	4.10	1
401-1-E10-081817	E	10	401-1	94.8	82.3	634	4.14	1
401-1-F01-081817	F	01	401-1	95.1	40.1	671	4.05	1
401-1-F02-081817	F	02	401-1	96.9	23.7	279	4.05	0.5
401-1-F03-081817	F	03	401-1	93.6	29.5	1020	4.22	0.5
401-1-F04-081817	F	04	401-1	95.4	31.3	282	4.09	0.5
401-1-F05-081817	F	05	401-1	96.6	27.0	238	4.04	1
401-1-F06-081817	F	06	401-1	95.4	43.5	354	4.11	2
401-1-F07-081817	F	07	401-1	96.3	38.8	595	4.21	1
401-1-F08-081817	F	08	401-1	95.0	32.6	377	4.21	0.5
401-1-F09-081817	F	09	401-1	96.5	38.4	578	4.16	0.5
401-1-F10-081817	F	10	401-1	93.0	50.3	657	4.20	2-3
401-1-G01-081817	G	01	401-1	97.8	27.6	391	4.17	1
401-1-G02-081817	G	02	401-1	97.8	20.7	311	4.12	0.5
401-1-G03-081817	G	03	401-1	97.0	30.9	409	4.15	0.5
401-1-G04-081817	G	04	401-1	97.1	28.7	385	4.17	0.5
401-1-G05-081817	G	05	401-1	96.4	19.9	231	4.15	1
401-1-G06-081817	G	06	401-1	95.3	43.0	588	4.19	2
401-1-G07-081817	G	07	401-1	96.8	26.7	301	4.12	1
401-1-G08-081817	G	08	401-1	92.4	90.5	1360	4.02	3
401-1-G09-081817	G	09	401-1	93.7	41.3	309	4.02	0.5
401-1-G09-081817-D	G	09	401-1	93.5	39.0	288	4.02	0.5
401-1-G10-081817	G	10	401-1	95.7	59.6	1740	4.06	0.5
401-1-H01-081817	H	01	401-1	97.2	38.4	444	4.25	1
401-1-H02-081817	H	02	401-1	96.5	32.9	508	4.21	0.5
401-1-H03-081817	H	03	401-1	95.3	37.4	693	4.12	0.5
401-1-H04-081817	H	04	401-1	96.4	25.8	360	4.26	1
401-1-H05-081817	H	05	401-1	97.7	26.2	333	4.21	0.5
401-1-H06-081817	H	06	401-1	93.6	45.0	566	4.24	0.5
401-1-H07-081817	H	07	401-1	95.5	33.8	336	4.08	0.5
401-1-H08-081817	H	08	401-1	96.1	43.7	190	4.33	1

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
401-1-H09-081817	H	09	401-1	94.0	41.1	1350		4.10	1
401-1-H10-081817	H	10	401-1	95.6	36.2	1190		4.24	1
401-1-I01-081817	I	01	401-1	96.5	23.7	486		4.13	0.5
401-1-I02-081817	I	02	401-1	95.4	29.8	767		4.31	1
401-1-I03-081817	I	03	401-1	94.8	29.8	684		4.00	1
401-1-I04-081817	I	04	401-1	93.9	33.0	656		4.09	0.5
401-1-I05-081817	I	05	401-1	97.2	37.2	708		4.29	0.5
401-1-I05-081817-D	I	05	401-1	96.7	35.3	632		4.29	0.5
401-1-I06-081817	I	06	401-1	94.7	37.0	831		4.03	1
401-1-I07-081817	I	07	401-1	96.7	42.1	797		4.25	0.5
401-1-I08-081817	I	08	401-1	95.2	67.3	527		4.01	na[d]
401-1-I09-081817	I	09	401-1	94.1	54.3	1430		4.38	2
401-1-I10-081817	I	10	401-1	96.4	38.9	684		4.06	0.25
401-1-J01-081817	J	01	401-1	97.0	24.9	480		4.19	1
401-1-J02-081817	J	02	401-1	96.9	26.3	470		4.24	2
401-1-J03-081817	J	03	401-1	96.1	21.5	300		4.12	2
401-1-J04-081817	J	04	401-1	93.3	39.4	805		4.22	1
401-1-J05-081817	J	05	401-1	96.4	37.4	591		4.29	1
401-1-J06-081817	J	06	401-1	96.7	18.8	266		4.16	0.5
401-1-J07-081817	J	07	401-1	95.9	23.2	419		4.24	0.5
401-1-J08-081817	J	08	401-1	94.7	60.8	947		4.27	1
401-1-J09-081817	J	09	401-1	94.9	44.6	721		4.23	0.5
401-1-J10-081817	J	10	401-1	96.4	32.8	486		4.17	1
401-2-A01-081717	A	01	401-2	96.2	18.3	273	J+	4.88	1
401-2-A02-081717	A	02	401-2	95.4	32.8	495	J+	4.72	0.5
401-2-A03-081717	A	03	401-2	95.7	38.7	377	J+	4.42	1-2
401-2-A04-081717	A	04	401-2	95.6	68.9	788	J+	4.12	2
401-2-A05-081717	A	05	401-2	96.0	76.0	1130	J+	4.06	na[d]
401-2-A06-081617	A	06	401-2	95.4	58.2	1020		5.22	1-2
401-2-A07-081617	A	07	401-2	93.8	24.1	451		6.53	1
401-2-A08-081617	A	08	401-2	95.0	36.6	445		5.20	0
401-2-A09-081617	A	09	401-2	96.5	23.0	222		4.29	0.5
401-2-A10-081617	A	10	401-2	95.6	28.1	450		4.10	0.5
401-2-B01-081717	A	01	401-2	95.1	18.1	329	J+	4.02	1
401-2-B02-081717	B	02	401-2	97.0	20.7	326	J+	4.09	0.5
401-2-B03-081717	B	03	401-2	93.6	62.1	674	J+	4.19	2-3
401-2-B04-081717	B	04	401-2	93.8	55.1	916	J+	4.26	1
401-2-B05-081717	B	05	401-2	92.1	53.9	419	J+	4.34	3
401-2-B06-081617	B	06	401-2	93.6	54.3	839		4.80	1-2
401-2-B07-081617	B	07	401-2	95.7	42.4	371		6.39	0.5
401-2-B07-081617-D	B	07	401-2	95.6	34.1	298		6.39	0.5

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
401-2-B08-081617	B	08	401-2	93.7	35.8	723		5.49	0
401-2-B09-081617	B	09	401-2	95.3	45.6	488		4.13	0.5
401-2-B10-081617	B	10	401-2	95.2	32.0	287		4.13	1
401-2-C01-081717	C	01	401-2	97.1	19.6	534	J+	5.01	1
401-2-C02-081717	C	02	401-2	96.7	26.4	393	J+	4.06	1
401-2-C03-081717	C	03	401-2	93.6	43.1	1210	J+	4.05	2
401-2-C04-081717	C	04	401-2	94.9	22.0	291	J+	4.19	2-3
401-2-C05-081717	C	05	401-2	94.6	40.0	858	J+	4.79	1
401-2-C06-081617	C	06	401-2	94.4	55.5	507		5.35	1-2
401-2-C07-081617	C	07	401-2	94.1	62.8	666		6.50	0
401-2-C08-081617	C	08	401-2	95.4	34.5	550		5.53	0
401-2-C09-081617	C	09	401-2	96.7	17.5	154		4.51	0.5
401-2-C09-081617-D	C	09	401-2	95.8	19.3	298		4.51	0.5
401-2-C10-081617	C	10	401-2	96.3	81.6	494		4.03	2-3
401-2-D01-081717	D	01	401-2	96.2	43.8	913		4.10	0.5
401-2-D02-081717	D	02	401-2	95.4	53.2	665		4.80	1
401-2-D03-081717	D	03	401-2	95.0	54.5	558		4.71	2
401-2-D04-081717	D	04	401-2	95.4	40.2	459		4.34	1-2
401-2-D05-081717	D	05	401-2	95.5	53.2	661		4.40	1
401-2-D06-081617	D	06	401-2	93.8	65.3	1430		5.32	1-2
401-2-D07-081617	D	07	401-2	95.7	49.8	340		6.18	0.5
401-2-D08-081617	D	08	401-2	95.2	48.1	572		5.35	0
401-2-D09-081617	D	09	401-2	95.0	45.2	499		4.19	0.5
401-2-D10-081617	D	10	401-2	96.2	53.1	1020		4.19	1
401-2-E01-081717	E	01	401-2	94.0	37.4	745		5.19	0.5
401-2-E02-081717	E	02	401-2	94.1	98.2	684		4.77	2
401-2-E03-081717	E	03	401-2	96.5	43.1	943		4.67	1
401-2-E04-081717	E	04	401-2	95.9	31.6	586		4.46	0.5
401-2-E05-081717	E	05	401-2	94.2	44.5	823		4.50	0.5
401-2-E05-081717-D	E	05	401-2	94.8	48.6	1040		4.50	0.5
401-2-E06-081617	E	06	401-2	92.1	73.2	1020		4.20	0
401-2-E07-081617	E	07	401-2	92.4	71.8	1010		6.03	0.5
401-2-E08-081617	E	08	401-2	95.1	35.2	580		4.96	0
401-2-E09-081617	E	09	401-2	95.4	49.9	1080		4.13	0.5
401-2-E10-081617	E	10	401-2	90.7	55.4	1370		4.13	0.5
401-2-F01-081717	F	01	401-2	95.0	40.2	304		4.62	1
401-2-F02-081717	F	02	401-2	95.2	33.3	155		4.80	1
401-2-F03-081717	F	03	401-2	95.5	57.3	701		4.83	0.5
401-2-F04-081717	F	04	401-2	90.6	65.3	1800		4.66	2
401-2-F05-081717	F	05	401-2	94.6	41.1	703		4.70	0.25
401-2-F06-081617	F	06	401-2	94.1	45.0	706	J+	4.30	0

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]		Arsenic (mg/kg dw)[a]		Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
401-2-F07-081617	F	07	401-2	84.2		13.8		402	J+	5.90	0.5
401-2-F08-081617	F	08	401-2	94.4		39.7		347	J+	4.80	1
401-2-F09-081617	F	09	401-2	94.4		29.4		478	J+	4.31	2
401-2-F10-081617	F	10	401-2	95.1		77.8		809	J+	4.30	0.5
401-2-G01-081717	G	01	401-2	92.5		10.3		117		4.05	0.5
401-2-G02-081717	G	02	401-2	94.4		28.3		360		4.27	1
401-2-G02-081717-D	G	02	401-2	94.6		32.1		368		4.27	1
401-2-G03-081717	G	03	401-2	92.0		60.4		1030		4.08	0.5
401-2-G04-081717	G	04	401-2	93.2		61.8		1060		4.04	2
401-2-G05-081717	G	05	401-2	95.2		42.3		423		4.12	1
401-2-G06-081617	G	06	401-2	95.4		84.3		907	J+	4.97	0.5
401-2-G07-081617	G	07	401-2	94.1		63.0		357	J+	5.24	1
401-2-G08-081617	G	08	401-2	91.9		35.2		641	J+	5.17	0.5
401-2-G09-081617	G	09	401-2	91.7		41.8		551	J+	4.56	0
401-2-G10-081617	G	10	401-2	91.0		54.8		646	J+	4.11	0.5
401-2-H01-081717	H	01	401-2	94.5		45.2		1100		4.40	1
401-2-H02-081717	H	02	401-2	92.9		68.3		1280		4.03	2
401-2-H03-081717	H	03	401-2	92.6		44.1		1110		4.12	2
401-2-H04-081717	H	04	401-2	94.8		48.8		420		4.18	na[d]
401-2-H05-081717	H	05	401-2	95.4		25.9		337		4.27	0.5
401-2-H06-081617	H	06	401-2	91.5		82.8		1000	J+	4.16	1-2
401-2-H07-081617	H	07	401-2	92.4		53.7		466	J+	5.61	0.5
401-2-H08-081617	H	08	401-2	87.7		29.5		974	J+	5.02	0.5
401-2-H09-081617	H	09	401-2	94.3		15.7		580	J+	4.53	0.5
401-2-H10-081617	H	10	401-2	95.4		22.7		475	J+	4.87	0
401-2-I01-081717	I	01	401-2	94.1		36.8		837		4.26	0.5
401-2-I02-081717	I	02	401-2	95.5		29.3		544		4.25	0.5
401-2-I03-081717	I	03	401-2	96.7		28.0		572		4.02	0.5
401-2-I04-081717	I	04	401-2	96.5		19.0		251		4.03	0.5
401-2-I05-081717	I	05	401-2	96.2		23.7		287		4.32	0.25
401-2-I06-081617	I	06	401-2	94.6		49.0		533	J+	4.34	0.5
401-2-I07-081617	I	07	401-2	85.9		65.7		384	J+	4.86	2-3
401-2-I08-081617	I	08	401-2	79.5		82.6		1100	J+	4.62	2
401-2-I09-081617	I	09	401-2	94.6		37.0		472	J+	4.02	0.5
401-2-I10-081617	I	10	401-2	94.4		29.0		287	J+	4.40	0.5
401-2-J01-081717	I	01	401-2	95.2		34.5		298		4.16	0.25
401-2-J02-081717	J	02	401-2	94.6		36.1		1100		4.01	0.25
401-2-J03-081717	J	03	401-2	96.2		20.2		394		4.07	0.5
401-2-J04-081717	J	04	401-2	62.3	R	59.4	R	850	R	4.00	0.25
401-2-J04-081717-D	J	04	401-2	96.0		62.7		839		4.00	0.25
401-2-J05-081717	J	05	401-2	95.7		79.8		893		4.05	0.5

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
401-2-J06-081617	J	06	401-2	94.7	26.4	288	J+	5.10	0
401-2-J07-081617	J	07	401-2	76.6	44.7	926	J+	5.11	1-2
401-2-J08-081617	J	08	401-2	86.3	36.9	1300	J+	4.60	0.5
401-2-J09-081617	J	09	401-2	93.8	37.4	574	J+	4.30	0.5
401-2-J10-081617	J	10	401-2	95.4	28.8	317	J+	4.77	0.5
258-1-A01-082117	A	01	258-1	98.8	13.1	159		4.81	0.5
258-1-A02-082117	A	02	258-1	98.8	11.8	97.4		4.60	1
258-1-A03-082117	A	03	258-1	98.7	18.1	320		4.05	3
258-1-A04-082117	A	04	258-1	93.8	17.6	328		4.11	1
258-1-A05-082117	A	05	258-1	97.5	17.4	246		3.98	2
258-1-A06-082117	A	06	258-1	96.9	10.1	381		4.00	2
258-1-A07-082117	A	07	258-1	97.0	14.6	125		4.96	na[d]
258-1-A08-082117	A	08	258-1	97.2	12.5	185		5.63	1
258-1-A09-082117	A	09	258-1	96.7	8.70	79.4		5.36	0.5
258-1-A10-082117	A	10	258-1	97.1	21.3	306		5.11	1
258-1-B01-082117	A	01	258-1	98.9	10.6	79.4		4.39	0.25
258-1-B02-082117	B	02	258-1	99.0	10.5	61.1		4.29	2
258-1-B03-082117	B	03	258-1	95.6	8.90	195		4.82	3
258-1-B04-082117	B	04	258-1	97.5	12.4	101		4.72	3
258-1-B05-082117	B	05	258-1	97.5	11.0	368		4.13	2
258-1-B06-082117	B	06	258-1	97.8	10.4	112		4.94	0.5
258-1-B07-082117	B	07	258-1	96.0	11.4	308		5.43	1
258-1-B08-082117	B	08	258-1	96.8	17.2	178		5.28	1
258-1-B09-082117	B	09	258-1	97.2	12.6	179		5.60	0.5
258-1-B10-082117	B	10	258-1	97.2	11.4	120		6.02	1
258-1-C01-082117	B	01	258-1	99.2	10.3	122	J-	5.62	1
258-1-C02-082117	C	02	258-1	98.9	10.4	149	J-	4.69	3
258-1-C02-082117-D	C	02	258-1	98.8	9.70	151	J-	4.69	3
258-1-C03-082117	C	03	258-1	98.9	7.90	98.8	J-	4.80	1
258-1-C04-082117	C	04	258-1	98.8	9.60	129	J-	4.96	0.5
258-1-C05-082117	C	05	258-1	97.1	7.00	214	J-	4.90	1
258-1-C06-082117	C	06	258-1	95.5	23.3	216	J-	5.05	3
258-1-C07-082117	C	07	258-1	96.3	14.2	210	J-	5.53	0.5
258-1-C08-082117	C	08	258-1	96.1	12.8	161	J-	5.97	0.5
258-1-C09-082117	C	09	258-1	97.2	15.1	211	J-	5.86	0.5
258-1-C10-082117	C	10	258-1	97.2	15.0	204	J-	6.25	1
258-1-D01-082117	C	01	258-1	98.6	4.10	33.5		5.89	0.5
258-1-D02-082117	D	02	258-1	97.5	8.90	273		5.84	0.5-1
258-1-D03-082117	D	03	258-1	96.5	10.9	191		5.55	0.5
258-1-D04-082117	D	04	258-1	99.0	8.10	243		5.08	1
258-1-D05-082117	D	05	258-1	93.4	17.4	796		4.28	0.5

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
258-1-D05-082117-D	D	05	258-1	96.4	20.2	826		4.28	0.5
258-1-D06-082117	D	06	258-1	97.9	6.60	168		5.58	0.5
258-1-D07-082117	D	07	258-1	96.4	17.2	569		5.26	1
258-1-D08-082117	D	08	258-1	96.0	11.8	243		5.72	0.5
258-1-D09-082117	D	09	258-1	95.7	17.0	244		5.43	1
258-1-D10-082117	D	10	258-1	95.9	14.2	193		5.81	2
258-1-E01-082117	E	01	258-1	94.8	12.1	324		4.88	0.5
258-1-E02-082117	E	02	258-1	98.0	5.40	76.6		6.20	1-2
258-1-E03-082117	E	03	258-1	96.3	12.5	225		5.33	1
258-1-E04-082117	E	04	258-1	97.7	12.4	381		4.71	0.5
258-1-E05-082117	E	05	258-1	96.7	12.5	230		5.01	2
258-1-E06-082117	E	06	258-1	97.2	12.0	201		4.99	0.5
258-1-E07-082117	E	07	258-1	97.5	11.9	143		5.26	0.25
258-1-E08-082117	E	08	258-1	92.6	20.4	403		6.08	2
258-1-E09-082117	E	09	258-1	95.5	15.1	229		5.58	1
258-1-E10-082117	E	10	258-1	98.0	15.7	194		5.51	2
258-1-E10-082117-D	E	10	258-1	97.1	14.7	178		5.51	2
258-1-F01-082117	F	01	258-1	96.5	8.10	129		5.29	0.5
258-1-F02-082117	F	02	258-1	97.8	6.20	99.4		5.86	0.5
258-1-F03-082117	F	03	258-1	98.6	10.0	121		6.05	1
258-1-F04-082117	F	04	258-1	98.2	13.5	217		5.46	2
258-1-F05-082117	F	05	258-1	96.5	26.0	739		4.40	0.5
258-1-F06-082117	F	06	258-1	94.2	47.2	530		4.45	3
258-1-F07-082117	F	07	258-1	95.7	22.1	228		5.86	1-2
258-1-F08-082117	F	08	258-1	96.4	22.4	346		5.20	0.5
258-1-F09-082117	F	09	258-1	96.6	16.2	195		6.41	0.5
258-1-F10-082117	F	10	258-1	98.2	11.4	153		6.10	2
258-1-G01-082117	G	01	258-1	96.4	25.5	315	J-	4.08	4
258-1-G02-082117	G	02	258-1	97.0	13.5	164	J-	5.48	1
258-1-G03-082117	G	03	258-1	98.4	11.1	172	J-	5.48	0.5
258-1-G04-082117	G	04	258-1	97.4	16.2	270	J-	4.81	0.5
258-1-G05-082117	G	05	258-1	97.1	20.8	312	J-	4.73	2
258-1-G06-082117	G	06	258-1	96.3	24.4	252	J-	4.14	1
258-1-G07-082117	G	07	258-1	98.2	10.0	94.7	J-	4.52	0.5
258-1-G08-082117	G	08	258-1	95.2	20.3	294	J-	5.17	0.5
258-1-G09-082117	G	09	258-1	97.4	12.8	179	J-	5.20	1
258-1-G10-082117	G	10	258-1	97.9	10.8	128	J-	5.97	0.5
258-1-H01-082117	G	01	258-1	96.0	14.6	225	J-	6.03	2
258-1-H02-082117	H	02	258-1	95.9	10.1	173	J-	5.62	2
258-1-H03-082117	H	03	258-1	97.6	9.10	120	J-	5.92	0.5
258-1-H04-082117	H	04	258-1	97.2	18.4	201	J-	6.04	0.5

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
258-1-H05-082117	H	05	258-1	96.3	21.8	398	J-	5.64	0.5
258-1-H06-082117	H	06	258-1	96.2	16.5	330	J-	5.92	1
258-1-H07-082117	H	07	258-1	97.1	12.3	169	J-	5.81	0.5
258-1-H08-082117	H	08	258-1	97.2	12.9	174	J-	6.10	0.25
258-1-H09-082117	H	09	258-1	96.3	22.8	312	J-	5.28	0.5
258-1-H10-082117	H	10	258-1	98.5	15.9	198	J-	5.03	0.5
258-1-I01-082117	H	01	258-1	98.3	21.7	284	J-	6.12	0.5
258-1-I02-082117	I	02	258-1	96.6	17.7	333	J-	6.30	1
258-1-I03-082117	I	03	258-1	96.9	16.3	434	J-	5.62	1
258-1-I04-082117	I	04	258-1	96.4	19.7	315	J-	5.53	0.5
258-1-I05-082117	I	05	258-1	98.0	9.20	95.5	J-	6.13	0.5
258-1-I06-082117	I	06	258-1	97.1	10.4	82.7	J-	6.16	0.5
258-1-I07-082117	I	07	258-1	97.1	13.6	185	J-	6.31	0.5
258-1-I07-082117-D	I	07	258-1	96.7	12.8	190	J-	6.31	0.5
258-1-I08-082117	I	08	258-1	97.9	12.0	153	J-	5.97	0.5
258-1-I09-082117	I	09	258-1	97.9	15.9	248	J-	5.98	0.5
258-1-I10-082117	I	10	258-1	98.1	20.3	385	J-	5.34	1
258-1-J01-082117	I	01	258-1	95.7	12.8	210	J-	5.66	1-2
258-1-J01-082117-D	J	01	258-1	95.1	13.7	231	J-	5.66	1-2
258-1-J02-082117	J	02	258-1	96.3	16.4	237	J-	6.11	0.5
258-1-J03-082117	J	03	258-1	97.9	13.4	199	J-	5.95	0.5
258-1-J04-082117	J	04	258-1	96.5	19.3	407	J-	6.17	0.5
258-1-J05-082117	J	05	258-1	96.3	13.6	210	J-	6.28	0.5
258-1-J06-082117	J	06	258-1	96.5	13.8	211	J-	5.78	0.5
258-1-J07-082117	J	07	258-1	98.2	12.7	184	J-	5.70	na[d]
258-1-J08-082117	J	08	258-1	97.7	11.7	141	J-	5.86	0.25
258-1-J09-082117	J	09	258-1	98.1	14.5	163	J-	4.97	0.5
258-1-J10-082117	J	10	258-1	98.5	20.7	266	J-	4.74	1
258-2-A01-081917	A	01	258-2	97.3	12.6	193		5.44	0.5
258-2-A02-081917	A	02	258-2	97.0	14.8	208		5.24	2
258-2-A03-081917	A	03	258-2	96.7	29.1	718		5.28	1
258-2-A04-081917	A	04	258-2	96.1	13.4	214		5.51	1
258-2-A05-081917	A	05	258-2	96.0	15.6	249		5.15	0.5
258-2-A06-081917	A	06	258-2	97.5	7.90	109		5.62	1
258-2-A07-081917	A	07	258-2	97.5	12.7	138		5.56	0.5
258-2-A08-081917	A	08	258-2	95.9	21.3	303		5.56	0.5
258-2-A09-081917	A	09	258-2	95.3	15.2	240		5.52	0.5
258-2-A10-081917	A	10	258-2	96.4	25.3	450		5.55	0.5
258-2-B01-081917	A	01	258-2	97.8	8.50	132		5.28	0.5
258-2-B02-081917	B	02	258-2	96.1	13.2	308		5.45	1
258-2-B03-081917	B	03	258-2	97.4	14.4	242		5.49	1

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]	pH Value[c]	Duff Thickness (in.)[c]
258-2-B04-081917	B	04	258-2	96.9	11.7	227	5.15	0.5
258-2-B05-081917	B	05	258-2	96.3	15.6	296	5.46	1
258-2-B06-081917	B	06	258-2	95.4	15.5	262	5.46	1
258-2-B07-081917	B	07	258-2	96.9	17.2	282	5.38	1
258-2-B08-081917	B	08	258-2	98.0	11.9	121	5.45	0.5
258-2-B09-081917	B	09	258-2	98.0	15.6	291	5.41	0.5
258-2-B10-081917	B	10	258-2	98.3	14.9	350	5.44	0.5
258-2-C01-081917	B	01	258-2	97.0	10.4	294	5.31	0.5
258-2-C02-081917	C	02	258-2	97.3	10.4	145	5.18	0.5
258-2-C03-081917	C	03	258-2	98.2	7.50	213	5.19	0.5
258-2-C04-081917	C	04	258-2	95.7	21.8	560	5.24	2
258-2-C05-081917	C	05	258-2	94.1	16.0	351	5.29	2
258-2-C06-081917	C	06	258-2	97.1	14.5	227	5.25	1
258-2-C06-081917-D	C	06	258-2	97.1	15.0	234	5.25	1
258-2-C07-081917	C	07	258-2	97.3	10.9	112	5.19	0.25
258-2-C08-081917	C	08	258-2	98.3	18.9	222	5.15	0.5
258-2-C09-081917	C	09	258-2	97.3	16.1	208	5.35	1
258-2-C10-081917	C	10	258-2	97.7	9.30	198	5.53	3
258-2-D01-081917	C	01	258-2	96.6	11.5	411	5.37	0.5
258-2-D01-081917-D	D	01	258-2	95.1	11.2	303	5.37	0.5
258-2-D02-081917	D	02	258-2	94.5	8.40	281	5.35	2
258-2-D03-081917	D	03	258-2	96.9	13.1	186	5.46	0.25
258-2-D04-081917	D	04	258-2	97.3	12.3	400	5.35	0.5
258-2-D05-081917	D	05	258-2	95.7	16.2	247	5.45	2
258-2-D06-081917	D	06	258-2	96.8	4.40	71.2	5.26	0.5
258-2-D07-081917	D	07	258-2	96.2	15.0	635	5.20	0.25
258-2-D08-081917	D	08	258-2	95.5	20.4	289	5.24	1
258-2-D09-081917	D	09	258-2	96.6	10.6	182	5.33	2
258-2-D10-081917	D	10	258-2	97.3	11.7	229	5.30	2
258-2-E01-081917	E	01	258-2	98.1	7.80	161	5.11	1
258-2-E02-081917	E	02	258-2	98.2	8.20	170	5.10	0.5
258-2-E03-081917	E	03	258-2	98.7	9.90	161	5.05	0.25
258-2-E04-081917	E	04	258-2	98.2	10.3	183	5.19	0.5
258-2-E05-081917	E	05	258-2	98.8	7.50	110	5.14	0.5
258-2-E06-081917	E	06	258-2	95.9	11.0	289	5.16	0.25
258-2-E07-081917	E	07	258-2	97.3	14.3	304	5.00	0.25
258-2-E08-081917	E	08	258-2	98.0	11.4	183	5.15	0.25
258-2-E09-081917	E	09	258-2	98.1	9.50	262	5.00	0.5
258-2-E10-081917	E	10	258-2	97.0	8.00	307	5.26	3
258-2-F01-081917	E	01	258-2	97.0	11.0	218	5.11	0.5
258-2-F02-081917	F	02	258-2	97.2	12.2	254	5.09	0.25

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]	pH Value[c]	Duff Thickness (in.)[c]
258-2-F03-081917	F	03	258-2	98.3	10.0	166	5.02	0.5
258-2-F04-081917	F	04	258-2	98.2	10.3	192	5.01	0.5
258-2-F05-081917	F	05	258-2	97.7	15.3	197	5.04	0.5
258-2-F06-081917	F	06	258-2	97.4	14.0	216	5.11	0.25
258-2-F07-081917	F	07	258-2	98.0	14.3	248	5.24	0.25
258-2-F08-081917	F	08	258-2	97.5	12.5	207	5.10	0.5
258-2-F09-081917	F	09	258-2	98.4	8.30	139	5.06	2
258-2-F10-081917	F	10	258-2	98.4	8.00	46.6	4.96	2
258-2-F10-081917-D	F	10	258-2	98.7	10.5	44.7	4.96	2
258-2-G01-081917	G	01	258-2	96.0	13.4	343	4.96	0.5
258-2-G02-081917	G	02	258-2	98.1	11.6	173	5.04	0.25
258-2-G03-081917	G	03	258-2	97.2	12.4	195	5.10	0.5
258-2-G04-081917	G	04	258-2	96.5	11.8	178	4.89	0.25
258-2-G05-081917	G	05	258-2	97.4	17.9	245	5.02	0.25
258-2-G06-081917	G	06	258-2	95.2	10.9	276	4.97	0.5
258-2-G07-081917	G	07	258-2	96.0	13.1	220	4.92	0.5
258-2-G08-081917	G	08	258-2	97.2	11.5	191	5.02	0.5
258-2-G09-081917	G	09	258-2	98.5	18.9	177	5.17	0.5
258-2-G10-081917	G	10	258-2	99.0	7.00	27.4	5.03	0
258-2-H01-081917	G	01	258-2	96.9	6.70	95.0	4.94	0.5
258-2-H01-081917-D	H	01	258-2	97.0	7.00	85.6	4.94	0.5
258-2-H02-081917	H	02	258-2	95.6	8.70	266	4.91	0.25
258-2-H03-081917	H	03	258-2	96.5	14.0	308	5.03	0.25
258-2-H04-081917	H	04	258-2	97.4	10.7	156	4.91	0.25
258-2-H05-081917	H	05	258-2	95.8	26.4	468	4.95	0.25
258-2-H06-081917	H	06	258-2	98.0	10.7	160	5.05	0.25
258-2-H07-081917	H	07	258-2	97.3	15.6	223	5.03	0.25
258-2-H08-081917	H	08	258-2	98.4	22.3	305	4.98	0.25
258-2-H09-081917	H	09	258-2	98.9	22.8	144	5.09	1
258-2-H10-081917	H	10	258-2	99.2	17.4	60.0	4.86	0
258-2-I01-081917	I	01	258-2	94.8	13.8	239	4.81	2
258-2-I02-081917	I	02	258-2	94.0	13.4	232	4.87	1
258-2-I03-081917	I	03	258-2	96.2	17.0	226	4.92	0.5
258-2-I04-081917	I	04	258-2	96.7	11.8	186	4.85	0.25
258-2-I05-081917	I	05	258-2	97.2	15.5	191	4.95	0.25
258-2-I06-081917	I	06	258-2	97.9	14.8	262	4.84	0.25
258-2-I07-081917	I	07	258-2	98.7	10.4	119	4.91	0.25
258-2-I08-081917	I	08	258-2	98.3	15.8	220	5.03	0.25
258-2-I09-081917	I	09	258-2	99.2	18.3	136	5.02	0
258-2-I10-081917	I	10	258-2	99.3	14.6	120	5.05	0
258-2-J01-081917	I	01	258-2	96.2	15.6	301	4.81	0.5

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
258-2-J02-081917	J	02	258-2	94.9	33.3	268		4.73	0.25
258-2-J03-081917	J	03	258-2	97.2	11.2	265		4.80	0.25
258-2-J04-081917	J	04	258-2	97.0	14.0	243		4.73	0.25
258-2-J05-081917	J	05	258-2	96.1	10.8	156		4.57	0.25
258-2-J05-081917-D	J	05	258-2	95.2	10.9	146		4.57	0.25
258-2-J06-081917	J	06	258-2	97.1	10.5	143		4.81	0.25
258-2-J07-081917	J	07	258-2	97.9	9.00	126		4.90	0.25
258-2-J08-081917	J	08	258-2	98.5	14.4	272		4.87	0
258-2-J09-081917	J	09	258-2	98.8	10.7	308		4.53	0
258-2-J10-081917	J	10	258-2	99.5	10.7	75.6		4.54	0
258-3-A01-082117	A	01	258-3	98.2	17.1	157	J-	5.72	0.25
258-3-A02-082117	A	02	258-3	97.9	13.6	78.5	J-	5.61	0
258-3-A03-082117	A	03	258-3	98.5	9.40	79.7	J-	5.74	0
258-3-A04-082117	A	04	258-3	98.1	11.8	165	J-	5.93	0
258-3-A05-082117	A	05	258-3	98.3	8.30	109	J-	5.88	0
258-3-A06-082117	A	06	258-3	97.0	14.2	205	J-	6.30	0.25
258-3-A07-082117	A	07	258-3	97.6	9.90	126	J-	5.80	0.25
258-3-A08-082117	A	08	258-3	97.1	15.7	245	J-	6.04	0.25
258-3-A09-082117	A	09	258-3	97.7	11.9	170	J-	5.77	0.25
258-3-A10-082117	A	10	258-3	97.8	13.7	290	J-	6.34	0
258-3-B01-082117	A	01	258-3	97.5	14.6	145	J-	6.31	0
258-3-B02-082117	B	02	258-3	98.1	8.50	61.9	J-	6.17	0
258-3-B03-082117	B	03	258-3	97.9	12.6	137	J-	5.83	0
258-3-B04-082117	B	04	258-3	98.2	10.9	86.5	J-	5.86	0
258-3-B05-082117	B	05	258-3	97.8	8.10	98.4	J-	6.23	0
258-3-B06-082117	B	06	258-3	97.4	21.1	371	J-	5.87	0
258-3-B07-082117	B	07	258-3	98.2	10.8	133	J-	6.00	0
258-3-B08-082117	B	08	258-3	97.4	22.7	688	J-	5.92	0
258-3-B09-082117	B	09	258-3	97.2	13.4	383	J-	5.86	0
258-3-B10-082117	B	10	258-3	98.3	9.20	96.3	J-	5.76	0
258-3-B10-082117-D	B	10	258-3	98.3	8.10	51.2		5.76	0
258-3-C01-082217	C	01	258-3	97.8	8.10	23.9		6.06	0
258-3-C02-082217	C	02	258-3	98.1	5.60	24.4		5.33	0
258-3-C03-082217	C	03	258-3	98.0	9.00	54.7		4.88	0
258-3-C04-082217	C	04	258-3	97.5	17.3	217		5.42	0
258-3-C05-082217	C	05	258-3	97.3	8.30	71.6		5.56	0
258-3-C06-082217	C	06	258-3	97.8	10.3	91.3		5.66	0
258-3-C07-082217	C	07	258-3	98.1	10.5	115		5.46	0
258-3-C08-082217	C	08	258-3	98.2	8.90	108		6.16	0
258-3-C09-082217	C	09	258-3	98.5	9.50	111		6.63	0
258-3-C10-082217	C	10	258-3	97.9	18.2	284		6.33	0

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
258-3-D01-082217	C	01	258-3	96.3	18.2	297		6.69	0
258-3-D02-082217	D	02	258-3	98.3	5.30	54.6		6.51	0
258-3-D03-082217	D	03	258-3	98.4	4.20	26.2		5.71	0
258-3-D04-082217	D	04	258-3	98.3	4.80	51.0		5.75	0
258-3-D05-082217	D	05	258-3	98.3	5.50	67.4		5.93	0
258-3-D06-082217	D	06	258-3	98.4	7.80	101		6.09	0
258-3-D07-082217	D	07	258-3	98.3	9.60	143		6.22	0
258-3-D08-082217	D	08	258-3	98.8	10.9	153		6.21	0
258-3-D09-082217	D	09	258-3	99.1	9.50	124		5.90	0
258-3-D09-082217-D	D	09	258-3	99.2	9.90	130		5.90	0
258-3-D10-082217	D	10	258-3	99.3	12.3	146		5.04	0
258-3-E01-082217	E	01	258-3	98.2	9.60	139		6.10	0
258-3-E02-082217	E	02	258-3	97.5	9.70	170		5.93	0.25
258-3-E03-082217	E	03	258-3	97.7	12.3	216		6.35	0
258-3-E04-082217	E	04	258-3	97.2	10.0	146		6.02	0
258-3-E05-082217	E	05	258-3	98.2	5.60	59.1		6.22	0
258-3-E06-082217	E	06	258-3	97.5	13.3	156		6.78	0.25
258-3-E07-082217	E	07	258-3	98.8	7.90	51.1		5.73	0
258-3-E08-082217	E	08	258-3	98.7	7.50	87.0		5.66	0
258-3-E09-082217	E	09	258-3	99.1	7.60	87.3		5.38	0
258-3-E10-082217	E	10	258-3	99.1	12.1	130		5.27	0
258-3-F01-082217	E	01	258-3	98.0	10.0	112		6.16	0.25
258-3-F01-082217-D	F	01	258-3	97.8	10.3	116		6.16	0.25
258-3-F02-082217	F	02	258-3	97.2	10.9	178		6.29	0.25
258-3-F03-082217	F	03	258-3	97.3	10.4	142		6.54	0.25
258-3-F04-082217	F	04	258-3	98.0	14.3	226		6.18	0
258-3-F05-082217	F	05	258-3	98.3	11.0	114		6.60	0.25
258-3-F06-082217	F	06	258-3	97.5	15.9	206		6.04	0
258-3-F07-082217	F	07	258-3	98.2	14.5	137		6.44	0
258-3-F08-082217	F	08	258-3	99.1	14.2	121		6.06	0
258-3-F09-082217	F	09	258-3	98.8	16.7	224		5.11	0
258-3-F10-082217	F	10	258-3	99.1	10.7	216		5.74	0
258-3-G01-082217	G	01	258-3	94.9	12.5	178	J+	6.26	0.25
258-3-G02-082217	G	02	258-3	96.0	14.8	2350	J+	6.40	0.25
258-3-G03-082217	G	03	258-3	97.3	11.5	91.9	J+	6.22	0.25
258-3-G04-082217	G	04	258-3	96.5	11.2	90.3	J+	6.28	0.25
258-3-G05-082217	G	05	258-3	96.1	18.6	170	J+	6.31	0
258-3-G06-082217	G	06	258-3	97.4	11.4	109	J+	5.80	0
258-3-G07-082217	G	07	258-3	97.1	14.7	249	J+	6.29	0.25
258-3-G08-082217	G	08	258-3	97.8	20.2	154	J+	5.76	0
258-3-G09-082217	G	09	258-3	98.9	7.90	27.5	J+	5.30	0

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
258-3-G10-082217	G	10	258-3	98.9	7.60	74.9	J+	5.93	0.25
258-3-H01-082217	G	01	258-3	90.7	19.1	999	J+	5.31	0.5
258-3-H02-082217	H	02	258-3	93.0	21.3	342	J+	5.16	1
258-3-H03-082217	H	03	258-3	86.2	8.00	198	J+	4.72	2
258-3-H04-082217	H	04	258-3	96.3	12.1	169	J+	5.17	2
258-3-H05-082217	H	05	258-3	97.2	11.5	155	J+	6.14	0.25
258-3-H06-082217	H	06	258-3	97.2	17.0	225	J+	6.01	0
258-3-H07-082217	H	07	258-3	97.4	15.2	188	J+	6.04	0
258-3-H07-082217-D	H	07	258-3	97.5	17.2	188		6.04	0
258-3-H08-082217	H	08	258-3	97.9	12.6	150	J+	5.97	0.25
258-3-H09-082217	H	09	258-3	98.7	7.60	85.4	J+	5.41	0.25
258-3-H10-082217	H	10	258-3	98.4	7.50	85.0	J+	5.66	0.25
258-3-I01-082217	I	01	258-3	94.8	15.2	532		5.93	0.5
258-3-I02-082217	I	02	258-3	94.3	12.1	223		5.65	0.5
258-3-I03-082217	I	03	258-3	92.4	22.9	598		4.92	1-2
258-3-I04-082217	I	04	258-3	96.5	13.6	231		6.38	0.25
258-3-I05-082217	I	05	258-3	97.5	9.90	124		6.58	0
258-3-I06-082217	I	06	258-3	98.5	4.40	31.9		6.14	1
258-3-I07-082217	I	07	258-3	94.0	21.0	426		4.61	1
258-3-I08-082217	I	08	258-3	97.4	13.3	249		5.55	0.5
258-3-I09-082217	I	09	258-3	95.2	13.3	516		5.93	1
258-3-I10-082217	I	10	258-3	95.3	20.8	412		5.97	1
258-3-J01-082217	I	01	258-3	94.6	21.4	796		5.99	0.25
258-3-J02-082217	J	02	258-3	95.1	16.8	364		5.66	2-3
258-3-J03-082217	J	03	258-3	94.8	17.6	548		6.19	0.25
258-3-J04-082217	J	04	258-3	95.3	13.9	231		6.10	0.25
258-3-J04-082217-D	J	04	258-3	95.9	13.0	213		6.10	0.25
258-3-J05-082217	J	05	258-3	96.9	12.4	179		6.14	0.25
258-3-J06-082217	J	06	258-3	97.6	12.7	211		5.82	0.5
258-3-J07-082217	J	07	258-3	96.8	13.9	237		5.65	0.5
258-3-J08-082217	J	08	258-3	97.5	14.7	192		6.11	0.25
258-3-J09-082217	J	09	258-3	96.1	13.6	297		5.95	1
258-3-J10-082217	J	10	258-3	96.6	9.30	142		6.15	0.5
441-1-A01-082217	A	01	441-1	96.3	17.0	115		5.98	0
441-1-A02-082217	A	02	441-1	88.3	25.4	1310		5.67	0.25
441-1-A03-082217	A	03	441-1	87.6	10.7	1910		5.71	0.25
441-1-A04-082217	A	04	441-1	89.8	23.8	549		5.76	0.25
441-1-A05-082217	A	05	441-1	90.3	21.3	571		5.68	0.5
441-1-A06-082217	A	06	441-1	89.0	18.3	1130		5.76	0.5
441-1-A07-082217	A	07	441-1	91.5	17.6	96.8		5.93	0.25
441-1-A08-082217	A	08	441-1	89.0	33.0	1280		5.63	2

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]		Arsenic (mg/kg dw)[a]		Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
441-1-A08-082217-D	A	08	441-1	85.6		28.5		1360		5.63	2
441-1-A09-082217	A	09	441-1	93.1		20.5		248		5.68	0.25
441-1-A10-082217	A	10	441-1	88.5		36.7		554		5.60	1
441-1-B01-082217	B	01	441-1	61.8	R	14.6	R	159	R	5.98	0.25
441-1-B02-082217	B	02	441-1	95.5		15.9		160		5.95	0.25
441-1-B03-082217	B	03	441-1	84.7		8.10		544		6.12	0.5
441-1-B04-082217	B	04	441-1	89.6		18.5		803		6.31	0.25
441-1-B05-082217	B	05	441-1	92.2		26.2		550		5.18	0.25
441-1-B06-082217	B	06	441-1	92.5		30.0		2150		5.83	0.25
441-1-B07-082217	B	07	441-1	93.6		22.7		222		6.27	0.5
441-1-B08-082217	B	08	441-1	94.7		17.1		237		5.92	0.25
441-1-B09-082217	B	09	441-1	95.0		23.9		277		5.88	0.25
441-1-B10-082217	B	10	441-1	93.3		36.0		932		5.96	0.5
441-1-C01-082217	C	01	441-1	90.3		23.1		239		5.35	0.25
441-1-C02-082217	C	02	441-1	92.3		17.1		747		6.39	0.25
441-1-C03-082217	C	03	441-1	93.0		19.1		61.6		5.75	0.5
441-1-C04-082217	C	04	441-1	93.8		23.2		115		5.90	0.25
441-1-C05-082217	C	05	441-1	94.8		24.1		367		5.43	0.25
441-1-C06-082217	C	06	441-1	97.1		25.2		60.8		5.77	0.25
441-1-C07-082217	C	07	441-1	92.4		21.5		376		6.18	0.25
441-1-C08-082217	C	08	441-1	96.5		14.1		21.7			0.25
441-1-C09-082217	C	09	441-1	97.3		22.3		231		6.05	0.5
441-1-C10-082217	C	10	441-1	94.8		76.6		1770		5.48	0.5
441-1-D01-082217	C	01	441-1	94.0		17.8		199	J-	6.25	0.25
441-1-D02-082217	D	02	441-1	97.1		15.2		151	J-	5.99	0.25
441-1-D03-082217	D	03	441-1	94.4		15.0		171	J-	5.86	0.25
441-1-D04-082217	D	04	441-1	95.1		25.3		267	J-	5.96	0.25
441-1-D05-082217	D	05	441-1	94.2		23.3		140	J-	6.00	0.25
441-1-D06-082217	D	06	441-1	95.1		47.3		596	J-	6.06	0.25
441-1-D07-082217	D	07	441-1	91.0		34.1		562	J-	5.91	0.25
441-1-D08-082217	D	08	441-1	92.5		40.9		339	J-	6.03	0.25
441-1-D09-082217	D	09	441-1	94.2		52.6		1150	J-	5.62	0.25
441-1-D10-082217	D	10	441-1	96.8		46.0		361	J-	5.41	1
441-1-D10-082217-D	D	10	441-1	96.2		37.2		343		5.41	1
441-1-E01-082217	E	01	441-1	97.0		18.5		195	J-	5.97	0.25
441-1-E02-082217	E	02	441-1	95.4		17.1		203	J-	6.10	0.25
441-1-E03-082217	E	03	441-1	95.0		44.0		893	J-	5.11	1
441-1-E04-082217	E	04	441-1	94.1		25.2		368	J-	5.59	0.25
441-1-E05-082217	E	05	441-1	92.3		46.3		608	J-	5.72	0.5
441-1-E06-082217	E	06	441-1	91.9		42.1		809	J-	5.93	0.25
441-1-E07-082217	E	07	441-1	92.9		42.8		831	J-	6.35	0.25

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
441-1-E08-082217	E	08	441-1	90.5	32.5	594	J-	5.80	0.5
441-1-E09-082217	E	09	441-1	95.2	40.6	434	J-	6.29	0.25
441-1-E10-082217	E	10	441-1	96.1	31.3	306	J-	6.24	0.25
441-1-F01-082217	E	01	441-1	95.3	16.3	204		6.27	0.25
441-1-F02-082217	F	02	441-1	93.6	24.1	255		5.72	0.25
441-1-F03-082217	F	03	441-1	94.6	29.2	434		6.34	1
441-1-F04-082217	F	04	441-1	92.4	37.6	556		5.92	1
441-1-F05-082217	F	05	441-1	90.7	28.1	325		5.86	0.5
441-1-F06-082217	F	06	441-1	93.9	35.9	269		6.57	0.25
441-1-F06-082217-D	F	06	441-1	93.0	34.1	280		6.57	0.25
441-1-F07-082217	F	07	441-1	94.1	16.3	123		5.97	1
441-1-F08-082217	F	08	441-1	90.9	15.8	78.2		6.29	0.5
441-1-F09-082217	F	09	441-1	92.5	38.7	1060		6.18	0.5
441-1-F10-082217	F	10	441-1	94.5	41.1	613		5.84	0.25
441-1-G01-082217	G	01	441-1	95.0	22.8	437		6.17	0.25
441-1-G02-082217	G	02	441-1	93.8	28.2	453		5.85	1
441-1-G03-082217	G	03	441-1	90.2	28.6	272		6.11	1
441-1-G04-082217	G	04	441-1	91.7	33.7	417		6.66	1
441-1-G05-082217	G	05	441-1	92.6	21.3	248		6.65	0.5
441-1-G06-082217	G	06	441-1	91.8	21.9	323		6.36	0.25
441-1-G07-082217	G	07	441-1	92.3	26.7	225		6.01	0.5
441-1-G08-082217	G	08	441-1	93.1	19.5	151		6.49	0.5
441-1-G09-082217	G	09	441-1	91.9	44.5	649		6.53	0.5
441-1-G10-082217	G	10	441-1	96.4	9.80	32.4		6.16	0.5
441-1-H01-082217	G	01	441-1	93.5	22.7	316		6.01	1
441-1-H02-082217	H	02	441-1	92.2	29.8	541		5.75	2
441-1-H03-082217	H	03	441-1	94.2	23.8	346		5.64	1
441-1-H04-082217	H	04	441-1	92.7	21.7	178		6.45	1
441-1-H05-082217	H	05	441-1	92.5	13.2	77.4		6.57	1
441-1-H06-082217	H	06	441-1	90.7	22.2	475		6.37	0.25
441-1-H07-082217	H	07	441-1	93.0	22.5	165		6.24	0.5
441-1-H08-082217	H	08	441-1	93.6	26.6	453		6.52	0.5
441-1-H09-082217	H	09	441-1	93.2	38.0	690		5.67	0.5
441-1-H10-082217	H	10	441-1	93.4	35.0	393		5.79	0.5
441-1-I01-082217	H	01	441-1	94.3	35.3	257	J-	6.14	0.5
441-1-I02-082217	I	02	441-1	95.5	32.6	174	J-	6.34	0.5
441-1-I03-082217	I	03	441-1	95.4	33.6	550	J-	6.35	0.5
441-1-I04-082217	I	04	441-1	94.4	21.9	207	J-	6.17	0.5
441-1-I04-082217-D	I	04	441-1	94.7	20.3	156	J-	6.17	0.5
441-1-I05-082217	I	05	441-1	92.5	19.3	347	J-	5.71	1
441-1-I06-082217	I	06	441-1	92.2	35.1	591	J-	4.96	0.25

Table 3-2. Phase IA Part 1 pH, Duff Thickness, and Arsenic and Lead Concentrations

Sample ID	Row Location	Column Location	Test Plot	Total Solids (%)[a,b]	Arsenic (mg/kg dw)[a]	Lead (mg/kg dw)[a]		pH Value[c]	Duff Thickness (in.)[c]
441-1-I07-082217	I	07	441-1	91.7	33.5	569	J-	6.40	0.25
441-1-I08-082217	I	08	441-1	91.6	27.3	941	J-	6.45	0.5
441-1-I09-082217	I	09	441-1	92.6	17.6	144	J-	6.47	2
441-1-I10-082217	I	10	441-1	93.5	25.9	248	J-	6.34	1
441-1-J01-082217	I	01	441-1	96.9	24.4	351	J-	6.32	1
441-1-J02-082217	J	02	441-1	94.4	18.9	143	J-	5.37	1
441-1-J03-082217	J	03	441-1	94.0	27.0	216	J-	6.47	0.5
441-1-J04-082217	J	04	441-1	94.4	41.0	533	J-	6.10	0.5
441-1-J05-082217	J	05	441-1	93.3	22.8	245	J-	6.68	0.25
441-1-J06-082217	J	06	441-1	93.2	31.1	635	J-	6.14	0.5
441-1-J07-082217	J	07	441-1	92.8	28.8	328	J-	5.98	2
441-1-J07-082217-D	J	07	441-1	92.3	21.6	217	J-	5.98	2
441-1-J08-082217	J	08	441-1	94.9	22.3	160	J-	6.50	0.5
441-1-J09-082217	J	09	441-1	94.6	24.2	206	J-	5.99	0.25
441-1-J10-082217	J	10	441-1	91.2	35.6	352	J-	6.16	1

Notes:

[a] Total solids measurement and arsenic and lead analyses performed by ALS Environmental, Kelso, Washington.

[b] Measured as wet weight.

[c] Duff thickness and pH values measured in the field during sample collection.

[d] Duff thickness was not recorded for this sample location.

J- - The result is an estimated quantity, but the result may be biased low.

J+ - The result is an estimated quantity, but the result may be biased high.

R - The data are unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

na - not available

Table 3-3. Phase IA Part 1 Summary Statistics for Lead Concentrations in Soil by Test Plot and Subplot

Test Plots[a]						Subplots (Test Plot Quadrants)[a]								
		Concentration (mg/kg dw)						Concentration (mg/kg dw)				CV	GSD	Variability /
Test Plot ID	N	Mean	Minimum	Maximum	σ	Subplot ID	N	Mean	Minimum	Maximum	σ	(unitless)[a]	(unitless)[a]	Dispersion[b]
401-1	100	556	134	2,060	60	A	25	450	198	1,160	54	0.605	1.75	Low
						B	25	569	134	2,060	68			
						C	25	500	231	1,020	40			
						D	25	704	190	1,740	58			
401-2	100	654	117	1,800	50	A	25	651	273	1,210	41	0.497	1.60	Low
						B	25	669	222	1,430	49			
						C	25	677	117	1,800	61			
						D	25	621	287	1,300	44			
258-1	100	230	33.5	826	55	A	25	219	33.5	826	72	0.551	1.67	Low
						B	25	222	79.4	569	46			
						C	25	256	95.5	739	53			
						D	25	224	82.7	530	44			
258-2	100	231	27.4	718	47	A	25	266	110	718	51	0.471	1.56	Low
						B	25	251	71.2	635	46			
						C	25	230	95.0	468	32			
						D	25	177	27.4	276	44			
258-3	100	216	23.9	2,350	124	A	25	109	23.9	297	61	1.24	2.62	Low
						B	25	184	51.1	688	73			
						C	25	374	90.3	2,350	124			
						D	25	199	27.5	516	59			
441-1	99[c]	453	21.7	2,150	85	A	24[c]	468	61.6	1,910	91	0.851	2.09	Low
						B	25	626	21.7	2,150	84			
						C	25	323	77.4	556	41			
						D	25	395	32.4	1,060	66			

Notes:

[a]Where a duplicate sample result is available, the highest of the parent concentration and the duplicate sample concentration was used for the statistical analyses.

[b]The Interstate Technology and Regulatory Council (ITRC 2012) defines low variability/dispersion as ≤ 1.5 coefficient of variation (CV) and ≤ 3 geometric standard deviation (GSD), and high variability/dispersion as > 3 CV and > 4.5 GSD.

[c]Sample 441-1-B01-082217 was rejected during data validation.

N - number of sample results

σ - standard deviation as percentage of the mean

Table 4-1. Phase IA Part 2 Soil Physical Properties

Characterization Sample ID	Sample Depth (in. bgs) Start	End	Description and Identification[a]	In Situ Bulk Density[b] (pcf)	In Situ Hydraulic Conductivity (cm/sec)[b]	Soil Moisture Holding Capacity (%)[b]
Test Plot 401-1						
D-401-1A-100417-0-3	0	3	Brown, silty SAND with organics (SM)	34.1	N/A	N/A
D-401-1A-100417-6-9	6	9	Olive brown, silty SAND with organics (SM)	79.9	N/A	N/A
D-401-1A-100417-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.0069	46.8
D-401-1B-100417-0-3	0	3	Brown, silty SAND with organics (SM)	26.3	N/A	N/A
D-401-1B-100417-6-9	6	9	Olive brown, silty SAND with organics (SM)	89.0	N/A	N/A
D-401-1B-100417-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.011	46.4
D-401-1C-100417-0-3	0	3	Brown, silty SAND with organics (SM)	64.4	N/A	N/A
D-401-1C-100417-6-9	6	9	Brown, silty SAND with organics (SM)	90.9	N/A	N/A
D-401-1C-100417-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.0042	46.8
D-401-1D-100417-0-3	0	3	Brown, silty SAND with organics (SM)	63.1	N/A	N/A
D-401-1D-100417-6-9	6	9	Grayish brown, silty SAND with organics (SM)	92.6	N/A	N/A
D-401-1D-100417-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.0073	33.6
Test Plot 401-2						
D-401-2A-100517-0-3	0	3	Grayish brown, silty SAND with organics (SM)	60.5	N/A	N/A
D-401-2A-100517-6-9	6	9	Brown, silty SAND with organics (SM)	86.1	N/A	N/A
D-401-2A-100517-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.013	36.2
D-401-2B-100517-0-3	0	3	Grayish brown, silty SAND with organics (SM)	48.7	N/A	N/A
D-401-2B-100517-6-9	6	9	Brown, silty SAND with organics (SM)	90.7	N/A	N/A
D-401-2B-100517-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.0046	29.7
D-401-2C-100517-0-3	0	3	Brown, silty SAND with organics (SM)	82.6	N/A	N/A
D-401-2C-100517-6-9	6	9	Brown, silty SAND with gravel and organics (SM)	97.6	N/A	N/A
D-401-2C-100517-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.0031	30.2
D-401-2D-100517-0-3	0	3	Brown, silty SAND with organics (SM)	44.2	N/A	N/A
D-401-2D-100517-6-9	6	9	Brown, silty SAND with gravel and organics (SM)	80.8	N/A	N/A
D-401-2D-100517-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.012	49.2
Test Plot 258-3						
D-258-3A-100717-0-3	0	3	Brown, silty SAND with organics (SM)	48.0	N/A	N/A
D-258-3A-100717-6-9	6	9	Olive brown, silty SAND with organics (SM)	80.5	N/A	N/A
D-258-3A-100717-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.014	58.4
D-258-3B-100717-0-3	0	3	Dark brown, silty SAND with organics (SM)	68.8	N/A	N/A
D-258-3B-100717-6-9	6	9	Olive brown, silty SAND with organics (SM)	85.1	N/A	N/A
D-258-3B-100717-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.001	36.4

Table 4-1. Phase IA Part 2 Soil Physical Properties

Characterization Sample ID	Sample Depth (in. bgs) Start	End	Description and Identification[a]	In Situ Bulk Density[b] (pcf)	In Situ Hydraulic Conductivity (cm/sec)[b]	Soil Moisture Holding Capacity (%)[b]
Test Plot 258-3 (continued)						
D-258-3C-100717-0-3	0	3	Brown, silty SAND with organics (SM)	50.3	N/A	N/A
D-258-3C-100717-6-9	6	9	Olive brown, silty SAND with organics (SM)	78.5	N/A	N/A
D-258-3C-100717-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.0047	51.3
D-258-3D-100717-0-3	0	3	Dark brown, silty SAND with organics (SM)	60.2	N/A	N/A
D-258-3D-100717-6-9	6	9	Dark brown, silty SAND with organics (SM)	75.4	N/A	N/A
D-258-3D-100717-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.0021	38.9
Test Plot 441-1						
D-441-1A-100617-0-3	0	3	Dark brown, silty SAND with organics (SM)	28.4	N/A	N/A
D-441-1A-100617-6-9	6	9	Dark brown, silty SAND with gravel and organics (SM)	76.8	N/A	N/A
D-441-1A-100617-0-6	0	6	Brown, silty SAND with organics (SM)	N/A	0.094	48.0
D-441-1B-100617-0-3	0	3	Olive brown, silty SAND with organics (SM)	58.3	N/A	N/A
D-441-1B-100617-6-9	6	9	Olive brown, silty SAND with gravel and organics (SM)	81.5	N/A	N/A
D-441-1B-100617-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.0041	31.6
D-441-1C-100617-0-3	0	3	Dark brown, silty SAND with organics (SM)	59.2	N/A	N/A
D-441-1C-100617-6-9	6	9	Olive brown, silty SAND with gravel and organics (SM)	81.6	N/A	N/A
D-441-1C-100617-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.0013	41.8
D-441-1D-100617-0-3	0	3	Olive brown, silty SAND with organics (SM)	54.4	N/A	N/A
D-441-1D-100617-6-9	6	9	Olive brown, silty SAND with organics (SM)	70.6	N/A	N/A
D-441-1D-100617-0-6	0	6	Dark brown, silty SAND with organics (SM)	N/A	0.0049	52.2

Notes:

[a]Soil description and classification based upon American Society of Testing and Materials Method D2488-00.

[b]Analyses performed by HWA GeoSciences, Bothell, Washington.

N/A - not analyzed

SM - silty sand soils classification

Table 4-2. Phase IA Part 2 Grain Size Distribution for Incremental Composite Soil Samples (0 to 3 in. bgs)

		Grain Size Analysis (%)			
Sample ID	Subplot	Fines (<2 µm)[a]	Silt (2-50 µm)[a]	Sand (50 µm-2 mm)[a]	Gravel (>2 mm)[a]
Test Plot 401-1					
IC-401-1A-101017	A	3.50	12.9	83.6	14.8
IC-401-1B-101017	B	3.57	17.0	79.4	31.5
IC-401-1C-101117	C	2.80	15.6	81.6	24.7
IC-401-1C-101117-D	C	3.06	14.7	82.2	20.7
IC-401-1D-101117	D	3.57	18.6	77.8	32.4
Test Plot 401-2					
IC1-401-2A-101217	A	3.89	18.0	78.1	27.1
IC2-401-2A-101217	A	4.40	20.5	75.1	24.8
IC3-401-2A-101217	A	4.21	19.3	76.5	33.5
IC-401-2B-101117	B	3.89	21.4	74.7	36.7
IC-401-2C-101217	C	3.82	20.5	75.7	42.7
IC-401-2D-101217	D	4.52	25.1	70.4	44.3
Test Plot 258-3					
IC-258-3A-101717	A	2.93	15.8	81.3	3.30
IC-258-3B-101717	B	2.93	12.9	84.2	1.34
IC-258-3C-101717	C	2.87	17.6	79.5	2.81
IC-258-3D-101717	D	2.49	12.8	84.7	2.03
Test Plot 441-1					
IC-441-1A-101617	A	3.95	34.1	61.9	36.5
IC-441-1B-101617	B	3.12	39.3	57.6	38.1
IC-441-1C-101617	C	4.01	32.7	63.3	34.1
IC-441-1D-101617	D	2.99	39.2	57.8	32.6

Notes:

Analyses performed by Ohio State University (OSU) laboratory, Cincinnati, Ohio.

Analysis of field duplicates and triplicates found all grain size analyses to be within control limits.

[a]Grain size analysis classification based on Gee and Bauder (1986).

Table 4-3. Phase IA Part 2 TAL Metals Data for Discrete Soil Samples from <2-mm Fraction

Sample ID	Sample Start Depth (in. bgs)	Sample End Depth (in. bgs)	Aluminum (mg/kg dw)	Antimony (mg/kg dw)	Arsenic (mg/kg dw)	Barium (mg/kg dw)	Beryllium (mg/kg dw)	Cadmium (mg/kg dw)	Calcium (mg/kg dw)	Chromium (mg/kg dw)	Cobalt (mg/kg dw)	Copper (mg/kg dw)	Iron (mg/kg dw)	Lead (mg/kg dw)	Magnesium (mg/kg dw)	Manganese (mg/kg dw)	Nickel (mg/kg dw)	Phosphorus[a] (mg/kg dw)	Potassium (mg/kg dw)	Selenium (mg/kg dw)	Silver (mg/kg dw)	Sodium (mg/kg dw)	Thallium (mg/kg dw)	Vanadium (mg/kg dw)	Zinc (mg/kg dw)
Test Plot 401-1																									
D-401-1A-101317-0-2	0	2	4770 J+	47.6 J+	16.9	60.2 J+	0.120 J	8.35	3890	13.7 J+	1.99	40.6	8760	1010	1120	225 J+	5.00	611	790 J+	4.68 J	0.200 U	87.0	0.470 J	20.0	724
D-401-1A-101317-2-4	2	4	11000 J+	21.8 J+	39.3	106 J+	0.365 J	4.60	1800	20.0 J+	4.59	27.1	18800	487	2410	309 J+	11.3	909	1020 J+	2.58 J	0.200 U	112	0.594 J	45.4	175
D-401-1A-101317-4-6	4	6	12700 J+	10.5 J+	29.8	146 J+	0.440 J	8.13	1650	26.3 J+	5.78	22.1	21900	199	2450	598 J+	11.8	918	911 J+	3.40 J	0.200 U	102	0.391 J	52.6	151
D-401-1A-101317-6-8	6	8	12900 J+	5.22 J+	7.72	130 J+	0.449 J	13.8	1900	27.3 J+	5.48	12.6	23200	41.2	2390	546 J+	13.3	870	872 J+	3.66 J	0.200 U	97.9	0.503 J	57.1	260
D-401-1A-101317-8-10	8	10	13400 J+	3.59 J	3.85	130 J+	0.437 J	2.55	2250	27.4 J+	5.32	12.9	24600	14.2	2640	382 J+	12.7	806	1060 J+	3.42 J	0.200 U	122	0.653 J	60.3	335
D-401-1A-101317-10-12	10	12	12700 J+	2.61 J	3.62	110 J+	0.378 J	0.900 J	2140	22.3 J+	5.34	11.6	19500	14.1	3200	325 J+	11.2	814	1020 J+	2.90 J	0.200 U	102	0.611 J	47.6	247
D-401-1B-101317-0-2	0	2	16100 J+	9.62 J+	47.5	152 J+	0.584 J	14.4	2730	28.6 J+	6.88	20.8	26900	113	2630	854 J+	14.4	1280	1140 J+	4.92 J	0.200 U	166	0.569 J	68.9	449
D-401-1B-101317-2-4	2	4	15700 J+	3.89 J	6.13	130 J+	0.455 J	1.70	3460	27.4 J+	6.43	13.2	24200	14.6	2890	512 J+	13.3	1220	1100 J+	4.01 J	0.200 U	157	0.428 J	60.0	225
D-401-1B-101317-2-4-D	2	4	16600 J+	3.85 J	7.09	142 J+	0.515 J	1.82	2990	27.9 J+	6.53	15.5	25400	14.6	3050	556 J+	15.0	1060	1140 J+	3.96 J	0.200 U	131	0.658 J	61.6	237
D-401-1B-101317-4-6	4	6	17600 J+	4.19 J	10.1	114 J+	0.524 J	2.66	2670	36.6 J+	6.75	16.2	28200	32.1	3010	482 J+	14.9	1140	1090 J+	3.16 J	0.200 U	167	0.713 J	71.6	113
D-401-1B-101317-6-8	6	8	17600 J+	3.16 J	5.32	119 J+	0.568 J	1.95	2500	35.4 J+	6.36	15.1	27200	11.0	2730	463 J+	15.5	1010	946 J+	1.96 J	0.200 U	135	0.431 J	68.8	146
D-401-1B-101317-8-10	8	10	17400 J+	2.07 J	3.60	116 J+	0.536 J	0.499 J	2720	29.9 J+	5.88	15.7	24300	6.45	3020	347 J+	14.4	898	990 J+	3.45 J	0.200 U	208	0.762 J	63.0	94.7
D-401-1B-101317-10-12	10	12	17600 J+	2.17 J	3.67	121 J+	0.547 J	0.497 J	2310	29.6 J+	6.82	15.9	27200	7.03	2890	337 J+	13.7	913	966 J+	3.56 J	0.200 U	150	0.493 J	68.4	51.1
D-401-1C-101317-0-2	0	2	11100 J+	20.5 J+	38.3	148 J+	0.383 J	14.8	3300	22.7 J+	5.04	28.2	17700	884	2400	544 J+	11.2	757	967 J+	4.93 J	0.200 U	113	0.741 J	39.8	550
D-401-1C-101317-2-4	2	4	13700 J+	6.86 J+	30.6	121 J+	0.422 J	4.97	3070	27.4 J+	5.81	19.8	23900	82.4	2990	497 J+	12.7	869	1190 J+	3.10 J	0.200 U	147	0.365 J	60.6	264
D-401-1C-101317-4-6	4	6	15000 J+	3.66 J	5.70	122 J+	0.478 J	0.761 J	2860	38.9 J+	6.14	13.8	28700	11.7	2660	447 J+	13.3	872	1010 J+	2.46 J	0.200 U	146	0.391 J	76.4	74.4
D-401-1C-101317-6-8	6	8	15600 J+	2.94 J	4.16	110 J+	0.511 J	0.545 J	2520	35.8 J+	6.45	13.5	29900	7.39	2910	375 J+	14.6	911	920 J+	2.07 J	0.200 U	126	0.747 J	78.6	48.0
D-401-1C-101317-8-10	8	10	16100 J+	2.44 J	4.60	105 J+	0.543 J	0.514 J	2580	29.5 J+	6.25	14.3	27700	8.27	2820	368 J+	13.4	838	991 J+	2.72 J	0.200 U	172	0.562 J	71.0	45.9
D-401-1C-101317-10-12	10	12	15000 J+	2.78 J	2.94	102 J+	0.489 J	0.473 J	2580	28.4 J+	5.76	13.8	26800	6.85	2850	331 J+	13.0	850	890 J+	2.79 J	0.200 U	146	0.788 J	71.5	47.4
D-401-1D-101317-0-2	0	2	13200 J+	32.4 J+	45.0	145 J+	0.446 J	18.9	4300	26.4 J+	5.49	44.0	22600	1160	2910	617 J+	12.0	1270	1240 J+	5.44 J	0.200 U	171	0.968 J	57.1	697
D-401-1D-101317-2-4	2	4	16500 J+	9.04 J+	17.5	176 J+	0.527 J	4.35	3490	31.6 J+	6.75	19.4	27000	75.9	2770	680 J+	15.5	1200	1230 J+	4.33 J	0.200 U	178	0.975 J	69.2	432
D-401-1D-101317-4-6	4	6	17000 J+	6.02 J+	5.90	154 J+	0.610 J	1.07	3320	32.3 J+	6.66	18.4	27100	14.2	2740	520 J+	14.3	1220	1040 J+	2.96 J	0.200 U	159	0.411 J	67.7	140
D-401-1D-101317-6-8	6	8	18000 J+	3.38 J	4.67	135 J+	0.610 J	0.711 J	3240	33.8 J+	6.62	17.5	27900	10.9	2890	489 J+	14.3	1220	1080 J+	3.38 J	0.200 U	180	0.516 J	71.6	62.1
D-401-1D-101317-8-10	8	10	17600 J+	2.88 J	4.21	118 J+	0.572 J	0.603 J	2640	33.6 J+	6.42	16.7	28700	9.03	2790	472 J+	15.0	1110	916 J+	3.11 J	0.200 U	152	0.706 J	73.2	58.0
D-401-1D-101317-10-12	10	12	18800 J+	2.11 J	4.87	135 J+	0.632 J	0.568 J	2730	32.7 J+	6.75	17.8	28700	7.89	2850	439 J+	14.5	1140	1030 J+	3.38 J	0.200 U	204	0.349 J	77.7	48.4
Test Plot 401-2																									
D-401-2A-101317-0-2	0	2	17500 J+	26.9 J+	75.7	164 J+	0.609 J	23.4	3070	23.3 J+	7.96	48.5	20900	384	2550	998	12.7	1620	1420 J+	3.85 J	0.200 UJ	232	1.12 J	50.6	461
D-401-2A-101317-2-4	2	4	17600 J+	7.62 J+	19.1	177 J+	0.580 J	9.69	3010	29.0 J+	6.54	19.2	23100	71.5	2730	692	13.7	1150	1260 J+	2.34 J	0.200 UJ	227	1.04 J	57.2	754
D-401-2A-101317-4-6	4	6	17300 J+	5.21 J+	6.62	154 J+	0.557 J	3.79	3340	33.0 J+	5.93	15.4	25900	13.4	2370	571	14.2	1040	1300 J+	3.31 J	0.200 UJ	247	0.654 J	67.3	386
D-401-2A-101317-6-8	6	8	17600 J+	4.54 J	4.32	110 J+	0.509 J	0.933 J	3390	27.2 J+	7.14	19.9	26600	13.5	3870	471 J+	13.5	1090	1000 J+	2.90 J	0.200 U	156	0.768 J	66.4	225
D-401-2A-101317-8-10	8	10	16700 J+	2.64 J	4.56	133 J+	0.531 J	0.603 J	2590	28.1 J+	5.92	16.0	25800	12.7	2650	385 J+	12.9	923	934 J+	2.62 J	0.200 U	163	0.568 J	65.1	53.4
D-401-2A-101317-10-12	10	12	16900 J+	2.60 J	4.06	124 J+	0.519 J	0.484 J	2790	35.1 J+	6.42	15.3	30000	6.64	3110	363 J+	15.7	823	1030 J+	2.08 J	0.200 U	207	0.760 J	74.5	45.0
D-401-2B-101317-0-2	0	2	16100 J+	15.7 J+	34.8	130 J+	0.506 J	8.28	3750	29.9 J+	6.16	26.8	19900	329	2850	582	12.7	1270	1440 J+	3.77 J	0.200 UJ	252	0.568 J	49.4	426
D-401-2B-101317-2-4	2	4	11700 J+	36.5 J+	26.0	103 J+	0.351 J	7.79	3810	28.0 J+	4.61	35.0	21700	869	2630	347	10.5	949	1270 J+	2.99 J	0.200 UJ	196	1.09 J	56.2	555
D-401-2B-101317-4-6	4	6	17700 J+	8.04 J+	15.1	149 J+	0.570 J	12.8	3050	36.0 J+	7.49	23.0	31700	72.1	3400	751	16.5	1100	1250 J+	1.38 J	0.200 UJ	227	0.675 J	84.1	335
D-401-2B-101317-6-8	6	8	16500 J+	3.69 J	4.38	140 J+	0.509 J	0.920 J	3320	33.2 J+	6.21	14.1	28000	7.61	3180	502 J+	13.4	1100	1150 J+	3.25 J	0.200 U	188	0.593 J	71.2	309
D-401-2B-101317-8-10	8	10	16400 J+	2.82 J	4.34	146 J+	0.529 J	0.561 J	2960	32.4 J+	6.60	17.2	27700	6.80	2870	481 J+	16.3	1030	1030 J+	2.22 J	0.200 U	162	0.414 J	73.4	63.6
D-401-2B-101317-10-12	10	12	16700 J+	2.27 J	3.84	121 J+	0.484 J	0.544 J	3210	30.8 J+	6.54	15.9	25800	7.03	3670	418 J+	15.1	1060	1120 J+	3.61 J	0.200 U	166	0.468 J	66.1	50.1
D-401-2C-101317-0-2	0	2	16100 J+	37.0 J+	62.6	93.7 J+	0.503 J	6.84	3140	28.5 J+	6.21	38.3	24400	996	2830	529	13.0	1770	1220 J+	3.56 J	0.200 UJ	209	0.623 J	60.9	289
D-401-2C-101317-2-4	2	4	18200 J+	17.9 J+	69.6	164 J+	0.645 J	19.5	2750	43.1 J+	7.95	31.0	26500	335	2830	920	15.3	1650	1400 J+	2.88 J	0.200 UJ	231	0.914 J	65.0	367
D-401-2C-101317-2-4-D	2	4	17100 J+	7.63 J+	18.5	182 J+	0.536 J	10.8	2460	27.2 J+	6.12	19.4	24400	68.9	2930	666 J+	14.1	1080	1090 J+	3.28 J	0.200 U	143	0.600 J	59.9	773
D-401-2C-101317-4-6	4	6	17600 J+	8.48 J+	18.7	203 J+	0.562 J	7.94	2890	32.4 J+	6.47	20.5	25800	107	2840	686 J+	14.6	1100	1120 J+	3.83 J	0.200 U	193	0.884 J	65.9	1220
D-401-2C-101317-6-8	6	8	17600 J+	4.90 J	6.87	152 J+	0.561 J	0.898 J	3130	27.0 J+	6.01	17.1	24000	20.7	2710	527 J+	12.7	1000	1020 J+	3.12 J	0.200 U	184	0.545 J	60.1	553
D-401-2C-101317-8-10	8	10	17800 J+	3.76 J	4.09	110 J+	0.574 J	0.533 J	2930	32.9 J+	6.46	16.5	29400	10.2	3070	427 J+	14.8	1000	1010 J+	1.24 J	0.200 U	186	0.422 J	73.8	337
D-401-2C-101317-10-12	10	12	17700 J+	2.96 J	4.38	114 J+	0.599 J	0.565 J	2930	28.2 J+	6.47	16.9	26800	10.9	2730	387 J+	13.2	1030	1120 J+	3.28 J	0.200 U	211	0.430 J	69.0	324
D-401-2D-101317-0-2	0	2	12300 J+	32.1 J+	35.6	116 J+	0.386 J	11.4	4670	21.5 J+	5.41	39.5	17000	843	2140	505	10.2	1480	1460 J+	3.13 J	0.200 UJ	210	0.727 J	41.7	541
D-401-2D-101317-2-4	2	4	12600 J+	33.8 J+	42.0	124 J+	0.409 J	11.9	4150	27.2 J+	5.33	40.9	18200	901	2220	538 J+	11.0	1260	1370 J+	3.19 J	0.200 U	183	1.18 J	42.7	558
D-401-2D-101317-4-6	4	6	17400 J+	23.9 J+	54.2	177 J+	0.550 J	12.6	4290	24.1 J+	5.81	36.4	20900	564	2910	710	13.3	1770	1640 J+	3.73 J	0.200 UJ	250	0.949 J	52.3	580
D-401-2D-101317-6-8	6	8	18700 J+	8.38 J+	15.4	157 J+	0.587 J	1.92	3590	29.2 J+	6.69	17.2	27200	18.2	1740	563 J+	14.1	1230	1370 J+	2.98 J	0.200 U	198	0.432 J	68.9	350
D-401-2D-101317-8-10	8	10	19800 J+	6.21 J+	4.89	139 J+	0.633 J	0.694 J	3380	35.3 J+	7.20	15.9	29300	15.6	3040	472 J+	15.0	1070	1260 J+	2.87 J	0.200 U	235	0.348 J	77.4	97.2
D-401-2D-101317-10-12	10	12	21000 J+	3.25 J	4.57	127 J+	0.660 J	0.610 J	3040	33.1 J+	7.14	17.5	29900	11.7	2780	442 J+	14.9	1160	1310 J+	3.46 J	0.200 U	247	0.585 J	74.6	58.0
Test Plot 258-3																									
D-258-3A-101317-0-2	0	2	11200 J+	11.1 J+	21.5	123 J+	0.384 J	11.6	3680	18.8 J+	4.97	27.5	14000	474	2850	424 J+	9.3	1000	1220 J+	3.20 J	0.200 U	151	0.640 J	32.0	347
D-258-3A-101317-2-4	2	4	11600 J+	6.48 J+	22.5	118 J+	0.386 J	5.33	3230	17.8 J+	4.17	18.0	12300	85.4	2300	429 J+	10.7	1050	1060 J+	3.06 J	0.200 U	156	0.618 J	29.3	322
D-258-3A-101317-4-6	4	6	11600 J+	6.01 J+	22.9	121 J+	0.382 J	4.41	3040	17.0 J+	4.54	16.4	12900	78.8	2340	445 J+	9.36	1050	928 J+	2.13 J	0.200 U	137	0.799 J	29.7	288
D-258-3A-101317-6-8	6	8	11500 J+	4.15 J	8.12	110 J+	0.375 J	1.36	3200	15.2 J+	4.07	11.6	13600	23.9	2410	398 J+	9.90	973	855 J+	2.28 J	0.200 U	147	0.594 J	31.3	138
D-258-3A-101317-8-10	8	10	12800 J+	2.97 J	4.26	104 J+	0.408 J	0.619 J	3620	16.2 J+	4.62	10.7	14200	8.89	2470	385 J+	10.2	1020	970 J+	3.02 J	0.200 U	180	0.596 J	32.9	66.5
D-258-3A-101317-10-12	10	12	11000 J+	2.29 J	3.85	82.0 J+	0.356 J	0.602 J	3390	12.2 J+	3.52	9.12	11700	7.02	2140	298 J+	8.08	1040	803 J+	2.24 J	0.200 U	137	0.486 J	26.7	53.6
D-258-3B-101317-0-2	0	2	13900 J+	9.10 J+	35.8	132 J+	0.427 J	12.4	3320	12.3 J+	4.83	25.0	11900	216	2420	562	9.65	1350	1140 J+	2.33 J	0.200 UJ	208	0.478 J	26.7	456
D-258-3B-101317-2-4	2	4	14300 J+	5.22 J+	11.6	146 J+	0.427 J	2.83	3820	13.4 J+	4.16	13.6	12300	30.8	2450	453	9.03	1180	1120 J+	2.73 J	0.200 UJ	236	0.565 J	28.9	598
D-258-3B-101317-4-6	4	6	13500 J+	2.82 J	2.45	116 J+	0.419 J	0.533 J	3130	13.7 J+	4.13	11.0	12000	9.88	2420	362 J+	9.19	897	911 J+	3.01 J	0.200 U	169	0.498 J	26.6	56.1
D-258-3B-101317-6-8	6	8	14000 J+	2.51 J	1.91	110 J+	0.430 J	0.304 J	3260	20.8 J+	4.14	10.3	11900	4.96	2340	317 J+	9.35	923	934 J+	2.80 J	0.200 U	190	0.262 U	28.0	37.3
D-258-3B-101317-8-10	8	10	13600 J+	1.48 J	2.34	92.3 J+	0.415 J	0.250 J	2490	12.6 J+	3.89	10.2	11500	4.07	2870	279 J+	8.71	755	858 J+	2.19 J	0.200 U	164	0.530 J	26.6	32.9
D-258-3B-101317-10-12	10	12	14400 J+	1.15 J	1.96	81.8 J+	0.446 J	0.276 J	2960	12.7 J+	4.37	10.2	12900	4.05	2690	268 J+	8.95	786	907 J+	2.64 J	0.200 U	229	0.510 J	30.1	31.8
D-258-3C-101317-0-2	0	2	11100 J+	3.85 J	9.35	111 J+	0.356 J	3.19	4010	16.7 J+	4.08	14.4	13000	102	2520	391	9.75	1150	1070 J+	3.70 J	0.200 UJ	166	0.515 J	28.5	213
D-258-3C-101317-2-4	2	4	11200 J+	6.98 J+	15.9	107 J+	0.358 J	4.59	3280	18.4 J+	4.05	17.9	12100	243	2350	332	8.21	1160	1080 J+	1.84 J	0.200 UJ	169	0.375 J	28.8	198
D-258-3C-101317-2-4-D	2	4	9900 J+	6.88 J+	14.9	97.6 J+	0.317 J	4.69	2610	12.0 J+	3.33	17.4	11100	247	2220	310 J+	7.72	1080	815 J+	2.81 J	0.200 U	88.8	0.602 J	23.8	197
D-258-3C-101317-4-6	4	6	12000 J+	5.54 J+	13.1	103 J+	0.385 J	3.12	4310	16.9 J+	4.07	15.9	12600	112	2390	353	8.34	1490	1210 J+	3.04 J	0.200 UJ	188	0.421 J	36.6	146
D-258-3C-101317-6-8	6	8	11900 J+	2.63 J	3.63	80.9 J+	0.403 J	0.623 J	2600	13.9 J+	4.23	10.0	13100	9.32	2300	304	8.47	909	1000 J+	3.13 J	0.200 UJ	175	0.771 J	30.6	99.0
D-258-3C-101317-8-10	8	10	14200 J+	1.97 J	2.89	86.1 J+	0.432 J	0.397 J	2750	15.2 J+	4.71	10.1	13800	6.77	2600	307	9.83	914	1030 J+	2.43 J	0.200 UJ	213	0.540 J	31.7	58.2
D-258-3C-101317-10-12	10	12	14500 J+	2.05 J	3.01	81.4 J+	0.466 J	0.327 J	2870	16.6 J+	4.46	10.3	13800	4.71	2380	295	9.03	835	1110 J+	2.09 J	0.200 UJ	236	0.356 J	34.8	35.3
D-258-3D-101317-0-2	0	2	8560 J+	7.34 J+	13.4	88.7 J+	0.285 J	4.74	3030	11.7 J+	3.13	16.4	10400	196	1990	355 J+	6.89	804	756 J+	2.76 J	0.200 U	90.3	0.796 J	23.2	221
D-258-3D-101317-2-4	2	4	9050 J+	5.94 J+	11.4	91.5 J+	0.333 J	3.64	3330	14.8 J+	3.53	14.9	11400	150	2010	366 J+	8.35	891	772 J+	3.30 J	0.200 U	103	0.563 J	25.7	177
D-258-3D-101317-4-6	4	6	10600 J+	2.74 J	2.78	91.3 J+	0.348 J	0.424 J	3300	15.2 J+	4.02	9.05	12800	6.96	2080	357 J+	8.47	896	882 J+	1.94 J	0.200 U	131	0.591 J	29.9	45.8
D-258-3D-101317-6-8	6	8	9930 J+	1.81 J	1.85	64.4 J+	0.321 J	0.305 J	2660	11.8 J+	3.46	7.47	12500	4.65	1890	273 J+	7.79	868	691 J+	1.37 J	0.200 U	103	0.366 J	28.4	36.0
D-258-3D-101317-8-10	8	10	9320 J+	1.51 J	1.72	48.0 J+	0.316 J	0.261 J	2090	22.2 J+	3.34	6.94	11800	2.90	2040	207 J+	8.29	699	667 J+	2.91 J	0.200 U	100	0.342 J	26.2	28.1
D-258-3D-101317-10-12	10	12	7900 J+	2.31 J	2.08	47.6 J+	0.285 J	0.243 J	2010	19.0 J+	3.35	6.80	12300	3.25	1910	188 J+	8.80	569	669 J+	2.63 J	0.200 U	111	0.397 J	28.8	26.5

Table 4-3. Phase IA Part 2 TAL Metals Data for Discrete Soil Samples from <2-mm Fraction

Sample ID	Sample Start Depth (in. bgs)	Sample End Depth (in. bgs)	Aluminum (mg/kg dw)	Antimony (mg/kg dw)	Arsenic (mg/kg dw)	Barium (mg/kg dw)	Beryllium (mg/kg dw)	Cadmium (mg/kg dw)	Calcium (mg/kg dw)	Chromium (mg/kg dw)	Cobalt (mg/kg dw)	Copper (mg/kg dw)	Iron (mg/kg dw)	Lead (mg/kg dw)	Magnesium (mg/kg dw)	Manganese (mg/kg dw)	Nickel (mg/kg dw)	Phosphorus[a] (mg/kg dw)	Potassium (mg/kg dw)	Selenium (mg/kg dw)	Silver (mg/kg dw)	Sodium (mg/kg dw)	Thallium (mg/kg dw)	Vanadium (mg/kg dw)	Zinc (mg/kg dw)
Test Plot 441-1																									
D-441-1A-101317-0-2	0	2	17400 J+	15.6 J+	22.5	369 J+	0.586 J	27.0	16520	29.2 J+	8.81	85.7	18400	1020	4670	1570	19.1	2610	3420 J+	4.17 J	0.200 UJ	225	1.37 J	44.5	978
D-441-1A-101317-2-4	2	4	22200 J+	7.07 J+	19.8	282 J+	0.776 J	4.46	10310	46.2 J+	11.0	47.0	23400	105	8030	1260	26.9	3090	3430 J+	3.25 J	0.200 UJ	271	0.611 J	55.4	364
D-441-1A-101317-4-6	4	6	23500 J+	5.77 J+	16.7	257 J+	0.787 J	1.83	7630	46.7 J+	11.6	37.0	26200	37.2	7600	1040	28.3	3200	3200 J+	2.69 J	0.200 UJ	287	0.863 J	67.0	173
D-441-1A-101317-6-8	6	8	21500 J+	5.15 J+	15.7	216 J+	0.717 J	1.48	6350	40.0 J+	9.83	33.5	22900	29.6	5160	873	26.8	2760	2730 J+	3.02 J	0.200 UJ	215	0.470 J	58.9	138
D-441-1A-101317-8-10	8	10	24200 J+	4.29 J	16.7	209 J+	0.777 J	0.805 J	6670	41.1 J+	11.0	34.4	24800	13.8	5320	826	27.1	2620	3210 J+	3.29 J	0.200 UJ	261	0.852 J	66.0	98.5
D-441-1A-101317-10-12	10	12	23000 J+	3.64 J	12.7	160 J+	0.762 J	0.630 J	5120	34.9 J+	10.8	30.7	24800	13.1	6040	590	25.1	1890	3250 J+	3.80 J	0.200 UJ	245	0.936 J	65.3	78.4
D-441-1B-101317-0-2	0	2	22800 J+	17.6 J+	40.2	269 J+	0.782 J	12.2	6850	41.8 J+	10.8	94.0	24200	675	4900	665 J+	26.4	2330	2950 J+	2.70 J	0.200 U	406	0.609 J	59.7	475
D-441-1B-101317-2-4	2	4	22800 J+	7.14 J+	21.9	265 J+	0.763 J	2.79	7960	38.8 J+	9.98	35.1	22900	44.1	4520	729 J+	23.6	2120	2720 J+	3.46 J	0.200 U	433	0.604 J	58.3	179
D-441-1B-101317-2-4-D	2	4	20800 J+	6.94 J+	20.4	253 J+	0.688 J	2.56	6960	34.3 J+	9.77	33.1	21900	39.1	4730	700 J+	21.8	2000	2460 J+	4.73 J	0.200 U	265	0.783 J	51.6	176
D-441-1B-101317-4-6	4	6	20500 J+	7.53 J+	15.5	248 J+	0.663 J	3.86	6920	31.5 J+	9.00	33.0	22000	188	4660	758 J+	21.7	1960	2500 J+	2.77 J	0.200 U	249	0.392 J	52.8	225
D-441-1B-101317-6-8	6	8	23400 J+	4.64 J	10.6	258 J+	0.752 J	1.30	6100	35.7 J+	9.95	26.5	23700	33.5	4770	778 J+	23.7	1780	2600 J+	4.06 J	0.200 U	353	0.686 J	58.2	104
D-441-1B-101317-8-10	8	10	22600 J+	3.19 J	6.90	260 J+	0.713 J	0.876 J	5270	33.0 J+	9.43	24.1	24000	22.0	5040	657 J+	23.6	1670	2580 J+	4.17 J	0.200 U	308	0.746 J	59.2	82.2
D-441-1B-101317-10-12	10	12	25900 J+	2.99 J	7.93	260 J+	0.827 J	0.701 J	5540	46.1 J+	10.7	27.2	25200	14.9	5010	666 J+	26.3	1620	2730 J+	3.00 J	0.200 U	510	0.717 J	63.8	78.1
D-441-1C-101317-0-2	0	2	22900 J+	9.19 J+	34.8	299 J+	0.737 J	2.83	9640	29.4 J+	9.11	42.5	20300	38.3	4080	990 J+	19.2	2800	2770 J+	4.01 J	0.200 U	407	0.449 J	49.0	233
D-441-1C-101317-2-4	2	4	23900 J+	7.17 J+	16.6	256 J+	0.735 J	1.11	7280	37.8 J+	9.91	26.9	23300	16.3	5310	873 J+	23.7	2370	2610 J+	3.21 J	0.200 U	351	0.714 J	55.9	105
D-441-1C-101317-4-6	4	6	24300 J+	5.29 J+	7.97	237 J+	0.786 J	0.657 J	6340	33.1 J+	10.0	25.1	22500	9.61	4960	737 J+	22.9	2070	2620 J+	4.53 J	0.200 U	472	1.02 J	56.8	82.6
D-441-1C-101317-6-8	6	8	23700 J+	5.08 J+	8.06	222 J+	0.743 J	0.641 J	5980	40.0 J+	9.89	24.1	24000	9.59	4850	648 J+	23.4	1880	2630 J+	4.20 J	0.200 U	408	0.791 J	61.2	76.2
D-441-1C-101317-8-10	8	10	22500 J+	3.84 J	5.96	193 J+	0.680 J	0.572 J	4850	30.0 J+	8.58	22.5	20800	8.90	4960	594 J+	19.3	1730	2070 J+	2.64 J	0.200 U	304	0.668 J	52.9	67.0
D-441-1C-101317-10-12	10	12	24600 J+	2.87 J	6.30	199 J+	0.761 J	0.542 J	4880	36.8 J+	9.31	22.8	22800	10.1	4870	538 J+	22.0	1580	2260 J+	3.86 J	0.200 U	404	0.483 J	58.4	72.9
D-441-1D-101317-0-2	0	2	21200 J+	6.60 J+	19.8	200 J+	0.617 J	4.00	6020	31.1 J+	8.92	49.9	22300	143	5690	643 J+	24.0	1750	2470 J+	2.41 J	0.200 U	259	0.471 J	52.2	208
D-441-1D-101317-2-4	2	4	24500 J+	7.65 J+	13.4	237 J+	0.803 J	2.13	6030	26.2 J+	9.35	32.0	21800	62.1	4210	773 J+	20.9	1860	2290 J+	3.38 J	0.200 U	265	0.511 J	46.1	129
D-441-1D-101317-4-6	4	6	25200 J+	6.89 J+	7.37	255 J+	0.757 J	0.989 J	6560	33.9 J+	9.51	28.0	20700	19.2	4650	756	21.5	1920	2410 J+	4.10 J	0.200 UJ	460	0.724 J	49.8	92.6
D-441-1D-101317-6-8	6	8	22700 J+	3.69 J	5.82	233 J+	0.711 J	0.575 J	5380	31.0 J+	8.53	22.2	19200	9.85	4500	674	20.0	1630	2080 J+	3.10 J	0.200 UJ	388	1.09 J	46.0	70.6
D-441-1D-101317-8-10	8	10	25500 J+	1.89 J	6.23	247 J+	0.782 J	0.571 J	5850	26.4 J+	8.90	24.5	19400	9.46	4210	683	20.4	1730	2180 J+	1.56 J	0.200 UJ	480	0.976 J	47.7	72.3
D-441-1D-101317-10-12	10	12	24900 J+	2.46 J	5.90	224 J+	0.746 J	0.486 J	5310	28.1 J+	8.35	23.8	20700	8.78	4810	595	22.2	1560	2300 J+	3.47 J	0.200 UJ	434	0.742 J	48.8	69.8

Notes:

Analyses performed by Ohio State University (OSU) laboratory, Cincinnati, Ohio.

[a] Phosphorus was not specified as a target analyte list (TAL) metal in the Final Work Plan for the Soil Amendment Technology Evaluation Study (Ramboll 2017a), but analysis was performed by OSU.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ - The result is an estimated quantity, but the result may be biased high.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Underlined qualifiers (i.e., U, J) were assigned by the laboratory. All other qualifiers were assigned during data validation.

Table 4-4. Phase IA Part 2 TAL Metals Data for Incremental Composite Soil Samples from < 2-mm Fraction (0 to 3 in. bgs)

Sample ID	Aluminum (mg/kg dw)	Antimony (mg/kg dw)	Arsenic (mg/kg dw)	Barium (mg/kg dw)	Beryllium (mg/kg dw)	Cadmium (mg/kg dw)	Calcium (mg/kg dw)	Chromium (mg/kg dw)	Cobalt (mg/kg dw)	Copper (mg/kg dw)	Iron (mg/kg dw)	Lead (mg/kg dw)	Magnesium (mg/kg dw)	Manganese (mg/kg dw)	Nickel (mg/kg dw)	Phosphorus[a] (mg/kg dw)	Potassium (mg/kg dw)	Selenium (mg/kg dw)	Silver (mg/kg dw)	Sodium (mg/kg dw)	Thallium (mg/kg dw)	Vanadium (mg/kg dw)	Zinc (mg/kg dw)
Test Plot 401-1																							
IC-401-1A-101017	12000 J+	15.0 J+	28.1	77.5	0.0036 U	5.37	2860	29.9 J+	5.37	22.7	23500	411	2880	376	11.3	893	1170 J+	0.698 U	0.2 UJ	155	0.266 J	64.0	221
IC-401-1B-101017	15200 J+	20.6 J+	37.6	117	0.0036 U	9.07	3090	30.1 J+	6.18	30.4	23900	516	3090	537	12.9	1160	1320 J+	0.698 U	0.2 UJ	180	0.657 J	57.9	339
IC-401-1C-101117	12900 J+	16.3 J+	29.4	90.9	0.0036 U	7.41	3390	30.1 J+	5.47	24.8	21800	453	3100	434	12.2	1030	1200 J+	1.12 J	0.2 UJ	155	0.522 J	53.6	293
IC-401-1C-101117-D	12900 J+	18.3 J+	33.4	95.5	0.0036 U	7.89	3210	43.5 J+	5.91	25.1	21700	503	2810	436	12.6	1020	1130 J+	0.984 J	0.2 UJ	160	0.724 J	55.5	307
IC-401-1D-101117	13700 J+	25.7 J+	42.7	115	0.0036 U	9.72	3640	34.3 J+	5.75	36.3	25700	751	2860	487	13.0	1130	1280 J+	1.08 J	0.2 UJ	186	0.437 J	64.5	416
Test Plot 401-2																							
IC1-401-2A-101217	14900 J+	41.7 J+	58.0	114	0.0036 U	13.6	3140	32.7 J+	6.27	42.6	23200	1090	3000	568	13.2	1370	1450 J+	1.69 J	0.2 UJ	205	0.776 J	57.2	446
IC2-401-2A-101217	15900 J+	33.3 J+	55.5	114	0.0036 U	13.0	3420	33.7 J+	6.06	38.9	23600	795	2810	614	13.0	1440	1610 J+	0.987 J	0.2 UJ	251	0.906 J	58.1	420
IC3-401-2A-101217	15300 J+	33.0 J+	52.8	108	0.0036 U	13.4	3950	46.2 J+	6.27	37.1	24100	767	2860	589	12.7	1340	1510 J+	0.812 J	0.2 UJ	227	0.632 J	62.2	415
IC-401-2B-101117	17700 J+	18.2 J+	42.0	130	0.0036 U	11.3	4140	39.7 J+	6.91	32.3	26600	554	2960	653	14.2	1350	1800 J+	0.698 U	0.2 UJ	317	0.725 J	67.0	471
IC-401-2C-101217	16900 J+	27.2 J+	48.9	143	0.0036 U	11.9	3800	36.2 J+	6.65	36.4	25800	696	3080	599	14.3	1320	1520 J+	1.16 J	0.2 UJ	258	0.874 J	68.0	451
IC-401-2D-101217	15500 J+	29.7 J+	47.5	116	0.0036 U	12.7	3730	29.8 J+	5.76	37.6	23000	780	2740	557	12.1	1240	1610 J+	1.22 J	0.2 UJ	241	0.605 J	57.7	511
Test Plot 258-3																							
IC-258-3A-101717	14600 J+	4.92 J	12.7	113	0.165 J	3.58	3990	31.9 J+	4.86	16.6	12800	133	2850	384	9.52	1010	1360 J+	0.698 U	0.2 UJ	265	0.474 J	29.9	174
IC-258-3B-101717	10600 J+	5.40 J+	12.6	82.4	0.175 J	3.90	3340	15.4 J+	3.95	15.0	11400	154	2420	322	8.63	962	1130 J+	0.698 U	0.2 UJ	166	0.371 J	25.4	194
IC-258-3C-101717	11300 J+	7.00 J+	14.9	110	0.0513 J	6.42	4380	22.0 J+	4.42	19.1	12800	284	2490	397	9.02	1110	1300 J+	0.840 J	0.2 UJ	209	0.386 J	29.1	293
IC-258-3D-101717	11100 J+	7.18 J+	17.4	97.2	0.0036 U	5.88	3890	16.3 J+	4.38	19.2	12400	262	2300	365	8.33	1060	1250 J+	0.956 J	0.2 UJ	198	0.588 J	29.1	252
Test Plot 441-1																							
IC-441-1A-101617	22500 J+	6.75 J+	17.6	209	0.0036 U	6.75	8850	43.1 J+	9.63	37.3	21800	276	6120	757	24.3	1980	3790 J+	1.53 J	0.2 UJ	408	0.385 J	56.3	322
IC-441-1B-101617	26000 J+	12.8 J+	36.9	222	0.0036 U	13.2	9720	36.1 J+	11.0	59.4	21400	485	5470	870	21.9	2950	3360 J+	1.36 J	0.2 UJ	541	0.773 J	53.1	719
IC-441-1C-101617	21000 J+	10.0 J+	26.9	208	0.0036 U	12.3	8550	33.6 J+	9.00	41.8	19300	462	4600	704	19.3	2001	3080 J+	1.01 J	0.2 UJ	437	0.858 J	48.6	679
IC-441-1D-101617	22200 J+	10.1 J+	30.4	218	0.0036 U	9.74	8220	53.2 J+	8.77	44.3	20300	406	4860	687	20.0	2050	2930 J+	1.90 J	0.2 UJ	425	0.583 J	51.2	471

Notes:

Analyses performed by Ohio State University (OSU) laboratory, Cincinnati, Ohio.

[a] Phosphorus was not specified as a target analyte list (TAL) metal in the Final Work Plan for the Soil Amendment Technology Evaluation Study (Ramboll 2017a), but analysis was performed by OSU.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ - The result is an estimated quantity, but the result may be biased high.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Underlined qualifiers (i.e., U, J) were assigned by the laboratory. All other qualifiers were assigned during data validation.

Table 4-5. Phase IA Part 2 TAL Metals Data for Incremental Composite Soil Samples from < 150-mm Fraction (0 to 3 in. bgs)

Sample ID	Aluminum (mg/kg dw)		Antimony (mg/kg dw)		Arsenic (mg/kg dw)	Barium (mg/kg dw)		Beryllium (mg/kg dw)		Cadmium (mg/kg dw)	Calcium (mg/kg dw)	Chromium (mg/kg dw)		Cobalt (mg/kg dw)	Copper (mg/kg dw)	Iron (mg/kg dw)	Lead (mg/kg dw)	Magnesium (mg/kg dw)	Manganese (mg/kg dw)		Nickel (mg/kg dw)	Phosphorus[a] (mg/kg dw)	Potassium (mg/kg dw)		Selenium (mg/kg dw)		Silver (mg/kg dw)		Sodium (mg/kg dw)	Thallium (mg/kg dw)		Vanadium (mg/kg dw)	Zinc (mg/kg dw)
Test Plot 401-1																																	
IC-401-1A-101017	21700	J+	31.4	J+	68.4	204	J+	0.822	J	14.6	4010	54.3	J+	8.75	64.7	39900	1130	2790	748	J+	19.4	1850	1980	J+	3.53	J	0.2	UJ	435	1.13	J	107	550
IC-401-1B-101017	26100	J+	34.6	J+	87.5	265	J+	0.937	J	21.1	4160	39.8	J+	9.61	75.2	31400	1230	3250	1090	J+	18.0	2220	2000	J+	3.68	J	0.2	UJ	485	0.773	J	79.1	745
IC-401-1C-101117	23900	J+	34.6	J+	80.1	259	J+	0.891	J	22.0	4770	43.2	J+	9.06	72.2	34800	1320	3180	988	J+	18.4	2140	2050	J+	3.30	J	0.2	UJ	468	0.539	J	90.2	783
IC-401-1C-101117-D	24900	J+	35.5	J+	82.2	258	J+	0.929	J	21.9	4970	43.1	J+	9.43	73.9	32700	1380	3300	987	J+	18.2	2150	2190	J+	3.53	J	0.2	UJ	553	0.746	J	84.6	808
IC-401-1D-101117	23100	J+	37.2	J+	92.4	237	J+	0.836	J	19.5	4480	39.7	J+	8.89	81.5	30500	1450	3040	864	J+	17.4	2150	2030	J+	3.04	J	0.2	UJ	474	1.04	J	76.9	744
Test Plot 401-2																																	
IC1-401-2A-101217	22700	J+	54.0	J+	117	230	J+	0.803	J	27.0	3670	35.3	J+	8.54	86.5	27700	1790	2790	1030	J+	16.4	2330	1860	J+	4.25	J	0.2	UJ	446	0.979	J	68.2	827
IC2-401-2A-101217	23700	J+	48.2	J+	116	231	J+	0.826	J	25.6	3590	31.0	J+	8.63	82.4	26700	1530	2910	1080	J+	16.5	2450	1920	J+	3.68	J	0.2	UJ	491	1.10	J	65.0	746
IC3-401-2A-101217	24000	J+	48.1	J+	111	237	J+	0.843	J	29.6	3750	34.8	J+	8.75	79.6	29000	1440	2920	1120	J+	16.9	2400	1950	J+	3.99	J	0.2	UJ	490	1.55	J	72.1	842
IC-401-2B-101117	26100	J+	30.5	J+	83.8	254	J+	0.892	J	20.4	4810	35.4	J+	8.89	64.1	26500	964	2920	1060	J+	16.5	2270	2040	J+	3.20	J	0.2	UJ	627	1.07	J	66.4	816
IC-401-2C-101217	24700	J+	40.0	J+	99.2	254	J+	0.856	J	23.6	4010	36.0	J+	9.19	73.3	27000	1350	2990	1020	J+	16.7	2190	1920	J+	4.01	J	0.2	UJ	512	1.20	J	67.0	820
IC-401-2D-101217	25000	J+	34.2	J+	87.8	227	J+	0.808	J	22.4	4620	36.0	J+	8.23	68.0	25600	1180	2740	979	J+	15.4	2150	2000	J+	3.84	J	0.2	UJ	543	1.32	J	63.0	800
Test Plot 258-3																																	
IC-258-3A-101717	25900	J+	14.0	J+	37.3	276	J+	0.859	J	12.2	6190	20.9	J+	7.95	48.1	19600	419	2500	859	J+	13.7	2010	1980	J+	2.81	J	0.2	UJ	603	0.828	J	45.9	474
IC-258-3B-101717	22700	J+	15.1	J+	36.7	261	J+	0.789	J	14.0	6650	22.8	J+	7.52	50.2	19700	547	2840	907	J+	13.2	2430	2010	J+	3.20	J	0.2	UJ	503	0.988	J	46.7	620
IC-258-3C-101717	19800	J+	14.0	J+	33.3	255	J+	0.664	J	14.7	7500	19.1	J+	7.00	47.4	17100	651	3070	827	J+	12.3	2320	1920	J+	2.72	J	0.2	UJ	487	1.23	J	39.7	643
IC-258-3D-101717	20000	J+	16.6	J+	42.2	252	J+	0.733	J	15.7	6670	21.9	J+	7.18	54.0	19800	672	2810	829	J+	12.8	2280	1840	J+	3.18	J	0.2	UJ	429	0.647	J	46.5	617
Test Plot 441-1																																	
IC-441-1A-101617	25300	J+	10.5	J+	33.3	338	J+	0.869	J	12.7	10600	35.8	J+	11.1	67.3	22200	552	4240	1240	J+	23.3	2840	3470	J+	4.29	J	0.2	UJ	572	1.13	J	56.5	598
IC-441-1B-101617	26900	J+	12.3	J+	40.8	308	J+	0.847	J	13.8	10400	32.7	J+	10.7	69.4	20900	556	3970	1130	J+	20.8	3370	3120	J+	4.93	J	0.2	UJ	698	0.654	J	51.8	738
IC-441-1C-101617	24800	J+	11.7	J+	37.8	303	J+	0.787	J	16.2	9940	34.9	J+	9.88	59.4	20400	612	3990	937	J+	19.6	2580	3380	J+	3.83	J	0.2	UJ	753	1.37	J	51.5	882
IC-441-1D-101617	24900	J+	8.61	J+	38.7	281	J+	0.766	J	10.4	8710	38.2	J+	9.46	56.0	21400	441	3850	840	J+	20.1	2580	3010	J+	3.95	J	0.2	UJ	675	0.900	J	55.5	511

Notes:

Analyses performed by Ohio State University (OSU) laboratory, Cincinnati, Ohio.

[a] Phosphorus was not specified as a target analyte list (TAL) metal in the Final Work Plan for the Soil Amendment Technology Evaluation Study (Ramboll 2017b), but analysis was performed by OSU.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ - The result is an estimated quantity, but the result may be biased high.

UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Underlined qualifiers (i.e., U, J) were assigned by the laboratory. All other qualifiers were assigned during data validation.

Table 4-6. Phase IA Part 2 Synthetic Precipitation Leaching Procedure Results for Incremental Composite Soil Samples from < 2-mm Fraction (0 to 3 in. bgs)

Sample ID	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Nickel (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silver (mg/L)	Sodium (mg/L)	Thallium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
Test Plot 401-1																						
IC-401-1A-101017	20.0	0.045	0.101	0.17 J	0.0002 U	0.004 J	3.4 J-	0.004 J	0.003 J	0.023	9.97	0.371	1.29 J-	0.539	0.005 J	2.25	0.004 U	0.004 J	2.0 U	0.004 U	0.013	0.380
IC-401-1B-101017	16.2	0.038	0.085	0.15 J	0.0002 U	0.004 J	3.0 J-	0.004 J	0.003 J	0.019	7.82	0.256	0.97 J-	0.580	0.004 J	1.75	0.004 U	0.0008 U	1.8 U	0.004 U	0.010 J	0.338
IC-401-1C-101117	17.3	0.038	0.099	0.16 J	0.0003 J	0.004 J	3.2 J-	0.004 J	0.003 J	0.021	8.74	0.371	1.09 J-	0.537	0.004 J	2.06	0.004 U	0.0008 J	1.8 U	0.004 U	0.011	0.369
IC-401-1C-101117-D	16.8	0.042	0.094	0.17 J	0.0002 J	0.004 J	3.2 J-	0.004 J	0.003 J	0.020	8.81	0.361	1.13 J-	0.528	0.005 J	2.22	0.004 U	0.001 J	1.8 U	0.004 U	0.012	0.370
IC-401-1D-101117	11.7	0.041	0.101	0.15 J	0.0002 U	0.003 J	3.4 J-	0.002 J	0.001 J	0.021	6.56	0.300	0.98 J-	0.343	0.003 J	3.25	0.004 U	0.001 J	1.9 U	0.004 U	0.009 J	0.339
Test Plot 401-2																						
IC1-401-2A-101217	15.1	0.066	0.148	0.15 J	0.0002 U	0.006 J	3.1 J-	0.004 J	0.003 J	0.027	7.82	0.439	1.08 J-	0.596	0.004 J	2.73	0.004 U	0.002 J	2.0 U	0.004 U	0.010	0.446
IC2-401-2A-101217	15.2	0.052	0.148	0.16 J	0.0002 J	0.006 J	3.2 J-	0.003 J	0.003 J	0.025	7.83	0.400	1.04 J-	0.686	0.004 J	2.59	0.004 U	0.001 J	1.9 U	0.004 U	0.010	0.419
IC3-401-2A-101217	16.3	0.065	0.154	0.15 J	0.0003 J	0.007 J	3.3 J-	0.003 J	0.003 J	0.027	8.37	0.431	1.10 J-	0.672	0.004 J	2.60	0.004 U	0.001 J	1.9 U	0.004 U	0.011	0.482
IC-401-2B-101117	15.1	0.035	0.085	0.16 J	0.0002 J	0.005 J	3.5 J-	0.003 J	0.002 J	0.020	6.92	0.264	0.98 J-	0.571	0.003 J	2.46	0.004 U	0.0008 J	1.9 U	0.004 U	0.008 J	0.383
IC-401-2C-101217	15.9	0.041	0.110	0.16 J	0.0002 J	0.005 J	3.2 J-	0.003 J	0.002 J	0.023	8.14	0.346	1.00 J-	0.558	0.004 J	2.08	0.004 U	0.001 J	1.9 U	0.004 U	0.010 J	0.404
IC-401-2D-101217	16.8	0.038	0.122	0.15 J	0.0002 U	0.006 J	3.7 J-	0.004 J	0.002 J	0.025	8.08	0.370	1.06 J-	0.549	0.004 J	4.14	0.004 U	0.001 J	1.8 U	0.004 U	0.011	0.448
Test Plot 258-3																						
IC-258-3A-101717	22.0	0.014 J	0.032	0.20 J	0.0004 J	0.002 J	4.3 J-	0.003 J	0.003 J	0.015	9.10	0.149	1.08 J-	0.607	0.003 J	1.86	0.004 U	0.0009 J	1.7 U	0.004 U	0.010	0.233
IC-258-3B-101717	17.6	0.015 J	0.048	0.18 J	0.0002 J	0.003 J	3.9 J-	0.003 J	0.003 J	0.016	7.96	0.194	1.10 J-	0.587	0.003 J	2.02	0.004 U	0.0008 U	1.7 U	0.004 U	0.009 J	0.292
IC-258-3C-101717	14.1	0.018 J	0.041	0.19 J	0.0002 U	0.004 J	4.2 J-	0.003 J	0.002 J	0.016	6.36	0.224	1.02 J-	0.442	0.002 J	2.54	0.004 U	0.0009 J	2.0 U	0.004 U	0.007 J	0.292
IC-258-3D-101717	13.4	0.017 J	0.058	0.15 J	0.0002 U	0.003 J	4.1 J-	0.003 J	0.002 J	0.016	6.66	0.208	1.04 J-	0.497	0.002 J	1.94	0.004 U	0.0008 U	1.7 U	0.004 U	0.008 J	0.276
Test Plot 441-1																						
IC-441-1A-101617	18.3	0.008 J	0.033	0.28	0.0004 J	0.004 J	7.5 J-	0.009 J	0.006 J	0.024	11.5	0.245	2.48	0.856	0.011	6.25	0.004 U	0.001 J	1.8 U	0.004 U	0.017	0.329
IC-441-1B-101617	13.2	0.020 J	0.050	0.22	0.0002 J	0.006 J	7.3 J-	0.006 J	0.004 J	0.029	8.02	0.348	1.67 J-	0.686	0.006 J	4.96	0.004 U	0.002 J	1.9 U	0.004 U	0.012	0.511
IC-441-1C-101617	13.9	0.014 J	0.044	0.23	0.0003 J	0.007 J	9.2 J-	0.005 J	0.004 J	0.025	8.20	0.382	2.03	0.583	0.007 J	7.18	0.004 U	0.0009 J	1.8 U	0.004 U	0.012	0.583
IC-441-1D-101617	10.7	0.011 J	0.035	0.20 J	0.0002 U	0.004 J	6.6 J-	0.004 J	0.003 J	0.021	6.36	0.235	1.54 J-	0.471	0.004 J	5.69	0.004 U	0.001 J	1.7 U	0.004 U	0.009 J	0.314

Notes:

Analyses performed by ALS Environmental, Kelso, Washington.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Underlined qualifiers (i.e., U, J) were assigned by the laboratory. All other qualifiers were assigned during data validation.

Table 4-7. Phase IA Part 2 Bioaccessible Arsenic and Lead and Mehlich III Extract Data for Incremental Composite Soil Samples from < 150-µm Fraction (0 to 3 in. bgs)

	Arsenic			Lead		Mehlich III Extracts (mg/kg dw)	
Sample ID	1.5 pH (%)[a]		2.5 pH (%)[a]	1.5 pH (%)	2.5 pH (%)[a]	Lead	Phosphorus
Test Plot 401-1							
IC-401-1A-101017	17.6		5.67	74.4	38.1	286	106
IC-401-1B-101017	16.7		5.87	65.3	30.3	229	64.2
IC-401-1C-101117	17.5		6.67	78.4	38.1	310	77.2
IC-401-1C-101117-D	17.2		6.30	78.5	36.1	317	76.6
IC-401-1D-101117	17.6		6.19	73.4	33.4	330	90.4
Test Plot 401-2							
IC1-401-2A-101217	21.2		8.94	78.3	38.6	454	110
IC2-401-2A-101217	21.6		9.82	75.8	40.7	401	115
IC3-401-2A-101217	21.6		9.84	76.0	41.6	364	99.4
IC-401-2B-101117	16.9		6.42	82.2	39.8	244	58.9
IC-401-2C-101217	16.7		6.83	68.9	36.1	294	72.9
IC-401-2D-101217	18.7		7.35	77.5	40.1	300	63.7
Test Plot 258-3							
IC-258-3A-101717	8.63		1.99	69.1	26.5	106	28.7
IC-258-3B-101717	8.88		2.82	63.2	24.5	128	90.5
IC-258-3C-101717	13.0		3.87	73.8	31.2	215	129
IC-258-3D-101717	12.5	J	3.59	69.3	28.3	182	117
Test Plot 441-1							
IC-441-1A-101617	24.7	J	9.30	76.9	29.0	186	206
IC-441-1B-101617	23.9	J	9.26	78.6	28.8	158	125
IC-441-1C-101617	24.7	J	10.9	80.7	35.2	191	205
IC-441-1D-101617	21.6	J	7.31	81.4	34.1	158	144

Notes:

[a] There is no EPA method that specifies percent bioaccessibility quality control ranges for bioaccessible arsenic at pH 1.5 and 2.5 and bioaccessible lead at pH 2.5 for the standard reference material used in the analysis (NIST SRM 2710a). Absent a reference value or range for comparison, the percent bioaccessibility data across batches of samples for Phase IA and over time were confirmed to be reproducible.

Analyses performed by Ohio State University (OSU) laboratory, Cincinnati, Ohio.

NIST SRM 2710a - National Institute of Standards and Technology Montana I soil

J - The result is and estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

Table 4-8. Phase IA Part 2 General Chemistry Data for Incremental Composite Soil Samples (0 to 3 in. bgs)

		Bulk Sample								< 2-mm Fraction							
Sample ID	Subplot	Electrical Conductivity (mS/m)[a]		pH[a,b]		Sulfide (mg/kg dw)[c]		Total Organic Carbon (%)[c]		Chloride (mg/kg dw)[a]		Sulfate (mg/kg dw)[a]		Total Carbon (%)[a]		Total Nitrogen (%)[a]	
Test Plot 401-1																	
IC-401-1A-101017	A	7.70	J-	4.60	R	0.6	UJ	5.97		18.6	J-	100	J-	2.80	J-	0.117	J-
IC-401-1B-101017	B	4.52	J-	4.94	R	0.6	UJ	4.56		16.9	J-	60.9	J-	5.06	J-	0.220	J-
IC-401-1C-101117	C	5.63	J-	4.78	R	0.5	J	4.73		15.9	J-	72.5	J-	5.20	J-	0.240	J-
IC-401-1C-101117-D	C	4.96	J-	5.15	R	0.8	J	5.00		27.4	J-	65.4	J-	4.55	J-	0.209	J-
IC-401-1D-101117	D	6.10	J-	4.92	R	0.6	J	6.09		18.0	J-	57.8	J-	10.5	J-	0.435	J-
Test Plot 401-2																	
IC1-401-2A-101217	A	6.02	J-	4.56	R	0.6	U	5.93		17.0	J-	65.7	J-	6.55	J-	0.275	J-
IC2-401-2A-101217	A	5.62	J-	4.56	R	0.6	U	4.24		17.7	J-	66.2	J-	5.02	J-	0.216	J-
IC3-401-2A-101217	A	5.20	J-	4.72	R	0.5	U	7.74		18.0	J-	66.3	J-	5.75	J-	0.255	J-
IC-401-2B-101117	B	5.50	J-	5.15	R	0.5	J	5.73		17.5	J-	62.3	J-	9.14	J-	0.447	J-
IC-401-2C-101217	C	5.13	J-	4.86	R	0.5	J	5.57		29.1	J-	74.1	J-	6.59	J-	0.298	J-
IC-401-2D-101217	D	11.6	J-	4.55	R	0.6	U	8.48		18.1	J-	57.9	J-	8.02	J-	0.365	J-
Test Plot 258-3																	
IC-258-3A-101717	A	7.90	J-	5.40	R	0.5	U	3.55		16.8	J-	49.0	J-	2.83	J-	0.178	J-
IC-258-3B-101717	B	9.62	J-	5.31	R	0.5	U	3.55		17.5	J-	57.0	J-	2.32	J-	0.140	J-
IC-258-3C-101717	C	15.0	J-	5.00	R	0.5	U	6.55		17.9	J-	56.9	J-	4.72	J-	0.257	J-
IC-258-3D-101717	D	11.3	J-	5.35	R	0.5	U	3.33		18.5	J-	49.7	J-	3.65	J-	0.205	J-
Test Plot 441-1																	
IC-441-1A-101617	A	12.6	J-	5.85	R	0.5	U	6.24		16.1	J-	30.0	J-	5.65	J-	0.314	J-
IC-441-1B-101617	B	9.28	J-	5.92	R	0.7	R	6.82		15.9	J-	30.0	J-	7.90	J-	0.472	J-
IC-441-1C-101617	C	12.8	J-	6.16	R	0.5	U	7.00		16.3	J-	47.1	J-	5.61	J-	0.352	J-
IC-441-1D-101617	D	11.2	J-	6.01	R	0.5	U	7.91		16.2	J-	30.0	J-	4.95	J-	0.321	J-

Notes:

[a] Analyses performed by Ohio State University (OSU) laboratory, Cincinnati, Ohio.

[b] pH was not a specified analysis for Phase IA Part 2 in the Final Work Plan for the Soil Amendment Technology Evaluation Study (Ramboll 2017b), but analysis was performed by OSU.

[c] Analyses performed by ALS Environmental, Kelso, WA.

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- - The result is an estimated quantity, but the result may be biased low.

R - The data are unusable. The sample result is rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

U - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

UJ - The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

Underlined qualifiers (i.e., U) were assigned by the laboratory. All other qualifiers were assigned during data validation.