Phase II Environmental Assessment Report for BNSF ROW R2R, Coeur d'Alene, Idaho - Final

Revision No. 2

Prepared for:

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Acronyms and Abbreviations

ASTM	American Standard for Testing Materials
BNSF	Burlington Northern Santa Fe Railway Company
bgs	below ground surface
CDA	Coeur d'Alene
COC	chemical of concern
DU	decision unit
EADA	Emulsified Asphalt Dust Abatement
Ecology	Washington State Department of Ecology
ESA	Environmental Site Assessment
ESC	Environmental Science Corporation Lab Sciences
GPS	global positioning system
IDEQ	Idaho Department of Environmental Quality
IDTL	Initial Default Target Level
IDW	investigation derived waste
ISM	incremental sampling method/ multi-incremental sampling
ITRC	Interstate Technology and Regulatory Council
IUPAC	International Union of Pure and Applied Chemistry
MS	matrix spike
MSD	matrix spike duplicate
ODEQ	Oregon Department of Environmental Quality
PAH	polycyclic aromatic hydrocarbon
PetroREM	Risk Evaluation Manual for Petroleum Releases
QA	quality assurance
QC	quality control
QAO	quality assurance officer
QAPP	quality assurance project plan
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
REM	Risk Evaluation Manual
ROW	Right of Way
RSD	relative standard deviation
RSL	Regional Screening Level
RUSL	Residential Use Screening Level
R2R	Riverstone to Huetter
SIM	selective ion monitoring
SVL	SVL Analytical, Inc.
SVOC	semi-volatile organic compounds
TerraGraphics	TerraGraphics Environmental Engineering, Inc.

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

Units

mg/kg	milligrams per kilogram
mm	millimeter
oz	ounce

Executive Summary

This report summarizes the environmental assessment activities for the Burlington Northern Santa Fe Railway Company (BNSF) Right of Way (ROW), Riverstone to Huetter (R2R) section, located in Coeur d'Alene (CDA), Idaho. TerraGraphics Environmental Engineering, Inc. (TerraGraphics) collected soil samples on October 3 through 7, 2016 from three primary zones within the approximate 2 mile railroad corridor (Figure 1). The assessment will provide data for use in evaluating potential human health risk assessment associated with redevelopment of the railroad corridor into a public pedestrian and/or bike trail, green space, and public waterfront access.

Potential site chemicals of concern (COCs) include polycyclic aromatic hydrocarbons (PAHs), semi-volatile organic compounds (SVOCs), and Resource Conservation and Recovery Act (RCRA) 8 metals in soil.

Soil Results

TerraGraphics divided the Site into three Zones based on historical industrial uses (Figure 1). TerraGraphics' field crew used multi-incremental sampling (ISM) and discrete/grab sampling procedures in each decision unit (DUs) within each Zone throughout the Site based on historical use and specific COCs within each DU (Figure 2, Figure 3, Figure 4, and Figure 5).

Incremental Sampling

TerraGraphics' field crew collected 23 soil samples (including quality assurance samples) utilizing an ISM approach, consistent with the Interstate Technology and Regulatory Council's (ITRC) Incremental Sampling Methodology guidance document (ITRC 2012). Each sample consisted of 30 individual subsamples. The sampling set followed the Quality Assurance Project Plan (QAPP) (TerraGraphics 2016) to include 3 replicate samples from DU1.2 and DU3.1A, and 1 sample from each of the remaining DUs.

The analytical results for the ISM soil samples yielded the following SVOC and PAHs constituents above their respective Residential Use Screening Level (RUSL) or U.S Environmental Protection Agency (USEPA) Residential Soil Table Screening Levels (RSLs) (IDEQ 2012 and USEPA 2016a, respectively).

- SVOCs (compared to RSLs):
    - dibenz(a.h)anthracene in DU1.2, DU1.3B, DU2.1A, DU2.1B, DU2.2B, DU3.1B, and
    - indeno(1,2,3-cd)pyrene in DU1.3B, DU2.1B, DU2.2B, and DU 3.2B.
- PAHs (compared to RUSLs):
    - benzo(a)anthracene in DU1.2, DU1.3B, DU2.1B, DU2.2B, and DU3.2B,
    - benzo(a)pyrene in DU1.2, DU1.3A, DU1.3B, DU2.1A, DU2.1B, DU2.1C, DU2.2B, DU3.1B, DU3.1C, DU3.2A, DU3.2B, DU3.2C, and
    - benzo(b)fluoranthene in DU1.2, DU1.3B, DU2.1B, DU2.2B, and DU3.2B.

RCRA 8 metals concentrations from the ISM soil samples exhibited the following constituent concentrations above their respective RSL (USEPA 2016a).

- RCRA 8 metals:
    - arsenic in all DUs, and
    - total chromium in all DUs

Table 1, Table 2, and Table 3 summarize the analytical results (expressed in milligrams per kilogram [mg/kg]).

Discrete/Grab Sampling (DU3.1A and DU3.1B only)

TerraGraphics' field crew collected 2 soil samples (1 from DU3.1A and 1 from DU3.1B) from the ground surface. The purpose of these grab samples were to assess COCs being evaluated at the Site (PAHs, SVOCs, and RCRA 8 metals) that might also be present in the surface soils due to a dust suppressant (known as Emulsified Asphalt Dust Abatement [EADA]) recently sprayed by the City of CDA street department (DU3.1A is known to not have EADA sprayed; DU3.1B is known to have EADA sprayed). The constituents within EADA is proprietary and might have contributed to COC concentrations detected within the ISM sample collected in DU 3.1B.

SVOCs, PAHs, and RCRA 8 metals analytical results for the discrete/grab soil samples exhibited the following constituents above their respective RUSL/RSL concentration:

DU3.1A (no EADA sprayed)

- RCRA 8 metals: arsenic and total chromium

DU3.1B (EADA sprayed)

- SVOCs: naphthalene, dibenz(a.h)anthracene, and indeno(1,2,3-cd)pyrene
- PAHs: benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene
- RCRA 8 metals: arsenic and total chromium

Table 1 and Table 3 summarize the analytical results (expressed in mg/kg).

Conclusions and Recommendations

Based on the available information and Site-specific data collected, TerraGraphics concludes the following:

- Soil SVOC and PAH concentrations within select DUs listed below located within all three Zones exceed the RUSL for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and naphthalene, and exceed the RSL for dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene. Affected DUs are: DU1.2, DU1.3A, DU1.3B, DU2.1A, DU2.1B, DU2.1C, DU2.2B, DU3.1B, DU3.1C, DU3.2A, DU3.2B, and DU3.2C. Figure 6, Figure7, and Figure 8 show the DUs and their specific elevated constituents within each DU.
- DU2.2A, DU2.2B, and DU2.2C had reporting limits exceeding the RSLs due to high dilution of the soil sampled in this area (analyzed using USEPA Method 8270D). The need for dilution due to sample viscosity, as well as the chromatogram signature of the samples, appear typical for samples contaminated with heavy hydrocarbon fuel, such as heavy oil, creosote, tar, or perhaps a combination. SVOC concentrations within the samples could possibly be elevated above the RSLs.

- Soil RCRA 8 metal concentrations within DUs located within all three Zones exceed the RSL for arsenic and total chromium. Both arsenic and total chromium exceeded the respective RSL within every DU. Figure 6, Figure 7, and Figure 8 show the DUs and their specific elevated constituents within each DU. All other detected metals (barium, cadmium, lead, and mercury) were below the residential soil USEPA RSL for direct contact-child (USEPA 2016a).
- The surface grab sample at 3.1B (known to have EADA sprayed) had concentrations exceeding the respective RUSL for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and naphthalene, and concentrations exceeding the respective RSL for dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic and total chromium. The surface grab sample within DU3.1A (known to not have EADA sprayed) exceeded the respective RSL values for arsenic and total chromium, confirming that EADA is not a likely source of metals in soil.

Based on the available information and Site-specific data collected, TerraGraphics recommends the following:

- Evaluate RCRA 8 metals, PAHs, and SVOCs for risk potential based upon the proposed future land use using the Risk Evaluation Manual for Petroleum Releases (PetroREM) (IDEQ 2012).

Section 1.0 Introduction

A Phase I Environmental Site Assessment (ESA) completed by TerraGraphics Environmental Engineering, Inc. (TerraGraphics) in 2015 uncovered recognized environmental conditions (RECs) at the Burlington Northern Santa Fe Railway Company (BNSF) Right of Way (ROW), Riverstone to Huetter (R2R) section (TerraGraphics 2015). The Phase I ESA divided the ROW into three Zones based upon historical industrial uses (Figure 1). All Zones have a 100 year history of railroad use. In the early 1900s, the rail line included hourly electric train services linking Spokane, Washington, to the City of Coeur d'Alene (CDA), Idaho. The region includes a long history of heavy metal mining and rail distribution.

TRC Environmental Solutions conducted previous limited assessment of the ROW for BNSF, included sampling of shallow sub-surface soils for Resource Conservation and Recovery Act (RCRA) 8 metals, Total Petroleum Hydrocarbons, and limited polycyclic aromatic hydrocarbons (PAHs) from the 18- to 24-inch depth interval. Metals concentrations from soil samples collected from the 18- to 24-inch depth interval were above Initial Default Target Levels (IDTLs).

In Zones 1, 2, and 3, the Phase I ESA identified RECs for heavy metals and PAHs from historical rail activity. As a result of the past railroad transportation and loading/unloading operations, the Phase I ESA identified surface soils within the Zones as having potential for containing PAHs, semi-volatile organic compounds (SVOCs), and heavy metals. The Phase I ESA recommended additional characterization for surface soils for RCRA 8 metals, PAHs, and SVOCs to evaluate the extent of the identified RECs.

On May 28, 2015, the City of CDA and Ignite CDA, the City's urban renewal agency, purchased the BNSF ROW property. Idaho Department of Environmental Quality (IDEQ) requested TerraGraphics perform additional characterization activities on the ROW Site. The data presented is for use in a human health risk assessment focused on currently identified future redevelopment goals and land use. The City of CDA has strong interest in, and public support for, redeveloping this property for a public pedestrian and/or bike trail, green space, and public waterfront access. The corridor contains some of the last remaining opportunities for public access to the Spokane River in CDA.

The purpose of this assessment was to delineate the extent of RCRA 8 metals, PAHs, and SVOCs within the three Zones of the BNSF ROW that may have been released from former rail and heavy industrial operations and deposited into the shallow subsurface (less than 12 inches below ground surface [bgs]). TerraGraphics evaluated full suite SVOCs within Zone 2 based on specific historical locations of a trestle and bone yard noted in the Phase I ESA (TerraGraphics 2015). TerraGraphics further sub-divided each zone into 17 separate parallel decision units (DUs) based on historical grade elevations and evaluated them based on their historical use (Figure 2, Figure 3, Figure 4, and Figure 5).

Based on the location of the Site and its extensive use throughout history, the potential existed for encountering historic and prehistoric cultural material during the Site activities. Therefore, an archaeologist was onsite during sampling to observe direct push technology activities, record the location of sampling locations, and examine the soil. The archaeologist noted "nothing of any potential cultural significance was noted in any of the sediment columns, all of which were screened through a ¼ inch sieve. There was no evidence of any pre-contact or historic items or of

any other cultural resources. Nothing was collected and there is nothing to curate. The drilling has been completed and no further cultural resource investigations are recommended. While no cultural resources were found during this project it is likely that undetected cultural resources are present in this area. Therefore it is recommended that a qualified archaeologist be present to monitor any future ground disturbance in the vicinity of site 10KT429 or at any other locations where cultural resources have been reported in the general area."

Section 2.0 Field Activities

2.1 Quality Assurance Project Plan Deviations

In general, sampling procedures followed the *Quality Assurance Project Plan (QAPP) for BNSF ROW R2R, Coeur d'Alene, Idaho* (TerraGraphics 2016) with the following exceptions:

- The randomly generated GPS locations for DU1.1 generated prior to fieldwork were incorrectly mapped north of the railway; therefore, random GPS locations for the correct location of DU1.1 (south of the railway) were not generated prior to fieldwork. TerraGraphics' field crew created random locations within the correct DU1.1 by using a "random within a grid" method per ITRC guidance (ITRC 2012). The sampling method was approved by IDEQ field staff. To preserve a random sampling methodology, the DU was divided into 30 equal distances lengthwise by pacing. A pen was spun in to determine a general direction, and a flag was tossed over the sampler's shoulder in the direction the pen pointed in order to select a random location in the grid.
- Location of replicate samples moved from DU1.1 to DU3.1A, per the request of IDEQ in the field.
    - Random global positioning system (GPS) locations generated for a multi-incremental sampling (ISM) triplicate sample were prepared during the QAPP phase for DU1.1; however, the GPS locations for DU 1.1 were incorrectly mapped north of the railway, on property owned by BNSF Railway Company. TerraGraphics' field crew created random locations within the correct DU1.1 (south of the railway). Due to DU1.1's proposed future use, IDEQ field staff requested TerraGraphics not to perform the triplicate sampling in DU1.1 and move the triplicate sampling to DU3.1A.
    - Due to the IDEQ field staff request to perform the triplicate sampling in DU3.1A, sample locations were therefore collected by a systematic offset from the original GPS-generated sample locations generated for DU3.1A, per Interstate Technology and Regulatory Council's (ITRC) ISM guidance, Section 5.3.5 and Figure 5-5 (ITRC 2012). TerraGraphics' field crew collected the second replicate sample 4 feet north of the original sample and the third replicate sample 4 feet west of the original sample.
    - In DU3.1A, the ground slope and vegetation cover prevented drill rig access; therefore, TerraGraphics' field crew utilized hand digging in these areas.
- Due to high viscosity in the soil samples collected in DU2.2A, DU2.2B, and DU2.2C being analyzed for full suite SVOCs using the U.S. Environmental Protection Agency (USEPA) Method 8270D, the laboratory had to dilute the samples by 20x, resulting in

higher than expected reporting limits. Out of the 36 analytes analyzed using Method 8270D, 24 had reporting limits higher than their respective screening levels. Section 3.2 provides further details on this deviation.

- IDEQ requested SVOCs and RCRA 8 metals be compared to USEPA Regional Screening Levels (RSLs) for Residential Soil (USEPA 2016a) rather than IDTLs (IDEQ 2004).

2.2 **Soil Sampling**

TerraGraphics conducted site assessment activities from October 3 through 7, 2016. This section describes each sampling procedure.

The field crew utilized the following two drill rigs and their respective equipment to conduct site assessment activities:

1) AMS PowerProbe ™ 9600 equipped with a Stanley MB-156 hammer. A single-tube Geoprobe® (2.25 inch diameter 5-foot length) macro-core barrel with a Geoprobe® macro-core liner.
2) AMS PowerProbe ™ 9110 equipped with a BR87 Hydraulic Breaker. An AMS sample tube (2.125 inch diameter 4 foot length) and an AMS PVC Liner.

The drill rigs completed all ISM and discrete/grab borings by driving the boring to a total depth of 1 foot bgs.

Following the QAPP (TerraGraphics 2016), TerraGraphics' field personnel placed all PAH and SVOC soil samples in a cooler containing double-bagged ice immediately after collection, and held the samples under chain-of-custody for shipment. RCRA 8 metals soil samples were double bagged in a one-gallon Ziploc® and held under chain-of-custody for delivery to the laboratory.

TerraGraphics shipped the soil samples via FedEx to Environmental Science Corporation Lab Sciences (ESC) where they were analyzed for PAHs and SVOCs. RCRA 8 metals soil samples were double-bagged and sent to SVL Analytical, Inc. (SVL) for analysis. Appendix A includes complete laboratory data sheets and chain-of-custody documentation. Investigation derived waste (IDW) consisting of soil cuttings were placed in 55-gallon drums, properly labeled, and stored onsite per the QAPP (TerraGraphics 2016). The IDW drums were collected by Safety Kleen on December 5, 2016. Appendix B includes the IDW manifest documentation and profile.

2.2.1 Incremental Sampling Methodology

The sampling design consisted of an ISM approach, consistent with the ITRC ISM guidance document (ITRC 2012). TerraGraphics divided the Site into 3 Zones and 17 individual DUs (Figure 1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, Figure 7, and Figure 8). The field crew collected 30 subsamples to complete one ISM sample for each DU.

The chemicals of concern (COCs) for all three Zones include PAHs and RCRA 8 metals from historical use. Zone 2 was further subdivided into DU2.2A, 2.2B, and 2.2C. Zone 2 included not only PAHs and RCRA 8 metals, but also full-suite SVOCs due to a historic location of a trestle and bone yard (TerraGraphics 2015).

Field crews collected three replicate samples from DU1.2 and DU3.1A, and one ISM sample from all other DUs (results are included in Table 1, Table 2, and Table 3).

With the exception of the deviations mentioned in Section 2.1, all subsample locations were randomly generated using a random number generator with GIS software and were located in the field with a GPS.

The field crew collected the ISM samples from the surface to a maximum depth of 1 foot bgs, ensuring an equal sample volume from each subsample. In most cases, TerraGraphics collected subsamples using direct push methods (ASTM 2014); however, in DU3.1A the ground slope and vegetation cover prevented drill rig access, therefore, TerraGraphics' field crew utilized hand digging in these areas. The field crew hand dug to a depth of 1 foot bgs and scooped equal volumes of soil from each location.

The field crew worked the recovered soil through a ¼-inch (6.35 millimeter [mm]) sieve to break up the soil and remove larger debris, then through a #10 sieve (2.00 mm) in the field to better homogenize the samples.

Field crews placed the soil from each DU into a dedicated, new, clean, and disposable plastic 5-gallon bucket for homogenization until they obtained all subsamples. To homogenize the material, the field crew laid out soil from the 5-gallon bucket onto dedicated visqueen material (polyethylene sheeting) and mixed thoroughly by hand using single use, nitrile gloves. The field crew used a cone and quarter technique to further composite and collected an equal volume of soil from each DU. TerraGraphics' field crew formed the soil on the visqueen material into a cone shape, flattened the cone into a cake shape, and divided the cake into four equal volumes. The two quarters which were opposite from each other were discarded, while the other two were combined and constituted the reduced volume size. This process continued until the remaining volume was the appropriate sample size for analysis (International Union of Pure and Applied Chemistry [IUPAC] Recommendations 2005).

TerraGraphics' field crew oversaw the excavation subcontractor, Able Clean-up Technologies, remove the top layer (approximately 6 inches) of Emulsified Asphalt Dust Abatement- (EADA) affected soils in DU3.1B at all subsample locations prior to conducting ISM sampling. Since the underlying soils likely represent Site conditions prior to EADA application, excavation efforts were conducted to minimize the potential effect of cross contamination from the overlying 6 inches of EADA-affected soils. Once field crews collected each subsample, the small pits were backfilled with the same excavated soil and compacted using the excavator tracks.

For RCRA 8 metals sampling, the field crew collected a total of 23 samples (including replicate and duplicate samples) and placed them into a double-bagged one-gallon Ziploc® bag for analysis. Samples were sent to SVL labs for preparation and analysis. SVL prepared the ISM samples following ITRC guidance (ITRC 2012), used 2-D Japanese Slab Cake method to create the analytical 10-gram aliquots, and analyzed samples for RCRA 8 metals by USEPA Method 6010C (USEPA 1996b) and mercury by USEPA Method 7471B (USEPA 2007).

For PAHs and SVOCs sampling, the field crew collected a total of 23 samples (including replicate and duplicate samples) and placed them into a 4-oz jar with no preservative. Samples were sent to ESC for analysis. ESC analyzed ISM samples for SVOCs and PAHs using USEPA Method 8270D-selective ion monitoring (SIM) (USEPA 1996a). DU2.2A, DU2.2B, DU2.2C also included full suite SVOC analysis by ESC through a combination of USEPA 8270D-SIM (USEPA 1996a) and USEPA Method 8270D (USEPA 1996a).

Field crews collected a rinsate blank at the end of each ISM sampling day; field crews collected a total of five rinsate blanks.

2.2.2 Discrete/Grab Sampling Methodology (DU3.1A and DU3.1B)

TerraGraphics' field crew collected 2 soil samples (1 from DU3.1A and 1 from DU3.1B) from the ground surface. The purpose of these grab samples were to assess COCs being evaluated at the Site (PAHs, SVOCs, and RCRA 8 metals) that might also be present in the surface soils due to a dust suppressant (known as EADA) recently sprayed by the City of CDA street department (DU3.1A is known to not have EADA sprayed; DU3.1B is known to have EADA sprayed). The constituents within EADA is proprietary and might have contributed to the concentrations detected within the ISM sample collected in DU 3.1B

The field crew collected the two soil samples using used clean methods to place the soil into a 4-oz glass jar (with no preservative) for PAH analysis, and a 4-oz glass jar (with no preservative) for RCRA 8 metals analysis. The field crew placed the soil samples in a cooler containing double-bagged ice immediately after collection and held the samples under chain-of-custody for shipment to ESC (PAH analysis) and SVL (RCRA 8 metals analysis). The samples were not subject to drying or sieving.

ESC analyzed the grab samples for SVOCs and PAHs using USEPA Method 8270D-SIM (USEPA 1996a). SVL analyzed the grab samples for RCRA 8 metals by USEPA Method 6010C (USEPA 1996b) and mercury by USEPA Method 7471B (USEPA 2007).

Section 3.0 Data Evaluation

3.1 Data Quality Assurance

Section 5.0 of the QAPP (TerraGraphics 2016) outlines the data quality objectives and criteria. TerraGraphics' project quality assurance officer (QAO) reviewed field documentation, results of field and laboratory quality assurance/quality control (QA/QC) samples, and data reported by the laboratory to ensure that the data had been recorded, transmitted, and processed correctly, and to determine that data quality objectives were met. The subsections below provide a summary of the data usability assessment. Appendix C includes the full QA/QC Memorandum.

The laboratory and field data are determined to be of acceptable quality. Accuracy and precision are acceptable and met data quality indicators stated in the QAPP (TerraGraphics 2016). However, the following samples are qualified provided the given basis:

1. The analytes 4-nitrophenol and phenol are qualified as estimates (*UJ*) in sample CDA-BNSF-ROW-DU3.1A-2-RB based on USEPA's National Functional Guidelines for Organics guidelines regarding the low percent recovery in the laboratory control samples (USEPA 2016c).
2. The analytes 3,3-dichlorobenzidine, hexachlorocyclopentadiene, n-nitrosodimethylamine, 2,4-dimethylphenol, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, 4-nitrophenol, and pentachlorophenol are not detected in the samples due to matrix interference. Therefore, they are qualified as estimates (*UJ*) in samples CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A based on USEPA's National Functional Guidelines for Inorganics guidelines regarding the sample matrix interference in the matrix spike (MS) and matrix spike duplicate (MSD) and the inability to calculate percent recoveries and relative percent differences (USEPA 2016b).

No analytes were rejected in any samples as part of this QA/QC review. Therefore, completeness for this sampling event is 100%, which meets the project data quality objective of ≥90% (TerraGraphics 2016).

Based on ITRC ISM guidance, TerraGraphics recommends that for DU1.2 and DU3.1A, where replicate samples were collected, that the maximum concentration of an analyte be used if the relative standard deviation (RSD) is less than 30% or that the Chebyshev 95% upper confidence limit (UCL) of an analyte be used if the RSD is equal to or greater than 30%. The table below shows those analytes where a maximum concentration is used or where the 95% UCL will be used.

	When Analyte RSD <30%, Then Use Maximum Replicate Concentration	**When Analyte RSD ≥30%, Then Use Chebyshev 95% UCL**
DU1.2	anthracene, acenaphthylene, dibenz(a,h)anthracene, phenanthrene	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, pyrene, and mercury
DU3.1A	anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene	chrysene and mercury

3.2 **Elevated Reporting Limits (SVOCs by 8270D)**

Field ISM samples within DU2.2A, DU2.2B, and DU2.2C included full suite SVOCs as COCs due to a historic location of a trestle and bone yard (TerraGraphics 2015). ESC analyzed SVOCs by USEPA Method 8270D-SIM (USEPA 1996a); however, the full SVOC suite is not available to be entirely run using this method. ESC used USEPA Method 8270D (USEPA 1996a) for the remaining SVOC constituents (Table 1 and Table 2).

Laboratory technicians at ESC noted that the extracts in both the SVOC samples analyzed with 8270D and 8270D-SIM were dark in color, and therefore they appropriately diluted the samples. However, the high dilution (20x) yielded elevated reporting limits higher than the screening levels in 24 out of the 36 SVOC analytes. The SVOC analytes which were analyzed by USEPA Method 8270D-SIM were able to be extracted down to the normal amount according to the Method, yielding reporting limits below screening levels. TerraGraphics considers the SVOC data analyzed using USEPA Method 8270D unusable for comparison to RSLs.

TerraGraphics' Analytical Chemist reviewed the chromatogram signatures provided by ESC and determined they appear typical for samples contaminated with heavy hydrocarbon fuel, such as heavy oil, creosote, tar, or perhaps a combination.

Section 4.0 Soil Sample Results

TerraGraphics conducted soil sampling activities from October 3 through 7, 2016. Field crews used ISM and discrete/grab sampling methods outlined within the QAPP (TerraGraphics 2016) to collect samples for COCs based on the RECs identified within each Zone. The following subsections describe the analytical results from each Zone.

4.1 Incremental Sampling Results

The analytical results for the ISM soil samples (analyzed for PAHs, SVOCs, and RCRA 8 metals within DU1.1, D1.2, DU1.3(A,B,C), DU2.1(A,B,C), DU2.2(A,B,C), DU3.1(A,B,C), and DU3.2 (A.B.C) yielded several analyte concentrations above their respective RUSL/RSL value (for SVOCs and PAHs) as summarized below. RCRA 8 metals are evaluated against RSLs (USEPA 2016a). Arsenic and total chromium are also compared to Statewide Washington Background Level/Owyhee Upland Oregon Background Level based on the Natural Background Soil Metals Concentrations in Washington State: Table 6 (Ecology 1994) and Background Levels of Metals in Soil for Cleanups: Table 4; Owyhee Uplands (ODEQ 2013), respectively.

4.1.1 Zone 1 (DU1.1, DU 1.2, DU1.3A, DU1.3B, and DU1.3C)

SVOCs (by 8270D-SIM):

Dibenz(a,h)anthracene; RSL = 0.016 mg/kg
- DU1.2: Result = 0.0170
- DU1.3B: Result = 0.113 mg/kg

Indeno(1,2,3-cd)pyrene; RSL = 0.16 mg/kg
- DU1.3B: Result = 0.378 mg/kg

PAHs (by 8270D-SIM):

Benzo(a)anthracene; RUSL = 0.09 mg/kg
- DU1.2; Result = 0.135 mg/kg
- DU1.3B: Result = 0.456 mg/kg

Benzo(a)pyrene; RUSL = 0.02 mg/kg
- DU1.2: Result = 0.128 mg/kg
- DU1.3A: Result = 0.0317 mg/kg
- DU1.3B: Result = 0.44 mg/kg

Benzo(b)fluoranthene; RUSL = 0.20 mg/kg
- DU1.2: Result = 0.217 mg/kg
- DU1.3B: Result = 1.0 mg/kg

RCRA 8 metals (by 6010 and 7471B):

Arsenic; RSL = 0.68 mg/kg; WA Background Level = 7.0 mg/kg; OR Background Level = 17.0 mg/kg
- DU1.1: Results = 25.6 mg/kg
- DU1.2: Result =20.7 mg/kg
- DU1.3A: Result =13.1 mg/kg
- DU1.3B: Result = 12.2 mg/kg
- DU1.3C: Result = 11.6 mg/kg

Total Chromium; RSL = 0.30 mg/kg*; WA Background Level = 42.0 mg/kg; OR Background Level = 120.0 mg/kg
- DU1.1: Results = 24.6 mg/kg
- DU1.2: Result =26.9 mg/kg
- DU1.3A: Result =18.8 mg/kg
- DU1.3B: Result = 21.4 mg/kg
- DU1.3C: Result = 18.4 mg/kg

* RSL is for chromium(VI), as there is no RSL for total chromium. Chromium(VI) yields the most conservative screening level for carcinogenic risk in resident soil.

4.1.2 Zone 2 (DU2.1A, DU2.1B, DU2.1C, DU2.2A, DU2.2B, and DU2.2C)

SVOCs (by 8270D-SIM):

Dibenz(a,h)anthracene; RSL = 0.016 mg/kg
- DU2.1A: Result = 0.019 mg/kg
- DU2.1B: Result = 0.118 mg/kg
- DU2.2B: Result = 0.126 mg/kg

Indeno(1,2,3-cd)pyrene; RSL = 0.16 mg/kg
- DU2.1B: Result = 0.405 mg/kg
- DU2.2B: Result = 0.420 mg/kg

PAHs (by 8270D-SIM):

Benzo(a)anthracene; RUSL = 0.09 mg/kg
- DU2.1B: Result = 0.468 mg/kg
- DU2.2B: Result = 0.52 mg/kg

Benzo(a)pyrene; RUSL = 0.02 mg/kg
- DU2.1A: Result = 0.0452 mg/kg
- DU2.1B: Result = 0.505 mg/kg
- DU2.1C: Result = 0.066 mg/kgDU2.2B: Result = 0.606 mg/kg

Benzo(b)fluoranthene; RUSL = 0.20 mg/kg
- DU2.1B: Result = 0.942 mg/kg
- DU2.2B: Result = 0.942 mg/kg

RCRA 8 metals (by 6010 and 7471B):

Arsenic; RSL = 0.68 mg/kg; WA Background Level = 7.00 mg/kg; OR Background Level = 17.0 mg/kg
- DU2.1A: Result =14.8 mg/kg
- DU2.1B: Result =10.3 mg/kg
- DU2.1C: Result = 10.7 mg/kg
- DU2.2A: Result = 15.7 mg/kg
- DU2.2B: Result = 14.5 mg/kg
- DU2.2C: Result = 13.7 mg/kg

Total Chromium; RSL = 0.30 mg/kg*; WA Background Level = 42.0 mg/kg; OR Background Level = 120.0 mg/kg
- DU2.1A: Result =20.9 mg/kg
- DU2.1B: Result =21.4 mg/kg
- DU2.1C: Result = 20.7 mg/kg
- DU2.2A: Result = 22.5 mg/kg
- DU2.2B: Result = 20.5 mg/kg
- DU2.2C: Result = 23.7 mg/kg

* RSL is for chromium(VI), as there is no RSL for total chromium. Chromium(VI) yields the most conservative screening level for carcinogenic risk in resident soil.

4.1.3 Zone 3 (DU3.1A, DU3.1B, DU3.1C, DU3.2A, DU3.2B, and DU3.2C)

SVOCs (by 8270D-SIM):

Dibenz(a,h)anthracene; RSL = 0.016 mg/kg
- DU3.1B: Result = 0.0288 mg/kg

Indeno(1,2,3-cd)pyrene; RSL = 0.16 mg/kg
- DU3.2B: Result = 0.167 mg/kg

PAHs (by 8270D-SIM):

Benzo(a)anthracene; RUSL = 0.09 mg/kg
- DU3.2B: Result = 0.224 mg/kg

Benzo(a)pyrene; RUSL = 0.02 mg/kg
- DU3.1B: Result = 0.121 mg/kg
- DU3.1C: Result = 0.0993 mg/kg
- DU3.2A: Result = 0.0263 mg/kg
- DU3.2B: Result = 0.234 mg/kg
- DU3.2C: Result = 0.16 mg/kg

Benzo(b)fluoranthene; RUSL = 0.20 mg/kg
- DU3.2B: Result = 0.416 mg/kg

RCRA 8 metals (by 6010 and 7471B):

Arsenic; RSL = 0.68 mg/kg; WA Background Level = 7.00 mg/kg; OR Background Level = 17.0 mg/kg
- DU3.1A: Result = 14.4 mg/kg
- DU3.1B: Result = 13.4 mg/kg
- DU3.1C: Result = 12.3 mg/kg
- DU3.2A: Result = 15.4 mg/kg
- DU3.2B: Result = 12.5 mg/kg
- DU3.2C: Result =11.7 mg/kg

Total Chromium; RSL = 0.30 mg/kg*; WA Background Level = 42.0 mg/kg; OR Background Level = 120.0 mg/kg
- DU3.1A: Result = 19.6 mg/kg
- DU3.1B: Result = 19.0 mg/kg
- DU3.1C: Result = 16.6 mg/kg
- DU3.2A: Result = 25.3 mg/kg
- DU3.2B: Result = 17.5 mg/kg
- DU3.2C: Result =14.9 mg/kg

* RSL is for chromium(VI), as there is no RSL for total chromium. Chromium(VI) yields the most conservative screening level for carcinogenic risk in resident soil.

Table 1, Table 2, and Table 3 summarize the analytical results (expressed in mg/kg).

4.2 **Discrete/Grab Sampling Results (DU3.1A and DU3.1B only)**

The analytical results for discrete/grab soil samples (analyzed for PAHs/SVOCs and RCRA 8 metals within DU3.1A and DU3.1B) yielded several analytes above their respective RUSL/RSL value as summarized in the bullet list below. RCRA 8 metals are evaluated against RSLs (USEPA 2016a). Arsenic and total chromium are also evaluated against Statewide Washington Background Level/Owyhee Upland Oregon Background Level based on the Natural Background Soil Metals Concentrations in Washington State: Table 6 (Ecology 1994) and Background Levels of Metals in Soil for Cleanups: Table 4; Owyhee Uplands (ODEQ 2013), respectively.

SVOCs (by 8270D-SIM):

Dibenz(a,h)anthracene; RSL = 0.016 mg/kg
- DU3.1B: Result = 0.33 mg/kg

Indeno(1,2,3-cd)pyrene; RSL = 0.16 mg/kg
- DU3.1B: Result = 1.01 mg/kg

Naphthalene; RUSL = 0.12 mg/kg
- DU3.1B: Result = 0.581 mg/kg

PAHs (by 8270D-SIM):

Benzo(a)anthracene; RUSL = 0.09 mg/kg
- DU3.1B: Result = 1.92 mg/kg

Benzo(a)pyrene; RUSL = 0.02 mg/kg
- DU3.1B: Result = 1.81 mg/kg

Benzo(b)fluoranthene; RUSL = 0.20 mg/kg
- DU3.1B: Result = 3.06 mg/kg

RCRA 8 metals (by 6010 and 7471B):

Arsenic; RSL = 0.68 mg/kg; WA Background Level = 7.00 mg/kg; OR Background Level = 17.0 mg/kg
- DU3.1A: Result = 9.2 mg/kg
- DU3.1B: Result = 5.3 mg/kg

Total Chromium; RSL = 0.30 mg/kg*; WA Background Level = 42.0 mg/kg; OR Background Level = 120.0 mg/kg
- DU3.1A: Result = 11.5 mg/kg
- DU3.1B: Result = 8.93 mg/kg

* RSL is for chromium(VI), as there is no RSL for total chromium. Chromium(VI) yields the most conservative screening level for carcinogenic risk in resident soil.

Table 1, Table 2, and Table 3 summarize the analytical results (expressed in mg/kg).

4.3 **Discussion**

Soil data (for both ISM and grab sampling methods) showed detections of several COCs. Soil samples yielded PAHs and SVOCs exceeding the REM RUSLs/RSLs for benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene. RCRA 8 metals arsenic and total chromium were also above RSL in both grab and ISM samples. All other detected metals (barium, cadmium, lead, and mercury) were below the residential soil USEPA RSL for direct contact-child (USEPA 2016a). Field crews did not note any obvious visual staining or odor in any of the borings throughout the Site. Appendix D includes photos from the assessment activities.

The purpose of collecting grab samples from the surface was to assess potential for the presence of EADA used as a dust suppressant. Collecting samples from DU3.1B (a DU known to previously have had EADA applied), and DU3.1A (an area known to not have EADA applied) allows for comparison. The data suggests that metals detected in the soils within DU3.1B (arsenic and total chromium) are not a result of EADA spray, but rather consistent throughout the entire Site at similar background concentrations. Interestingly, the entire list of elevated PAHs and SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and naphthalene) were all detected above their respective RUSL/RSL in grab sample DU3.1B (known to have EADA sprayed). The grab sample from DU3.1A (known not to have EADA) had no analytes detected above their respective RUSL/RSL.

Comparison of metals concentrations across the DUs suggest the elevated analytes detected within the grab samples were not caused strictly by EADA, as the constituents were also detected above RUSLs/RSLs in ISM samples from DU1.2, DU1.3A, DU1.3B, DU2.1A, DU2.1B, DU2.2B, DU3.1B, DU3.1C, DU3.2A, DU3.2B, and DU3.2C. However, EADA could have elevated the detected result, as the surface grab sample from DU3.1B (known to be affected by EADA) had the highest concentrations of all the detected analytes.

Section 5.0 Conclusions and Recommendations

This section summarizes TerraGraphics' conclusions and recommendations.

5.1 Conclusions

Based on the available information and Site-specific data collected, TerraGraphics concludes the following COCs at the Site exceed screening levels:

- Soil SVOC and PAH concentrations within select DUs listed below located within all three Zones exceed the RUSL for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and naphthalene, and exceed the RSL for dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene. Affected DUs are: DU1.2, DU1.3A, DU1.3B, DU2.1A, DU2.1B, DU2.1C, DU2.2B, DU3.1B, DU3.1C, DU3.2A, DU3.2B, and DU3.2C. Figure 6, Figure7, and Figure 8 show the DUs and their specific elevated constituents within each DU.
- DU2.2A, DU2.2B, and DU2.2C had reporting limits exceeding the RSLs due to high dilution of the soil sampled in this area (analyzed using USEPA Method 8270D). The need for dilution due to sample viscosity, as well as the chromatogram signature of the samples, appear typical for samples contaminated with heavy hydrocarbon fuel, such as heavy oil, creosote, tar, or perhaps a combination. SVOC concentrations within the samples could possibly be elevated above the RSLs.
- Soil RCRA 8 metal concentrations within DUs located within all three Zones exceed the RSL for arsenic and total chromium. Both arsenic and total chromium exceeded the respective RSL within every DU. Figure 6, Figure 7, and Figure 8 show the DUs and their specific elevated constituents within each DU. All other detected metals (barium, cadmium, lead, and mercury) were below the residential soil USEPA RSL for direct contact-child (USEPA 2016a).
- The surface grab sample at 3.1B (known to have EADA sprayed) had concentrations exceeding the respective RUSL for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and naphthalene, and concentrations exceeding the respective RSL for dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, arsenic and total chromium. The surface grab sample within DU3.1A (known to not have EADA sprayed) exceeded the respective RSL values for arsenic and total chromium, confirming that EADA is not a likely source of metals in soil.

5.2 Recommendations

Based on the available information and Site-specific data collected, TerraGraphics recommends the following:

- Evaluate RCRA 8 metals, PAHs, and SVOCs for risk potential based upon the proposed future land use using the PetroREM (IDEQ 2012).

Section 6.0 References and Resources Used

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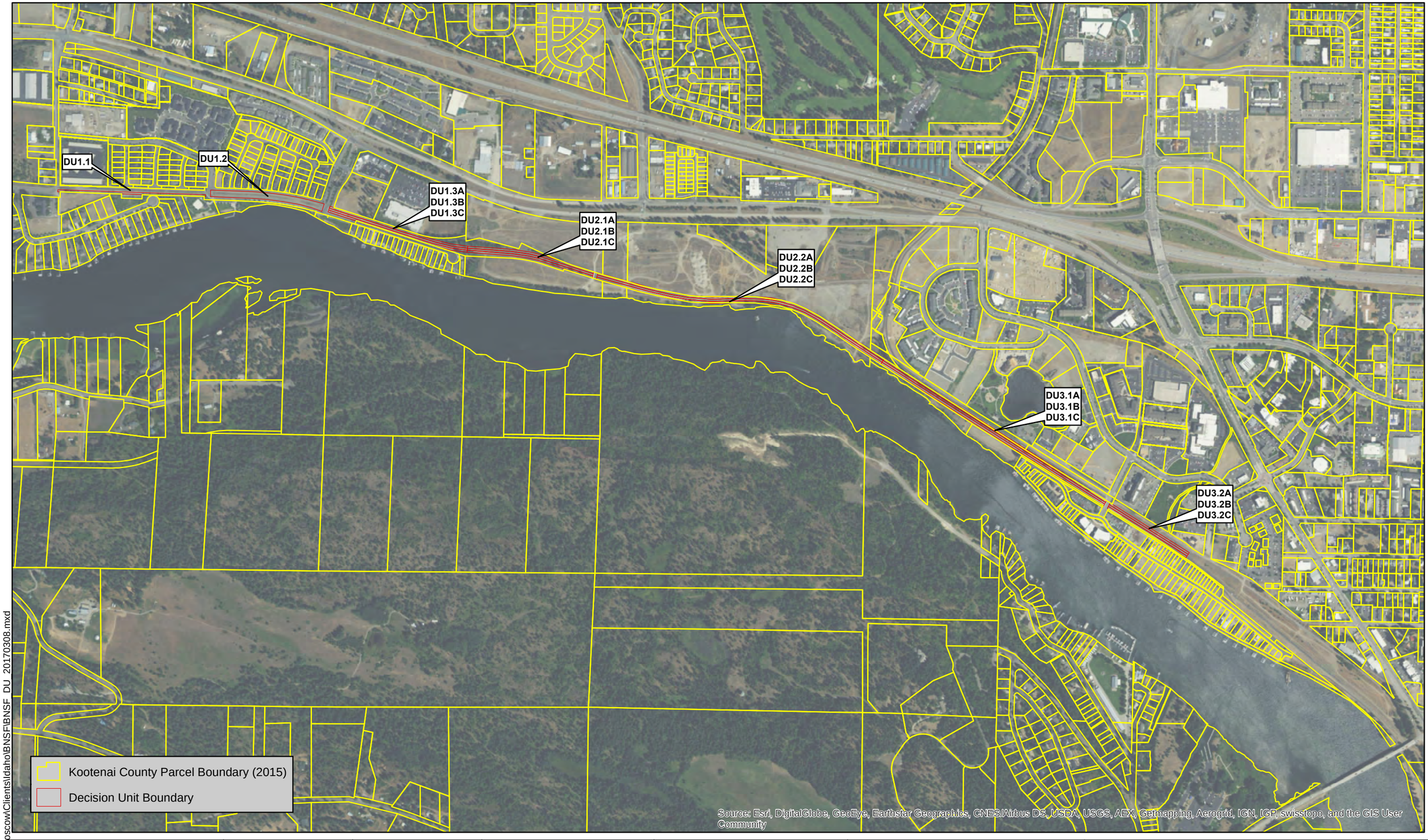

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Print Date	March 8, 2017
Project Number	15029-01
Requestor	M. Studer
Project Manager	M. Studer
Cartographer	B. Bailey
Project Name	**BNSF ROW R2R Coeur d'Alene, Idaho**

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1:10,000
1 inch = 833 feet
0 500 1,000 Feet

N

Figure 1

Site Layout Showing Decision Units and Zones

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1:4,000
1 inch = 333 feet
0 200 400 Feet

N

Figure 2

Decision Units 1.1, 1.2, and 1.3

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1:4,000
1 inch = 333 feet
0 200 400 Feet

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Figure 3

Decision Units 2.1 and 2.2

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Cartographer	B. Bailey
Project Name	**ROW R2R Coeur d'Alene, Idaho**

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1:4,000
1 inch = 333 feet
0 200 400 Feet

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Figure 4

Decision Units 3.1 and 3.2

DU1.1	
Arsenic	25.6
Total Chromium	24.6

DU1.2	
Benzo(a)anthracene	0.135†
Benzo(a) pyrene	0.128†
Benzo(b)fluoranthene	0.217†
Dibenz(a,h)anthracene	0.0170
Arsenic	20.7
Total Chromium	26.9

DU1.3A	
Benzo(a) pyrene	0.0317
Arsenic	13.1
Total Chromium	18.8

DU1.3B	
Benzo(a)anthracene	0.456
Benzo(a) pyrene	0.440
Benzo(b)fluoranthene	1.00
Dibenz(a,h)anthracene	0.113
Indeno(1,2,3-cd)pyrene	0.378
Arsenic	12.2
Total Chromium	21.4

DU1.3C	
Arsenic	11.6
Total Chromium	18.4

Kootenai County Parcel Boundary (2015)

Concentrations are in mg/kg.

† = The maximum concentration of the replicate ISM results is presented.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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March 8, 2017	M. Studer	BNSF ROW R2R Coeur d'Alene, Idaho
Project Number	**Project Manager**	
15029-01	M. Studer	
	Cartographer	
	B. Bailey	

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1:4,000
1 inch = 333 feet
0 200 400 Feet

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Figure 5

Decision Units 1.1, 1.2, and 1.3
(with results greater than the USEPA RSL Residential Soil value)

DU2.1A	
Benzo(a) pyrene	0.0452
Dibenz(a,h)anthracene	0.0190
Arsenic	14.8
Total Chromium	20.9

DU2.1B	
Benzo(a)anthracene	0.468
Benzo(a) pyrene	0.505
Benzo(b)fluoranthene	0.942
Dibenz(a,h)anthracene	0.118
Indeno(1,2,3-cd)pyrene	0.405
Arsenic	10.3
Total Chromium	21.4

DU2.1C	
Benzo(a) pyrene	0.066
Arsenic	10.7
Total Chromium	20.7

DU2.2A	
Arsenic	15.7
Total Chromium	22.5

DU2.2B	
Benzo(a)anthracene	0.520
Benzo(a) pyrene	0.606
Benzo(b)fluoranthene	0.942
Dibenz(a,h)anthracene	0.126
Indeno(1,2,3-cd)pyrene	0.420
Arsenic	14.5
Total Chromium	20.5

DU2.2C	
Arsenic	13.7
Total Chromium	23.7

Kootenai County Parcel Boundary (2015)

Concentrations are in mg/kg.

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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Project Manager	M. Studer
Cartographer	B. Bailey
Project Name	ROW R2R Coeur d'Alene, Idaho

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1:4,000
1 inch = 333 feet
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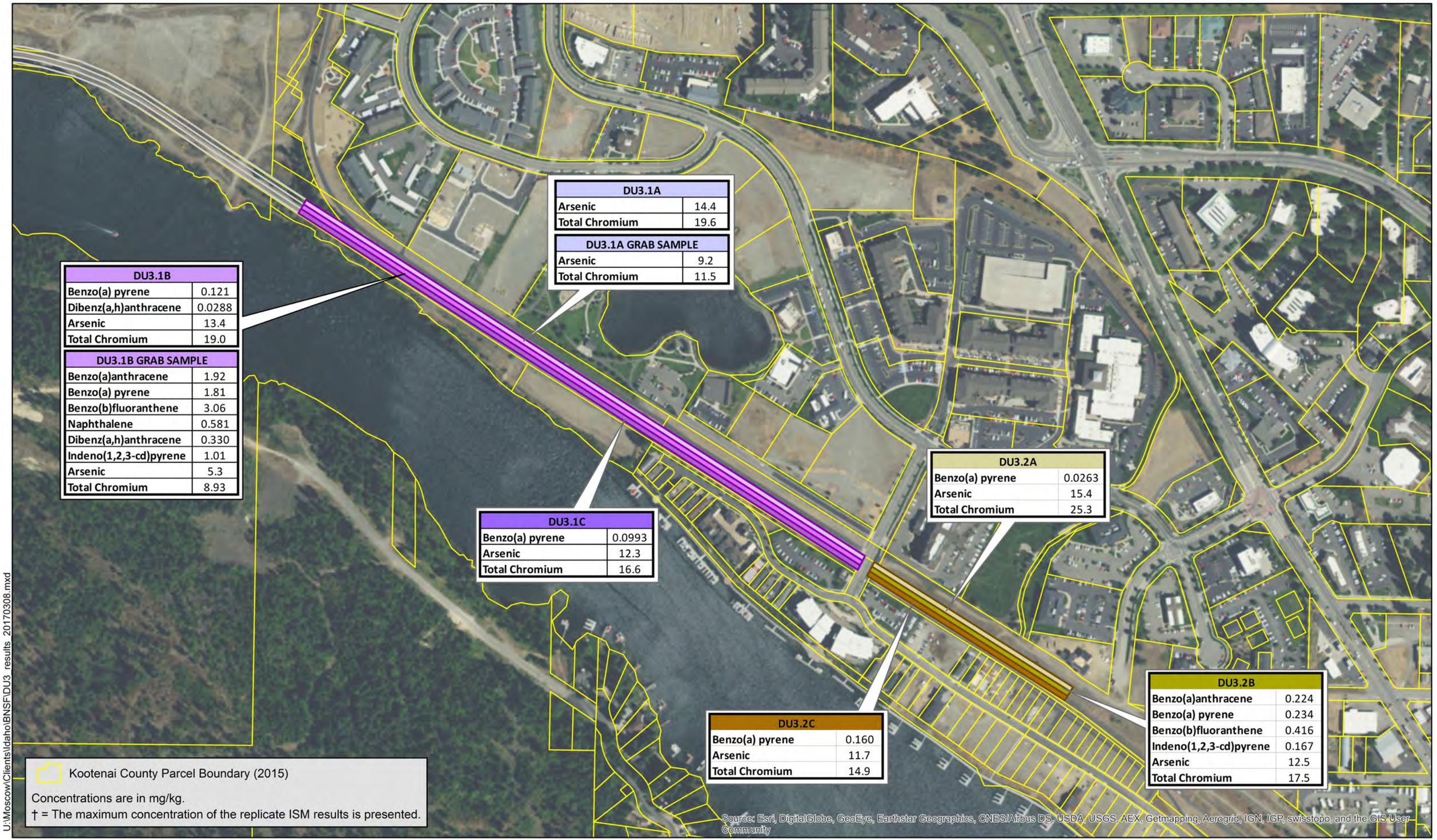
Figure 6

Decision Units 2.1 and 2.2
(with results greater than the USEPA RSL Residential Soil value)



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Cartographer	B. Bailey
Project Name	ROW R2R Coeur d'Alene, Idaho

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1:4,000
1 inch = 333 feet
0 200 400 Feet

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Figure 7

Decision Units 3.1 and 3.2
(with results greater than the IDTL value)

Table 1. Soil Sample Results for Polycyclic Aromatic Hydrocarbons and Semi-Volatile Organic Compounds by Method 8270D-SIM

Sample ID/Date		Anthracene	Acenaphthene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Fluoranthene	Fluorene	Naphthalene	Pyrene	Acenaphthylene	Benzo(g,h,i)perylene	2-Chloronaphthalene (beta-chloronaphthalene)	1-Methylnaphthalene	2-Methylnaphthalene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Phenanthrene
DU1.1																				
Result	10/7/2016 (mg/kg)	<0.120	<0.120	<0.120	<0.120	<0.120	<0.120	<0.120	<0.120	<0.120	<0.400	<0.120	<0.120	<0.120	<0.400	<0.400	<0.400	<0.120	<0.120	<0.120
DU1.2																				
Result*	10/5-6/2016 (mg/kg)	0.0211	<0.012	**0.135**†	**0.128**†	**0.217**†	0.0687†	0.192†	0.254†	<0.0120	<0.0400	0.275†	0.0198	0.117†	<0.0400	<0.0400	<0.0400	**0.0170**	0.0890†	0.0218
DU1.3A																				
Result	10/4/2016 (mg/kg)	0.0466	<0.0060	0.0302	**0.0317**	0.0673	0.0205	0.0461	0.0584	<0.0060	<0.0200	0.0558	0.0257	0.0943	<0.0200	<0.0200	<0.0200	0.0100	0.0431	0.0183
DU1.3B																				
Result	10/4/2016 (mg/kg)	0.361	<0.030	**0.456**	**0.440**	**1.00**	0.317	0.839	1.08	<0.0300	<0.100	1.06	0.276	0.555	<0.100	<0.100	<0.100	**0.113**	**0.378**	0.242
DU1.3C																				
Result	10/5/2016 (mg/kg)	<0.012	<0.012	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0120	<0.0400	<0.0120	<0.0120	<0.0120	<0.0400	<0.0400	<0.0400	<0.0120	<0.0120	<0.0120
DU2.1A																				
Result	10/4/2016 (mg/kg)	0.0575	<0.0120	0.0382	**0.0452**	0.132	0.035	0.0547	0.0911	<0.0120	<0.0400	0.0834	0.0327	0.107	<0.0400	<0.0400	<0.0400	**0.0190**	0.0512	0.0268
DU2.1B																				
Result	10/3/2016 (mg/kg)	0.340	<0.030	**0.468**	**0.505**	**0.942**	0.282	0.815	1.17	<0.0300	<0.100	1.12	0.283	0.646	<0.100	<0.100	<0.100	**0.118**	**0.405**	0.242
DU2.1C																				
Result	10/4/2016 (mg/kg)	0.0571	<0.030	0.0673	**0.066**	0.150	0.0436	0.133	0.135	<0.0300	<0.100	0.117	0.0314	0.0941	<0.100	<0.100	<0.100	<0.0300	0.0579	0.0457
DU2.2A																				
Result	10/3/2016 (mg/kg)	<0.060	<0.060	<0.0600	<0.0600	<0.0600	<0.0600	<0.0600	<0.0600	<0.0600	<0.200	<0.0600	<0.0600	<0.0600	<0.200	<0.200	<0.200	<0.0600	<0.0600	<0.0600
DU2.2B																				
Result*	10/3/2016 (mg/kg)	0.349	<0.060	**0.520**	**0.606**	**0.942**	0.288	0.679	0.938	<0.0600	<0.200	1.01	0.298	0.651	<0.200	<0.200	<0.200	**0.126**	**0.420**	0.145
DU2.2C																				
Result	10/3/2016 (mg/kg)	<0.030	<0.030	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300	0.0343	<0.0300	<0.100	0.0367	<0.0300	0.0529	<0.100	<0.100	<0.100	<0.0300	<0.0300	<0.0300
DU3.1A																				
Result*	10/7/2016 (mg/kg)	0.0125	<0.030	0.0164	0.0195	0.0417	<0.0300	0.0430†	0.0439	<0.0300	<0.100	0.0372	<0.030	0.0217	<0.100	<0.100	<0.100	<0.0300	0.0151	0.0198
DU3.1B																				
Result	10/6/2016 (mg/kg)	0.0571	<0.0060	0.0856	**0.121**	0.196	0.0634	0.125	0.142	<0.00600	<0.0200	0.175	0.0617	0.130	<0.0200	<0.0200	<0.0200	**0.0288**	0.0960	0.0340
DU3.1C																				
Result	10/4/2016 (mg/kg)	<0.060	<0.060	0.0849	**0.0993**	0.126	<0.0600	0.0975	0.138	<0.0600	<0.200	0.247	<0.0600	0.116	<0.200	<0.200	<0.200	<0.0600	<0.0600	<0.0600
DU3.2A																				
Result	10/6/2016 (mg/kg)	0.0348	0.015	0.0249	**0.0263**	0.0528	0.0130	0.0481	0.0940	<0.0120	0.0693	0.0711	0.0123	0.0452	<0.0400	<0.0400	0.0417	<0.0120	0.0259	0.0769
DU3.2B																				
Result	10/5/2016 (mg/kg)	0.138	<0.060	**0.224**	**0.234**	**0.416**	0.117	0.301	0.373	<0.0600	<0.200	0.402	<0.0600	0.259	<0.200	<0.200	<0.200	<0.0600	**0.167**	0.111
DU3.2C																				
Result	10/5/2016 (mg/kg)	<0.060	<0.060	<0.0600	**0.160**	0.0782	<0.0600	<0.0600	<0.0600	<0.0600	<0.200	0.128	<0.0600	0.235	<0.200	<0.200	<0.200	<0.0600	<0.0600	<0.0600
DU3.1A - GRAB SAMPLE																				
Result	10/6/2016 (mg/kg)	0.0144	<0.012	<0.0120	0.0154	0.0260	<0.0120	0.0231	0.0300	<0.0120	<0.0400	0.0239	0.0123	0.0267	<0.0400	<0.0400	<0.0400	<0.0120	0.0161	0.0221
DU3.1B - GRAB SAMPLE																				
Result	10/6/2016 (mg/kg)	0.563	0.126	**1.92**	**1.81**	**3.06**	1.03	2.85	3.56	<0.060	**0.581**	3.62	0.657	1.14	<0.0200	<0.0200	<0.0200	**0.330**	**1.01**	0.798
	RUSL (mg/kg)	3,200	200	0.0900	0.0200	0.200	1.90	9.50	1,400	240	0.120	1,000	-	-	-	-	-	-	-	-
	RUSL Critical Pathway	*GWP*	*GWP*	*GWP*	*Direct Contact*	*Direct Contact*	*Direct Contact*	*GWP*	*GWP*	*GWP*		*GWP*	-	-	-	-	-	-	-	-
	RSL (mg/kg)	18,000	3,600	0.160	0.0160	0.160	1.60	16.0	2,400	2,400	3.80	1,800	-	-	4,800	18.0	240	0.0160	0.160	-
	USEPA RSL Critical Receptor	*Non-Carcinogenic Child*	*Non-Carcinogenic Child*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*	*Non-Carcinogenic Child*	*Non-Carcinogenic Child*	*Carcinogenic*	*Non-Carcinogenic Child*	-	-	*Non-Carcinogenic Child*	*Carcinogenic*	*Non-Carcinogenic Child*	*Carcinogenic*	*Carcinogenic*	-

Notes:

Analytical test for PAHs (polycyclic aromatic hydrocarbons) and SVOCs (semi-volatile organic compounds) used USEPA Method 8270D-SIM.

< denotes that the result was not detected above the reporting limit

RUSL = Residential Use Screening Level for petroleum related constituents from IDAPA 58.01.24.

USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level; Resident Soil Table (USEPA 2016)

A **bolded** number in the "Results" row denotes that the laboratory detected analyte is greater than the RUSL/RSL value.

mg/kg = milligram per kilogram

J = Result is an estimate

- = not used for comparison

* = Sample is a replicate/duplicate. The highest concentration is shown.

† = The maximum concentration of the replicate ISM results is presented.

Table 2. Soil Sample Results for Semi-Volatile Organic Compounds by Method 8270D

Sample ID	Date	Unit	Benzidine	Bis(2-chloroethoxy)methane	Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl)ether	4-Bromophenyl-phenylether	4-Chlorophenyl-phenylether	3,3-Dichlorobenzidine	2,4-Dinitrotoluene	2,6-Dinitrotoluene	Hexachlorobenzene	Hexachloro-1,3-butadiene	Hexachlorocyclopentadiene	Hexachloroethane	Isophorone	Nitrobenzene	n-Nitrosodimethylamine	n-Nitrosodiphenylamine	n-Nitrosodi-n-propylamine
DU2.2A Result		(mg/kg)	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33
DU2.2B Result*		(mg/kg)	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66
DU2.2C Result		(mg/kg)	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33
RSL		(mg/kg)	0.00053	190	0.23	-	-	-	1.2	1.7	0.36	0.21	-	1.8	1.8	570	5.1	0.002	110	0.078
USEPA RSL Critical Receptor			*Carcinogenic*	*Non-Carcinogenic Child*	*Non-Carcinogenic Child*				*Carcinogenic*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*		*Non-Carcinogenic Child*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*	*Carcinogenic*

Sample ID	Date	Unit	Benzylbutyl phthalate	Bis(2-ethylhexyl)phthalate	Di-n-butyl phthalate	Diethyl phthalate	Dimethyl phthalate	Di-n-octyl phthalate	1,2,4-Trichlorobenzene	4-Chloro-3-methylphenol	2-Chlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	4,6-Dinitro-2-methylphenol	2,4-Dinitrophenol	2-Nitrophenol	4-Nitrophenol	Pentachlorophenol	Phenol	2,4,6-Trichlorophenol
DU2.2A Result		(mg/kg)	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33
DU2.2B Result*		(mg/kg)	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66	<6.66
DU2.2C Result		(mg/kg)	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33	<3.33
RSL		(mg/kg)	290	39.0	6,300	51,000	-	630	24.0	-	390	190	1,300	-	130	-	-	1.0	19,000	49.0
USEPA RSL Critical Receptor			*Carcinogenic*	*Carcinogenic*	*Non-Carcinogenic Child*	*Non-Carcinogenic Child*		*Non-Carcinogenic Child*	*Carcinogenic*		*Non-Carcinogenic Child*	*Non-Carcinogenic Child*	*Non-Carcinogenic Child*		*Non-Carcinogenic Child*			*Carcinogenic*	*Non-Carcinogenic Child*	*Carcinogenic*

Notes:

Analytical tests for SVOCs used USEPA Method 8270D.

< denotes that the result was not detected above method detection limit

Shaded areas identify constituents where the reporting limit exceeds the screening level.

A **bolded** number in the "Results" row denotes that the laboratory detected analyte is greater than the RSL value.

USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level; Resident Soil Table (USEPA 2016)

mg/kg = milligram per kilogram

J = Result is an estimate

- = not available

* = Sample is a duplicate. The highest concentration is shown.

Table 3. Soil Sample Results for RCRA 8 Metals

Sample ID/Date	Date	Unit	Arsenic	Barium	Cadmium	Total Chromium	Lead	Selenium	Silver	Mercury
DU1.1										
Result	10/7/2016	(mg/kg)	**25.6**	171	0.410	**24.6**	63.9	<4.0	<0.50	0.268
DU1.2										
Result*	10/5-6/2016	(mg/kg)	**20.7**	187	0.340	**26.9**	59.0	<4.0	<0.50	1.54†
DU1.3A										
Result	10/4/2016	(mg/kg)	**13.1**	224	0.370	**18.8**	24.2	<4.0	<0.50	0.0350
DU1.3B										
Result	10/4/2016	(mg/kg)	**12.2**	140	0.510	**21.4**	31.6	<4.0	<0.50	<0.0330
DU1.3C										
Result	10/5/2016	(mg/kg)	**11.6**	173	0.520	**18.4**	34.0	<4.0	<0.50	0.0580
DU2.1A										
Result	10/4/2016	(mg/kg)	**14.8**	227	0.420	**20.9**	35.6	<4.0	<0.50	0.285
DU2.1B										
Result	10/3/2016	(mg/kg)	**10.3**	174	0.400	**21.4**	42.2	<4.0	<0.50	0.160
DU2.1C										
Result	10/4/2016	(mg/kg)	**10.7**	218	0.380	**20.7**	48.2	<4.0	<0.50	0.115
DU2.2A										
Result	10/3/2016	(mg/kg)	**15.7**	173	0.440	**22.5**	35.6	<4.0	<0.50	0.132
DU2.2B										
Result*	10/3/2016	(mg/kg)	**14.5**	190	0.400	**20.5**	36.4	<4.0	<0.50	0.193
DU2.2C										
Result	10/3/2016	(mg/kg)	**13.7**	187	0.750	**23.7**	35.5	<4.0	<0.50	0.0380
DU3.1A										
Result*	10/7/2016	(mg/kg)	**14.4**	297	0.610	**19.6**	60.5	<4.0	<0.50	0.272†
DU3.1B										
Result	10/6/2016	(mg/kg)	**13.4**	201	<0.200	**19.0**	23.6	<4.0	<0.50	0.310
DU3.1C										
Result	10/5/2016	(mg/kg)	**12.3**	147	0.400	**16.6**	37.1	<4.0	<0.50	0.0980
DU3.2A										
Result	10/6/2016	(mg/kg)	**15.4**	209	0.490	**25.3**	49.4	<4.0	<0.50	0.0420
DU3.2B										
Result	10/5/2016	(mg/kg)	**12.5**	209	0.420	**17.5**	40.4	<4.0	<0.50	0.342
DU3.2C										
Result	10/5/2016	(mg/kg)	**11.7**	99.3	0.250	**14.9**	18.6	<4.0	<0.50	<0.0330
DU3.1A - GRAB SAMPLE										
Result	10/6/2016	(mg/kg)	**9.2**	109	0.310	**11.5**	21.3	<4.0	<0.50	0.0430
DU3.1B - GRAB SAMPLE										
Result	10/6/2016	(mg/kg)	**5.3**	94.4	0.310	**8.93**	12.3	<4.0	<0.50	0.0820
USEPA RSL		(mg/kg)	0.68	15,000	71.0	0.30**	400	390	390	23.0
USEPA RSL Critical Receptor			*Residential Direct Contact; Carcinogenic*	*Residential Direct Contact; Noncarcinogenic - Child*	*Residential Direct Contact; Noncarcinogenic - Child*	*Residential Direct Contact; Carcinogenic*	*Residential Direct Contact; Noncarcinogenic - Child*	*Residential Direct Contact; Ingestion-Child*	*Residential Direct Contact; Ingestion-Child*	*Residential Direct Contact; Ingestion-Child*
Statewide WA Background		(mg/kg)	7.0	-	-	42.0	-	-	-	-
Owyhee Upland OR Background		(mg/kg)	17.0	-	-	120.0	-	-	-	-

Notes:

A **bolded** number in the "Results" row denotes that the laboratory detected analyte is greater than the IDTL value.

Analytical tests for RCRA 8 Metals used USEPA Method 6010C. Mercury by USEPA Method 7471B.

< denotes that the result was not detected above method detection limit.

Shaded cells denote that the reporting limit exceeds the screening level.

Natural Background Soil Metals Concentrations in Washington State: Table 6 (Ecology 1994).

Background Levels of Metals in Soils for Cleanups: Table 4; Owyhee Uplands (ODEQ 2013).

USEPA RSL = U.S. Environmental Protection Agency Regional Screening Level; Resident Soil Table (USEPA 2016)

mg/kg = milligram per kilogram

* = Sample is a replicate/duplicate. The highest concentration is shown.

** = RSL is for chromium(VI), as there is no RSL for total chromium. Chromium(VI) yields the most conservative screening level for carcinogenic risk in resident soil.

† = The maximum concentration of the replicate ISM results is presented.

Appendix A

ESC and SVL Analytical Reports

ANALYTICAL REPORT

October 18, 2016

TerraGraphics Env. Eng. - BNSF Region 1

Sample Delivery Group:	L865222
Samples Received:	10/11/2016
Project Number:	15137-02
Description:	CDA BNSF ROW Phase II Site

Report To: Melody Studer
108 W. Idaho Avenue
Kellogg, ID 83837

Entire Report Reviewed By:

Mark W. Beasley
Technical Service Representative

CDA-BNSF-ROW-DU2.2B L865222-01 Solid

Collected by: Shelley Hicks | Collected date/time: 10/03/16 13:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG916680	20	10/14/16 02:40	10/14/16 19:46	SNR
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	10	10/14/16 16:39	10/15/16 09:04	KMP
Total Solids by Method 2540 G-2011	WG916301	1	10/12/16 09:07	10/12/16 09:15	KDW

CDA-BNSF-ROW-DU2.2B-FD L865222-02 Solid

Collected by: Shelley Hicks | Collected date/time: 10/03/16 13:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG916680	20	10/14/16 02:40	10/14/16 20:10	SNR
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	10	10/14/16 16:39	10/15/16 09:48	KMP
Total Solids by Method 2540 G-2011	WG916301	1	10/12/16 09:07	10/12/16 09:15	KDW

CDA-BNSF-ROW-DU2.2C L865222-03 Solid

Collected by: Shelley Hicks | Collected date/time: 10/03/16 15:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG916680	10	10/14/16 02:40	10/14/16 18:09	SNR
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	5	10/14/16 16:39	10/15/16 06:10	KMP
Total Solids by Method 2540 G-2011	WG916301	1	10/12/16 09:07	10/12/16 09:15	KDW

CDA-BNSF-ROW-DU2.2A L865222-04 Solid

Collected by: Shelley Hicks | Collected date/time: 10/03/16 17:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG916680	10	10/14/16 02:40	10/16/16 16:53	SNR
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	10	10/14/16 16:39	10/15/16 07:37	KMP
Total Solids by Method 2540 G-2011	WG916301	1	10/12/16 09:07	10/12/16 09:15	KDW

CDA-BNSF-ROW-DU2.1B L865222-05 Solid

Collected by: Shelley Hicks | Collected date/time: 10/03/16 16:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	5	10/14/16 16:39	10/15/16 06:32	KMP
Total Solids by Method 2540 G-2011	WG916301	1	10/12/16 09:07	10/12/16 09:15	KDW

CDA-BNSF-ROW-DU2.1C L865222-06 Solid

Collected by: Shelley Hicks | Collected date/time: 10/04/16 11:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	5	10/14/16 16:39	10/15/16 06:54	KMP
Total Solids by Method 2540 G-2011	WG916301	1	10/12/16 09:07	10/12/16 09:15	KDW

CDA-BNSF-ROW-DU2.1A L865222-07 Solid

Collected by: Shelley Hicks | Collected date/time: 10/04/16 13:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	2	10/14/16 16:39	10/15/16 05:48	KMP
Total Solids by Method 2540 G-2011	WG916301	1	10/12/16 09:07	10/12/16 09:15	KDW

CDA-BNSF-ROW-DU1.3B L865222-08 Solid

Collected by: Shelley Hicks | Collected date/time: 10/04/16 13:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	5	10/14/16 16:39	10/15/16 07:16	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU1.3A L865222-09 Solid

Collected by: Shelley Hicks | Collected date/time: 10/04/16 16:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	1	10/14/16 16:39	10/15/16 03:16	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU3.1C L865222-10 Solid

Collected by: Shelley Hicks | Collected date/time: 10/04/16 10:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	10	10/14/16 16:39	10/15/16 08:43	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU3.2C L865222-11 Solid

Collected by: Shelley Hicks | Collected date/time: 10/05/16 11:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	10	10/14/16 16:39	10/15/16 09:26	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU3.2B L865222-12 Solid

Collected by: Shelley Hicks | Collected date/time: 10/05/16 12:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	10	10/14/16 16:39	10/15/16 07:59	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU1.3C L865222-13 Solid

Collected by: Shelley Hicks | Collected date/time: 10/05/16 15:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	2	10/14/16 16:39	10/15/16 03:59	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU1.2-1 L865222-14 Solid

Collected by: Shelley Hicks | Collected date/time: 10/05/16 16:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	1	10/14/16 16:39	10/15/16 02:54	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU3.1A-GB L865222-15 Solid

Collected by: Shelley Hicks | Collected date/time: 10/06/16 08:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	2	10/14/16 16:39	10/15/16 04:21	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU3.2A L865222-16 Solid

Collected by: Shelley Hicks | Collected date/time: 10/06/16 09:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	2	10/14/16 16:39	10/15/16 04:43	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU3.1B L865222-17 Solid

Collected by: Shelley Hicks | Collected date/time: 10/06/16 10:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	1	10/14/16 16:39	10/15/16 03:38	KMP
Total Solids by Method 2540 G-2011	WG916302	1	10/12/16 08:51	10/12/16 09:06	KDW

CDA-BNSF-ROW-DU3.1B-GB L865222-18 Solid

Collected by: Shelley Hicks | Collected date/time: 10/06/16 10:30 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	10	10/14/16 16:39	10/15/16 08:21	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU1.2-2 L865222-19 Solid

Collected by: Shelley Hicks | Collected date/time: 10/06/16 13:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	2	10/14/16 16:39	10/15/16 05:05	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU1.2-2-FD L865222-20 Solid

Collected by: Shelley Hicks | Collected date/time: 10/06/16 13:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916688	2	10/14/16 16:39	10/15/16 05:27	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU1.2-3 L865222-21 Solid

Collected by: Shelley Hicks | Collected date/time: 10/06/16 13:00 | Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916919	1	10/13/16 21:31	10/14/16 05:31	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU1.1 L865222-22 Solid

Collected by: Shelley Hicks
Collected date/time: 10/07/16 10:30
Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916919	20	10/13/16 21:31	10/14/16 12:04	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU3.1A-1 L865222-23 Solid

Collected by: Shelley Hicks
Collected date/time: 10/07/16 11:00
Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916919	2	10/13/16 21:31	10/14/16 11:20	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU3.1A-2 L865222-24 Solid

Collected by: Shelley Hicks
Collected date/time: 10/07/16 11:00
Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916919	2	10/13/16 21:31	10/14/16 11:42	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU3.1A-3 L865222-25 Solid

Collected by: Shelley Hicks
Collected date/time: 10/07/16 11:00
Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG917280	5	10/14/16 12:08	10/15/16 05:11	KMP
Total Solids by Method 2540 G-2011	WG916394	1	10/12/16 10:33	10/12/16 10:53	KDW

CDA-BNSF-ROW-DU3.1A-2-RB L865222-26 GW

Collected by: Shelley Hicks
Collected date/time: 10/10/16 12:25
Received date/time: 10/11/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi Volatile Organic Compounds (GC/MS) by Method 8270D	WG916690	1	10/13/16 21:29	10/14/16 17:44	SNR
Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM	WG916567	1	10/12/16 23:19	10/14/16 19:15	FMB

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Technical Service Representative

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.3		1	10/12/2016 09:15	WG916301

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.660	20	10/14/2016 19:46	WG916680
Acenaphthylene	ND		0.660	20	10/14/2016 19:46	WG916680
Anthracene	ND		0.660	20	10/14/2016 19:46	WG916680
Benzidine	ND		6.66	20	10/14/2016 19:46	WG916680
Benzo(a)anthracene	ND		0.660	20	10/14/2016 19:46	WG916680
Benzo(b)fluoranthene	ND		0.660	20	10/14/2016 19:46	WG916680
Benzo(k)fluoranthene	ND		0.660	20	10/14/2016 19:46	WG916680
Benzo(g,h,i)perylene	ND		0.660	20	10/14/2016 19:46	WG916680
Benzo(a)pyrene	ND		0.660	20	10/14/2016 19:46	WG916680
Bis(2-chlorethoxy)methane	ND		6.66	20	10/14/2016 19:46	WG916680
Bis(2-chloroethyl)ether	ND		6.66	20	10/14/2016 19:46	WG916680
Bis(2-chloroisopropyl)ether	ND		6.66	20	10/14/2016 19:46	WG916680
4-Bromophenyl-phenylether	ND		6.66	20	10/14/2016 19:46	WG916680
2-Chloronaphthalene	ND		0.660	20	10/14/2016 19:46	WG916680
4-Chlorophenyl-phenylether	ND		6.66	20	10/14/2016 19:46	WG916680
Chrysene	ND		0.660	20	10/14/2016 19:46	WG916680
Dibenz(a,h)anthracene	ND		0.660	20	10/14/2016 19:46	WG916680
3,3-Dichlorobenzidine	ND		6.66	20	10/14/2016 19:46	WG916680
2,4-Dinitrotoluene	ND		6.66	20	10/14/2016 19:46	WG916680
2,6-Dinitrotoluene	ND		6.66	20	10/14/2016 19:46	WG916680
Fluoranthene	ND		0.660	20	10/14/2016 19:46	WG916680
Fluorene	ND		0.660	20	10/14/2016 19:46	WG916680
Hexachlorobenzene	ND		6.66	20	10/14/2016 19:46	WG916680
Hexachloro-1,3-butadiene	ND		6.66	20	10/14/2016 19:46	WG916680
Hexachlorocyclopentadiene	ND		6.66	20	10/14/2016 19:46	WG916680
Hexachloroethane	ND		6.66	20	10/14/2016 19:46	WG916680
Indeno(1,2,3-cd)pyrene	ND		0.660	20	10/14/2016 19:46	WG916680
Isophorone	ND		6.66	20	10/14/2016 19:46	WG916680
Naphthalene	ND		0.660	20	10/14/2016 19:46	WG916680
Nitrobenzene	ND		6.66	20	10/14/2016 19:46	WG916680
n-Nitrosodimethylamine	ND		6.66	20	10/14/2016 19:46	WG916680
n-Nitrosodiphenylamine	ND		6.66	20	10/14/2016 19:46	WG916680
n-Nitrosodi-n-propylamine	ND		6.66	20	10/14/2016 19:46	WG916680
Phenanthrene	ND		0.660	20	10/14/2016 19:46	WG916680
Benzylbutyl phthalate	ND		6.66	20	10/14/2016 19:46	WG916680
Bis(2-ethylhexyl)phthalate	ND		6.66	20	10/14/2016 19:46	WG916680
Di-n-butyl phthalate	ND		6.66	20	10/14/2016 19:46	WG916680
Diethyl phthalate	ND		6.66	20	10/14/2016 19:46	WG916680
Dimethyl phthalate	ND		6.66	20	10/14/2016 19:46	WG916680
Di-n-octyl phthalate	ND		6.66	20	10/14/2016 19:46	WG916680
Pyrene	ND		0.660	20	10/14/2016 19:46	WG916680
1,2,4-Trichlorobenzene	ND		6.66	20	10/14/2016 19:46	WG916680
4-Chloro-3-methylphenol	ND		6.66	20	10/14/2016 19:46	WG916680
2-Chlorophenol	ND		6.66	20	10/14/2016 19:46	WG916680
2,4-Dichlorophenol	ND		6.66	20	10/14/2016 19:46	WG916680
2,4-Dimethylphenol	ND		6.66	20	10/14/2016 19:46	WG916680
4,6-Dinitro-2-methylphenol	ND		6.66	20	10/14/2016 19:46	WG916680
2,4-Dinitrophenol	ND		6.66	20	10/14/2016 19:46	WG916680
2-Nitrophenol	ND		6.66	20	10/14/2016 19:46	WG916680
4-Nitrophenol	ND		6.66	20	10/14/2016 19:46	WG916680

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pentachlorophenol	ND		6.66	20	10/14/2016 19:46	WG916680
Phenol	ND		6.66	20	10/14/2016 19:46	WG916680
2,4,6-Trichlorophenol	ND		6.66	20	10/14/2016 19:46	WG916680
(S) 2-Fluorophenol	*45.0*	J7	*21.1-116*		*10/14/2016 19:46*	WG916680
(S) Phenol-d5	*48.9*	J7	*26.3-121*		*10/14/2016 19:46*	WG916680
(S) Nitrobenzene-d5	*45.2*	J7	*21.9-129*		*10/14/2016 19:46*	WG916680
(S) 2-Fluorobiphenyl	*56.6*	J7	*34.9-129*		*10/14/2016 19:46*	WG916680
(S) 2,4,6-Tribromophenol	*63.4*	J7	*21.6-142*		*10/14/2016 19:46*	WG916680
(S) p-Terphenyl-d14	*48.5*	J7	*21.5-128*		*10/14/2016 19:46*	WG916680

Sample Narrative:

8270D L865222-01 WG916680: Dilution due to viscosity

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.349		0.0600	10	10/15/2016 09:04	WG916688
Acenaphthene	ND		0.0600	10	10/15/2016 09:04	WG916688
Acenaphthylene	0.298		0.0600	10	10/15/2016 09:04	WG916688
Benzo(a)anthracene	0.520		0.0600	10	10/15/2016 09:04	WG916688
Benzo(a)pyrene	0.606		0.0600	10	10/15/2016 09:04	WG916688
Benzo(b)fluoranthene	0.942		0.0600	10	10/15/2016 09:04	WG916688
Benzo(g,h,i)perylene	0.651		0.0600	10	10/15/2016 09:04	WG916688
Benzo(k)fluoranthene	0.288		0.0600	10	10/15/2016 09:04	WG916688
Chrysene	0.679		0.0600	10	10/15/2016 09:04	WG916688
Dibenz(a,h)anthracene	0.126		0.0600	10	10/15/2016 09:04	WG916688
Fluoranthene	0.938		0.0600	10	10/15/2016 09:04	WG916688
Fluorene	ND		0.0600	10	10/15/2016 09:04	WG916688
Indeno(1,2,3-cd)pyrene	0.420		0.0600	10	10/15/2016 09:04	WG916688
Naphthalene	ND		0.200	10	10/15/2016 09:04	WG916688
Phenanthrene	0.133		0.0600	10	10/15/2016 09:04	WG916688
Pyrene	1.01		0.0600	10	10/15/2016 09:04	WG916688
1-Methylnaphthalene	ND		0.200	10	10/15/2016 09:04	WG916688
2-Methylnaphthalene	ND		0.200	10	10/15/2016 09:04	WG916688
2-Chloronaphthalene	ND		0.200	10	10/15/2016 09:04	WG916688
(S) Nitrobenzene-d5	*97.1*		*22.1-146*		*10/15/2016 09:04*	WG916688
(S) 2-Fluorobiphenyl	*96.2*		*40.6-122*		*10/15/2016 09:04*	WG916688
(S) p-Terphenyl-d14	*81.9*		*32.2-131*		*10/15/2016 09:04*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
	%				
Total Solids	94.1		1	10/12/2016 09:15	WG916301

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
	mg/kg		mg/kg			
Acenaphthene	ND		0.660	20	10/14/2016 20:10	WG916680
Acenaphthylene	ND		0.660	20	10/14/2016 20:10	WG916680
Anthracene	ND		0.660	20	10/14/2016 20:10	WG916680
Benzidine	ND		6.66	20	10/14/2016 20:10	WG916680
Benzo(a)anthracene	ND		0.660	20	10/14/2016 20:10	WG916680
Benzo(b)fluoranthene	0.682		0.660	20	10/14/2016 20:10	WG916680
Benzo(k)fluoranthene	ND		0.660	20	10/14/2016 20:10	WG916680
Benzo(g,h,i)perylene	ND		0.660	20	10/14/2016 20:10	WG916680
Benzo(a)pyrene	ND		0.660	20	10/14/2016 20:10	WG916680
Bis(2-chlorethoxy)methane	ND		6.66	20	10/14/2016 20:10	WG916680
Bis(2-chloroethyl)ether	ND		6.66	20	10/14/2016 20:10	WG916680
Bis(2-chloroisopropyl)ether	ND		6.66	20	10/14/2016 20:10	WG916680
4-Bromophenyl-phenylether	ND		6.66	20	10/14/2016 20:10	WG916680
2-Chloronaphthalene	ND		0.660	20	10/14/2016 20:10	WG916680
4-Chlorophenyl-phenylether	ND		6.66	20	10/14/2016 20:10	WG916680
Chrysene	ND		0.660	20	10/14/2016 20:10	WG916680
Dibenz(a,h)anthracene	ND		0.660	20	10/14/2016 20:10	WG916680
3,3-Dichlorobenzidine	ND		6.66	20	10/14/2016 20:10	WG916680
2,4-Dinitrotoluene	ND		6.66	20	10/14/2016 20:10	WG916680
2,6-Dinitrotoluene	ND		6.66	20	10/14/2016 20:10	WG916680
Fluoranthene	ND		0.660	20	10/14/2016 20:10	WG916680
Fluorene	ND		0.660	20	10/14/2016 20:10	WG916680
Hexachlorobenzene	ND		6.66	20	10/14/2016 20:10	WG916680
Hexachloro-1,3-butadiene	ND		6.66	20	10/14/2016 20:10	WG916680
Hexachlorocyclopentadiene	ND		6.66	20	10/14/2016 20:10	WG916680
Hexachloroethane	ND		6.66	20	10/14/2016 20:10	WG916680
Indeno(1,2,3-cd)pyrene	ND		0.660	20	10/14/2016 20:10	WG916680
Isophorone	ND		6.66	20	10/14/2016 20:10	WG916680
Naphthalene	ND		0.660	20	10/14/2016 20:10	WG916680
Nitrobenzene	ND		6.66	20	10/14/2016 20:10	WG916680
n-Nitrosodimethylamine	ND		6.66	20	10/14/2016 20:10	WG916680
n-Nitrosodiphenylamine	ND		6.66	20	10/14/2016 20:10	WG916680
n-Nitrosodi-n-propylamine	ND		6.66	20	10/14/2016 20:10	WG916680
Phenanthrene	ND		0.660	20	10/14/2016 20:10	WG916680
Benzylbutyl phthalate	ND		6.66	20	10/14/2016 20:10	WG916680
Bis(2-ethylhexyl)phthalate	ND		6.66	20	10/14/2016 20:10	WG916680
Di-n-butyl phthalate	ND		6.66	20	10/14/2016 20:10	WG916680
Diethyl phthalate	ND		6.66	20	10/14/2016 20:10	WG916680
Dimethyl phthalate	ND		6.66	20	10/14/2016 20:10	WG916680
Di-n-octyl phthalate	ND		6.66	20	10/14/2016 20:10	WG916680
Pyrene	ND		0.660	20	10/14/2016 20:10	WG916680
1,2,4-Trichlorobenzene	ND		6.66	20	10/14/2016 20:10	WG916680
4-Chloro-3-methylphenol	ND		6.66	20	10/14/2016 20:10	WG916680
2-Chlorophenol	ND		6.66	20	10/14/2016 20:10	WG916680
2,4-Dichlorophenol	ND		6.66	20	10/14/2016 20:10	WG916680
2,4-Dimethylphenol	ND		6.66	20	10/14/2016 20:10	WG916680
4,6-Dinitro-2-methylphenol	ND		6.66	20	10/14/2016 20:10	WG916680
2,4-Dinitrophenol	ND		6.66	20	10/14/2016 20:10	WG916680
2-Nitrophenol	ND		6.66	20	10/14/2016 20:10	WG916680
4-Nitrophenol	ND		6.66	20	10/14/2016 20:10	WG916680

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pentachlorophenol	ND		6.66	20	10/14/2016 20:10	WG916680
Phenol	ND		6.66	20	10/14/2016 20:10	WG916680
2,4,6-Trichlorophenol	ND		6.66	20	10/14/2016 20:10	WG916680
(S) 2-Fluorophenol	*48.4*	J7	*21.1-116*		*10/14/2016 20:10*	WG916680
(S) Phenol-d5	*50.7*	J7	*26.3-121*		*10/14/2016 20:10*	WG916680
(S) Nitrobenzene-d5	*51.5*	J7	*21.9-129*		*10/14/2016 20:10*	WG916680
(S) 2-Fluorobiphenyl	*58.1*	J7	*34.9-129*		*10/14/2016 20:10*	WG916680
(S) 2,4,6-Tribromophenol	*64.4*	J7	*21.6-142*		*10/14/2016 20:10*	WG916680
(S) p-Terphenyl-d14	*54.4*	J7	*21.5-128*		*10/14/2016 20:10*	WG916680

Sample Narrative:

8270D L865222-02 WG916680: Dilution due to viscosity

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	0.331		0.0600	10	10/15/2016 09:48	WG916688
Acenaphthene	ND		0.0600	10	10/15/2016 09:48	WG916688
Acenaphthylene	0.286		0.0600	10	10/15/2016 09:48	WG916688
Benzo(a)anthracene	0.420		0.0600	10	10/15/2016 09:48	WG916688
Benzo(a)pyrene	0.562		0.0600	10	10/15/2016 09:48	WG916688
Benzo(b)fluoranthene	0.882	V	0.0600	10	10/15/2016 09:48	WG916688
Benzo(g,h,i)perylene	0.604	V	0.0600	10	10/15/2016 09:48	WG916688
Benzo(k)fluoranthene	0.272		0.0600	10	10/15/2016 09:48	WG916688
Chrysene	0.593		0.0600	10	10/15/2016 09:48	WG916688
Dibenz(a,h)anthracene	0.118		0.0600	10	10/15/2016 09:48	WG916688
Fluoranthene	0.766	V	0.0600	10	10/15/2016 09:48	WG916688
Fluorene	ND		0.0600	10	10/15/2016 09:48	WG916688
Indeno(1,2,3-cd)pyrene	0.386		0.0600	10	10/15/2016 09:48	WG916688
Naphthalene	ND		0.200	10	10/15/2016 09:48	WG916688
Phenanthrene	0.145		0.0600	10	10/15/2016 09:48	WG916688
Pyrene	0.852	V	0.0600	10	10/15/2016 09:48	WG916688
1-Methylnaphthalene	ND		0.200	10	10/15/2016 09:48	WG916688
2-Methylnaphthalene	ND		0.200	10	10/15/2016 09:48	WG916688
2-Chloronaphthalene	ND		0.200	10	10/15/2016 09:48	WG916688
(S) Nitrobenzene-d5	*88.9*		*22.1-146*		*10/15/2016 09:48*	WG916688
(S) 2-Fluorobiphenyl	*89.1*		*40.6-122*		*10/15/2016 09:48*	WG916688
(S) p-Terphenyl-d14	*78.5*		*32.2-131*		*10/15/2016 09:48*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.9		1	10/12/2016 09:15	WG916301

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.330	10	10/14/2016 18:09	WG916680
Acenaphthylene	ND		0.330	10	10/14/2016 18:09	WG916680
Anthracene	ND		0.330	10	10/14/2016 18:09	WG916680
Benzidine	ND		3.33	10	10/14/2016 18:09	WG916680
Benzo(a)anthracene	ND		0.330	10	10/14/2016 18:09	WG916680
Benzo(b)fluoranthene	ND		0.330	10	10/14/2016 18:09	WG916680
Benzo(k)fluoranthene	ND		0.330	10	10/14/2016 18:09	WG916680
Benzo(g,h,i)perylene	ND		0.330	10	10/14/2016 18:09	WG916680
Benzo(a)pyrene	ND		0.330	10	10/14/2016 18:09	WG916680
Bis(2-chlorethoxy)methane	ND		3.33	10	10/14/2016 18:09	WG916680
Bis(2-chloroethyl)ether	ND		3.33	10	10/14/2016 18:09	WG916680
Bis(2-chloroisopropyl)ether	ND		3.33	10	10/14/2016 18:09	WG916680
4-Bromophenyl-phenylether	ND		3.33	10	10/14/2016 18:09	WG916680
2-Chloronaphthalene	ND		0.330	10	10/14/2016 18:09	WG916680
4-Chlorophenyl-phenylether	ND		3.33	10	10/14/2016 18:09	WG916680
Chrysene	ND		0.330	10	10/14/2016 18:09	WG916680
Dibenz(a,h)anthracene	ND		0.330	10	10/14/2016 18:09	WG916680
3,3-Dichlorobenzidine	ND	J6	3.33	10	10/14/2016 18:09	WG916680
2,4-Dinitrotoluene	ND		3.33	10	10/14/2016 18:09	WG916680
2,6-Dinitrotoluene	ND		3.33	10	10/14/2016 18:09	WG916680
Fluoranthene	ND		0.330	10	10/14/2016 18:09	WG916680
Fluorene	ND		0.330	10	10/14/2016 18:09	WG916680
Hexachlorobenzene	ND		3.33	10	10/14/2016 18:09	WG916680
Hexachloro-1,3-butadiene	ND		3.33	10	10/14/2016 18:09	WG916680
Hexachlorocyclopentadiene	ND	J6	3.33	10	10/14/2016 18:09	WG916680
Hexachloroethane	ND		3.33	10	10/14/2016 18:09	WG916680
Indeno(1,2,3-cd)pyrene	ND		0.330	10	10/14/2016 18:09	WG916680
Isophorone	ND		3.33	10	10/14/2016 18:09	WG916680
Naphthalene	ND		0.330	10	10/14/2016 18:09	WG916680
Nitrobenzene	ND		3.33	10	10/14/2016 18:09	WG916680
n-Nitrosodimethylamine	ND	J6	3.33	10	10/14/2016 18:09	WG916680
n-Nitrosodiphenylamine	ND		3.33	10	10/14/2016 18:09	WG916680
n-Nitrosodi-n-propylamine	ND		3.33	10	10/14/2016 18:09	WG916680
Phenanthrene	ND		0.330	10	10/14/2016 18:09	WG916680
Benzylbutyl phthalate	ND		3.33	10	10/14/2016 18:09	WG916680
Bis(2-ethylhexyl)phthalate	ND		3.33	10	10/14/2016 18:09	WG916680
Di-n-butyl phthalate	ND		3.33	10	10/14/2016 18:09	WG916680
Diethyl phthalate	ND		3.33	10	10/14/2016 18:09	WG916680
Dimethyl phthalate	ND		3.33	10	10/14/2016 18:09	WG916680
Di-n-octyl phthalate	ND		3.33	10	10/14/2016 18:09	WG916680
Pyrene	ND		0.330	10	10/14/2016 18:09	WG916680
1,2,4-Trichlorobenzene	ND		3.33	10	10/14/2016 18:09	WG916680
4-Chloro-3-methylphenol	ND		3.33	10	10/14/2016 18:09	WG916680
2-Chlorophenol	ND		3.33	10	10/14/2016 18:09	WG916680
2,4-Dichlorophenol	ND		3.33	10	10/14/2016 18:09	WG916680
2,4-Dimethylphenol	ND	J6	3.33	10	10/14/2016 18:09	WG916680
4,6-Dinitro-2-methylphenol	ND	J6	3.33	10	10/14/2016 18:09	WG916680
2,4-Dinitrophenol	ND	J6	3.33	10	10/14/2016 18:09	WG916680
2-Nitrophenol	ND		3.33	10	10/14/2016 18:09	WG916680
4-Nitrophenol	ND	J6	3.33	10	10/14/2016 18:09	WG916680

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pentachlorophenol	ND	J6	3.33	10	10/14/2016 18:09	WG916680
Phenol	ND		3.33	10	10/14/2016 18:09	WG916680
2,4,6-Trichlorophenol	ND		3.33	10	10/14/2016 18:09	WG916680
(S) 2-Fluorophenol	*47.1*		*21.1-116*		*10/14/2016 18:09*	WG916680
(S) Phenol-d5	*49.5*		*26.3-121*		*10/14/2016 18:09*	WG916680
(S) Nitrobenzene-d5	*53.8*		*21.9-129*		*10/14/2016 18:09*	WG916680
(S) 2-Fluorobiphenyl	*59.4*		*34.9-129*		*10/14/2016 18:09*	WG916680
(S) 2,4,6-Tribromophenol	*62.9*		*21.6-142*		*10/14/2016 18:09*	WG916680
(S) p-Terphenyl-d14	*49.5*		*21.5-128*		*10/14/2016 18:09*	WG916680

Sample Narrative:

8270D L865222-03 WG916680: Dilution due to viscosity

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0300	5	10/15/2016 06:10	WG916688
Acenaphthene	ND		0.0300	5	10/15/2016 06:10	WG916688
Acenaphthylene	ND		0.0300	5	10/15/2016 06:10	WG916688
Benzo(a)anthracene	ND		0.0300	5	10/15/2016 06:10	WG916688
Benzo(a)pyrene	ND		0.0300	5	10/15/2016 06:10	WG916688
Benzo(b)fluoranthene	ND		0.0300	5	10/15/2016 06:10	WG916688
Benzo(g,h,i)perylene	0.0529		0.0300	5	10/15/2016 06:10	WG916688
Benzo(k)fluoranthene	ND		0.0300	5	10/15/2016 06:10	WG916688
Chrysene	ND		0.0300	5	10/15/2016 06:10	WG916688
Dibenz(a,h)anthracene	ND		0.0300	5	10/15/2016 06:10	WG916688
Fluoranthene	0.0343		0.0300	5	10/15/2016 06:10	WG916688
Fluorene	ND		0.0300	5	10/15/2016 06:10	WG916688
Indeno(1,2,3-cd)pyrene	ND		0.0300	5	10/15/2016 06:10	WG916688
Naphthalene	ND		0.100	5	10/15/2016 06:10	WG916688
Phenanthrene	ND		0.0300	5	10/15/2016 06:10	WG916688
Pyrene	0.0367		0.0300	5	10/15/2016 06:10	WG916688
1-Methylnaphthalene	ND		0.100	5	10/15/2016 06:10	WG916688
2-Methylnaphthalene	ND		0.100	5	10/15/2016 06:10	WG916688
2-Chloronaphthalene	ND		0.100	5	10/15/2016 06:10	WG916688
(S) Nitrobenzene-d5	*91.1*		*22.1-146*		*10/15/2016 06:10*	WG916688
(S) 2-Fluorobiphenyl	*86.6*		*40.6-122*		*10/15/2016 06:10*	WG916688
(S) p-Terphenyl-d14	*72.4*		*32.2-131*		*10/15/2016 06:10*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.7		1	10/12/2016 09:15	WG916301

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Acenaphthene	ND		0.330	10	10/16/2016 16:53	WG916680
Acenaphthylene	ND		0.330	10	10/16/2016 16:53	WG916680
Anthracene	ND		0.330	10	10/16/2016 16:53	WG916680
Benzidine	ND		3.33	10	10/16/2016 16:53	WG916680
Benzo(a)anthracene	ND		0.330	10	10/16/2016 16:53	WG916680
Benzo(b)fluoranthene	ND		0.330	10	10/16/2016 16:53	WG916680
Benzo(k)fluoranthene	ND		0.330	10	10/16/2016 16:53	WG916680
Benzo(g,h,i)perylene	ND		0.330	10	10/16/2016 16:53	WG916680
Benzo(a)pyrene	ND		0.330	10	10/16/2016 16:53	WG916680
Bis(2-chlorethoxy)methane	ND		3.33	10	10/16/2016 16:53	WG916680
Bis(2-chloroethyl)ether	ND		3.33	10	10/16/2016 16:53	WG916680
Bis(2-chloroisopropyl)ether	ND		3.33	10	10/16/2016 16:53	WG916680
4-Bromophenyl-phenylether	ND		3.33	10	10/16/2016 16:53	WG916680
2-Chloronaphthalene	ND		0.330	10	10/16/2016 16:53	WG916680
4-Chlorophenyl-phenylether	ND		3.33	10	10/16/2016 16:53	WG916680
Chrysene	ND		0.330	10	10/16/2016 16:53	WG916680
Dibenz(a,h)anthracene	ND		0.330	10	10/16/2016 16:53	WG916680
3,3-Dichlorobenzidine	ND		3.33	10	10/16/2016 16:53	WG916680
2,4-Dinitrotoluene	ND		3.33	10	10/16/2016 16:53	WG916680
2,6-Dinitrotoluene	ND		3.33	10	10/16/2016 16:53	WG916680
Fluoranthene	ND		0.330	10	10/16/2016 16:53	WG916680
Fluorene	ND		0.330	10	10/16/2016 16:53	WG916680
Hexachlorobenzene	ND		3.33	10	10/16/2016 16:53	WG916680
Hexachloro-1,3-butadiene	ND		3.33	10	10/16/2016 16:53	WG916680
Hexachlorocyclopentadiene	ND		3.33	10	10/16/2016 16:53	WG916680
Hexachloroethane	ND		3.33	10	10/16/2016 16:53	WG916680
Indeno(1,2,3-cd)pyrene	ND		0.330	10	10/16/2016 16:53	WG916680
Isophorone	ND		3.33	10	10/16/2016 16:53	WG916680
Naphthalene	ND		0.330	10	10/16/2016 16:53	WG916680
Nitrobenzene	ND		3.33	10	10/16/2016 16:53	WG916680
n-Nitrosodimethylamine	ND		3.33	10	10/16/2016 16:53	WG916680
n-Nitrosodiphenylamine	ND		3.33	10	10/16/2016 16:53	WG916680
n-Nitrosodi-n-propylamine	ND		3.33	10	10/16/2016 16:53	WG916680
Phenanthrene	ND		0.330	10	10/16/2016 16:53	WG916680
Benzylbutyl phthalate	ND		3.33	10	10/16/2016 16:53	WG916680
Bis(2-ethylhexyl)phthalate	ND		3.33	10	10/16/2016 16:53	WG916680
Di-n-butyl phthalate	ND		3.33	10	10/16/2016 16:53	WG916680
Diethyl phthalate	ND		3.33	10	10/16/2016 16:53	WG916680
Dimethyl phthalate	ND		3.33	10	10/16/2016 16:53	WG916680
Di-n-octyl phthalate	ND		3.33	10	10/16/2016 16:53	WG916680
Pyrene	ND		0.330	10	10/16/2016 16:53	WG916680
1,2,4-Trichlorobenzene	ND		3.33	10	10/16/2016 16:53	WG916680
4-Chloro-3-methylphenol	ND		3.33	10	10/16/2016 16:53	WG916680
2-Chlorophenol	ND		3.33	10	10/16/2016 16:53	WG916680
2,4-Dichlorophenol	ND		3.33	10	10/16/2016 16:53	WG916680
2,4-Dimethylphenol	ND		3.33	10	10/16/2016 16:53	WG916680
4,6-Dinitro-2-methylphenol	ND		3.33	10	10/16/2016 16:53	WG916680
2,4-Dinitrophenol	ND		3.33	10	10/16/2016 16:53	WG916680
2-Nitrophenol	ND		3.33	10	10/16/2016 16:53	WG916680
4-Nitrophenol	ND		3.33	10	10/16/2016 16:53	WG916680

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Pentachlorophenol	ND		3.33	10	10/16/2016 16:53	WG916680
Phenol	ND		3.33	10	10/16/2016 16:53	WG916680
2,4,6-Trichlorophenol	ND		3.33	10	10/16/2016 16:53	WG916680
(S) 2-Fluorophenol	*47.6*		*21.1-116*		*10/16/2016 16:53*	WG916680
(S) Phenol-d5	*45.7*		*26.3-121*		*10/16/2016 16:53*	WG916680
(S) Nitrobenzene-d5	*48.0*		*21.9-129*		*10/16/2016 16:53*	WG916680
(S) 2-Fluorobiphenyl	*47.3*		*34.9-129*		*10/16/2016 16:53*	WG916680
(S) 2,4,6-Tribromophenol	*137*		*21.6-142*		*10/16/2016 16:53*	WG916680
(S) p-Terphenyl-d14	*50.9*		*21.5-128*		*10/16/2016 16:53*	WG916680

Sample Narrative:

8270D L865222-04 WG916680: Dilution due to viscosity

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0600	10	10/15/2016 07:37	WG916688
Acenaphthene	ND		0.0600	10	10/15/2016 07:37	WG916688
Acenaphthylene	ND		0.0600	10	10/15/2016 07:37	WG916688
Benzo(a)anthracene	ND		0.0600	10	10/15/2016 07:37	WG916688
Benzo(a)pyrene	ND		0.0600	10	10/15/2016 07:37	WG916688
Benzo(b)fluoranthene	ND		0.0600	10	10/15/2016 07:37	WG916688
Benzo(g,h,i)perylene	ND		0.0600	10	10/15/2016 07:37	WG916688
Benzo(k)fluoranthene	ND		0.0600	10	10/15/2016 07:37	WG916688
Chrysene	ND		0.0600	10	10/15/2016 07:37	WG916688
Dibenz(a,h)anthracene	ND		0.0600	10	10/15/2016 07:37	WG916688
Fluoranthene	ND		0.0600	10	10/15/2016 07:37	WG916688
Fluorene	ND		0.0600	10	10/15/2016 07:37	WG916688
Indeno(1,2,3-cd)pyrene	ND		0.0600	10	10/15/2016 07:37	WG916688
Naphthalene	ND		0.200	10	10/15/2016 07:37	WG916688
Phenanthrene	ND		0.0600	10	10/15/2016 07:37	WG916688
Pyrene	ND		0.0600	10	10/15/2016 07:37	WG916688
1-Methylnaphthalene	ND		0.200	10	10/15/2016 07:37	WG916688
2-Methylnaphthalene	ND		0.200	10	10/15/2016 07:37	WG916688
2-Chloronaphthalene	ND		0.200	10	10/15/2016 07:37	WG916688
(S) Nitrobenzene-d5	*87.9*		*22.1-146*		*10/15/2016 07:37*	WG916688
(S) 2-Fluorobiphenyl	*81.1*		*40.6-122*		*10/15/2016 07:37*	WG916688
(S) p-Terphenyl-d14	*73.1*		*32.2-131*		*10/15/2016 07:37*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.8		1	10/12/2016 09:15	WG916301

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.340		0.0300	5	10/15/2016 06:32	WG916688
Acenaphthene	ND		0.0300	5	10/15/2016 06:32	WG916688
Acenaphthylene	0.283		0.0300	5	10/15/2016 06:32	WG916688
Benzo(a)anthracene	0.468		0.0300	5	10/15/2016 06:32	WG916688
Benzo(a)pyrene	0.505		0.0300	5	10/15/2016 06:32	WG916688
Benzo(b)fluoranthene	0.942		0.0300	5	10/15/2016 06:32	WG916688
Benzo(g,h,i)perylene	0.646		0.0300	5	10/15/2016 06:32	WG916688
Benzo(k)fluoranthene	0.282		0.0300	5	10/15/2016 06:32	WG916688
Chrysene	0.815		0.0300	5	10/15/2016 06:32	WG916688
Dibenz(a,h)anthracene	0.118		0.0300	5	10/15/2016 06:32	WG916688
Fluoranthene	1.17		0.0300	5	10/15/2016 06:32	WG916688
Fluorene	ND		0.0300	5	10/15/2016 06:32	WG916688
Indeno(1,2,3-cd)pyrene	0.405		0.0300	5	10/15/2016 06:32	WG916688
Naphthalene	ND		0.100	5	10/15/2016 06:32	WG916688
Phenanthrene	0.242		0.0300	5	10/15/2016 06:32	WG916688
Pyrene	1.12		0.0300	5	10/15/2016 06:32	WG916688
1-Methylnaphthalene	ND		0.100	5	10/15/2016 06:32	WG916688
2-Methylnaphthalene	ND		0.100	5	10/15/2016 06:32	WG916688
2-Chloronaphthalene	ND		0.100	5	10/15/2016 06:32	WG916688
(S) Nitrobenzene-d5	*81.5*		*22.1-146*		*10/15/2016 06:32*	WG916688
(S) 2-Fluorobiphenyl	*78.6*		*40.6-122*		*10/15/2016 06:32*	WG916688
(S) p-Terphenyl-d14	*66.1*		*32.2-131*		*10/15/2016 06:32*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.1		1	10/12/2016 09:15	WG916301

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0571		0.0300	5	10/15/2016 06:54	WG916688
Acenaphthene	ND		0.0300	5	10/15/2016 06:54	WG916688
Acenaphthylene	0.0314		0.0300	5	10/15/2016 06:54	WG916688
Benzo(a)anthracene	0.0673		0.0300	5	10/15/2016 06:54	WG916688
Benzo(a)pyrene	0.0660		0.0300	5	10/15/2016 06:54	WG916688
Benzo(b)fluoranthene	0.150		0.0300	5	10/15/2016 06:54	WG916688
Benzo(g,h,i)perylene	0.0941		0.0300	5	10/15/2016 06:54	WG916688
Benzo(k)fluoranthene	0.0436		0.0300	5	10/15/2016 06:54	WG916688
Chrysene	0.133		0.0300	5	10/15/2016 06:54	WG916688
Dibenz(a,h)anthracene	ND		0.0300	5	10/15/2016 06:54	WG916688
Fluoranthene	0.135		0.0300	5	10/15/2016 06:54	WG916688
Fluorene	ND		0.0300	5	10/15/2016 06:54	WG916688
Indeno(1,2,3-cd)pyrene	0.0579		0.0300	5	10/15/2016 06:54	WG916688
Naphthalene	ND		0.100	5	10/15/2016 06:54	WG916688
Phenanthrene	0.0457		0.0300	5	10/15/2016 06:54	WG916688
Pyrene	0.117		0.0300	5	10/15/2016 06:54	WG916688
1-Methylnaphthalene	ND		0.100	5	10/15/2016 06:54	WG916688
2-Methylnaphthalene	ND		0.100	5	10/15/2016 06:54	WG916688
2-Chloronaphthalene	ND		0.100	5	10/15/2016 06:54	WG916688
(S) Nitrobenzene-d5	*78.5*		*22.1-146*		*10/15/2016 06:54*	WG916688
(S) 2-Fluorobiphenyl	*77.5*		*40.6-122*		*10/15/2016 06:54*	WG916688
(S) p-Terphenyl-d14	*66.6*		*32.2-131*		*10/15/2016 06:54*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.3		1	10/12/2016 09:15	WG916301

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0575		0.0120	2	10/15/2016 05:48	WG916688
Acenaphthene	ND		0.0120	2	10/15/2016 05:48	WG916688
Acenaphthylene	0.0327		0.0120	2	10/15/2016 05:48	WG916688
Benzo(a)anthracene	0.0382		0.0120	2	10/15/2016 05:48	WG916688
Benzo(a)pyrene	0.0452		0.0120	2	10/15/2016 05:48	WG916688
Benzo(b)fluoranthene	0.132		0.0120	2	10/15/2016 05:48	WG916688
Benzo(g,h,i)perylene	0.107		0.0120	2	10/15/2016 05:48	WG916688
Benzo(k)fluoranthene	0.0354		0.0120	2	10/15/2016 05:48	WG916688
Chrysene	0.0547		0.0120	2	10/15/2016 05:48	WG916688
Dibenz(a,h)anthracene	0.0190		0.0120	2	10/15/2016 05:48	WG916688
Fluoranthene	0.0911		0.0120	2	10/15/2016 05:48	WG916688
Fluorene	ND		0.0120	2	10/15/2016 05:48	WG916688
Indeno(1,2,3-cd)pyrene	0.0512		0.0120	2	10/15/2016 05:48	WG916688
Naphthalene	ND		0.0400	2	10/15/2016 05:48	WG916688
Phenanthrene	0.0268		0.0120	2	10/15/2016 05:48	WG916688
Pyrene	0.0834		0.0120	2	10/15/2016 05:48	WG916688
1-Methylnaphthalene	ND		0.0400	2	10/15/2016 05:48	WG916688
2-Methylnaphthalene	ND		0.0400	2	10/15/2016 05:48	WG916688
2-Chloronaphthalene	ND		0.0400	2	10/15/2016 05:48	WG916688
(S) Nitrobenzene-d5	*77.5*		*22.1-146*		*10/15/2016 05:48*	WG916688
(S) 2-Fluorobiphenyl	*73.8*		*40.6-122*		*10/15/2016 05:48*	WG916688
(S) p-Terphenyl-d14	*61.2*		*32.2-131*		*10/15/2016 05:48*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.6		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.361		0.0300	5	10/15/2016 07:16	WG916688
Acenaphthene	ND		0.0300	5	10/15/2016 07:16	WG916688
Acenaphthylene	0.276		0.0300	5	10/15/2016 07:16	WG916688
Benzo(a)anthracene	0.456		0.0300	5	10/15/2016 07:16	WG916688
Benzo(a)pyrene	0.440		0.0300	5	10/15/2016 07:16	WG916688
Benzo(b)fluoranthene	1.00		0.0300	5	10/15/2016 07:16	WG916688
Benzo(g,h,i)perylene	0.555		0.0300	5	10/15/2016 07:16	WG916688
Benzo(k)fluoranthene	0.317		0.0300	5	10/15/2016 07:16	WG916688
Chrysene	0.839		0.0300	5	10/15/2016 07:16	WG916688
Dibenz(a,h)anthracene	0.113		0.0300	5	10/15/2016 07:16	WG916688
Fluoranthene	1.08		0.0300	5	10/15/2016 07:16	WG916688
Fluorene	ND		0.0300	5	10/15/2016 07:16	WG916688
Indeno(1,2,3-cd)pyrene	0.378		0.0300	5	10/15/2016 07:16	WG916688
Naphthalene	ND		0.100	5	10/15/2016 07:16	WG916688
Phenanthrene	0.242		0.0300	5	10/15/2016 07:16	WG916688
Pyrene	1.06		0.0300	5	10/15/2016 07:16	WG916688
1-Methylnaphthalene	ND		0.100	5	10/15/2016 07:16	WG916688
2-Methylnaphthalene	ND		0.100	5	10/15/2016 07:16	WG916688
2-Chloronaphthalene	ND		0.100	5	10/15/2016 07:16	WG916688
(S) Nitrobenzene-d5	*84.7*		*22.1-146*		*10/15/2016 07:16*	WG916688
(S) 2-Fluorobiphenyl	*83.1*		*40.6-122*		*10/15/2016 07:16*	WG916688
(S) p-Terphenyl-d14	*65.3*		*32.2-131*		*10/15/2016 07:16*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.2		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0466		0.00600	1	10/15/2016 03:16	WG916688
Acenaphthene	ND		0.00600	1	10/15/2016 03:16	WG916688
Acenaphthylene	0.0257		0.00600	1	10/15/2016 03:16	WG916688
Benzo(a)anthracene	0.0302		0.00600	1	10/15/2016 03:16	WG916688
Benzo(a)pyrene	0.0317		0.00600	1	10/15/2016 03:16	WG916688
Benzo(b)fluoranthene	0.0673		0.00600	1	10/15/2016 03:16	WG916688
Benzo(g,h,i)perylene	0.0943		0.00600	1	10/15/2016 03:16	WG916688
Benzo(k)fluoranthene	0.0205		0.00600	1	10/15/2016 03:16	WG916688
Chrysene	0.0461		0.00600	1	10/15/2016 03:16	WG916688
Dibenz(a,h)anthracene	0.0100		0.00600	1	10/15/2016 03:16	WG916688
Fluoranthene	0.0584		0.00600	1	10/15/2016 03:16	WG916688
Fluorene	ND		0.00600	1	10/15/2016 03:16	WG916688
Indeno(1,2,3-cd)pyrene	0.0431		0.00600	1	10/15/2016 03:16	WG916688
Naphthalene	ND		0.0200	1	10/15/2016 03:16	WG916688
Phenanthrene	0.0183		0.00600	1	10/15/2016 03:16	WG916688
Pyrene	0.0558		0.00600	1	10/15/2016 03:16	WG916688
1-Methylnaphthalene	ND		0.0200	1	10/15/2016 03:16	WG916688
2-Methylnaphthalene	ND		0.0200	1	10/15/2016 03:16	WG916688
2-Chloronaphthalene	ND		0.0200	1	10/15/2016 03:16	WG916688
(S) Nitrobenzene-d5	*81.1*		*22.1-146*		*10/15/2016 03:16*	WG916688
(S) 2-Fluorobiphenyl	*75.3*		*40.6-122*		*10/15/2016 03:16*	WG916688
(S) p-Terphenyl-d14	*63.7*		*32.2-131*		*10/15/2016 03:16*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.0		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0600	10	10/15/2016 08:43	WG916688
Acenaphthene	ND		0.0600	10	10/15/2016 08:43	WG916688
Acenaphthylene	ND		0.0600	10	10/15/2016 08:43	WG916688
Benzo(a)anthracene	0.0849		0.0600	10	10/15/2016 08:43	WG916688
Benzo(a)pyrene	0.0993		0.0600	10	10/15/2016 08:43	WG916688
Benzo(b)fluoranthene	0.126		0.0600	10	10/15/2016 08:43	WG916688
Benzo(g,h,i)perylene	0.116		0.0600	10	10/15/2016 08:43	WG916688
Benzo(k)fluoranthene	ND		0.0600	10	10/15/2016 08:43	WG916688
Chrysene	0.0975		0.0600	10	10/15/2016 08:43	WG916688
Dibenz(a,h)anthracene	ND		0.0600	10	10/15/2016 08:43	WG916688
Fluoranthene	0.138		0.0600	10	10/15/2016 08:43	WG916688
Fluorene	ND		0.0600	10	10/15/2016 08:43	WG916688
Indeno(1,2,3-cd)pyrene	ND		0.0600	10	10/15/2016 08:43	WG916688
Naphthalene	ND		0.200	10	10/15/2016 08:43	WG916688
Phenanthrene	ND		0.0600	10	10/15/2016 08:43	WG916688
Pyrene	0.247		0.0600	10	10/15/2016 08:43	WG916688
1-Methylnaphthalene	ND		0.200	10	10/15/2016 08:43	WG916688
2-Methylnaphthalene	ND		0.200	10	10/15/2016 08:43	WG916688
2-Chloronaphthalene	ND		0.200	10	10/15/2016 08:43	WG916688
(S) Nitrobenzene-d5	*97.9*		*22.1-146*		*10/15/2016 08:43*	WG916688
(S) 2-Fluorobiphenyl	*92.4*		*40.6-122*		*10/15/2016 08:43*	WG916688
(S) p-Terphenyl-d14	*74.6*		*32.2-131*		*10/15/2016 08:43*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.2		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0600	10	10/15/2016 09:26	WG916688
Acenaphthene	ND		0.0600	10	10/15/2016 09:26	WG916688
Acenaphthylene	ND		0.0600	10	10/15/2016 09:26	WG916688
Benzo(a)anthracene	ND		0.0600	10	10/15/2016 09:26	WG916688
Benzo(a)pyrene	0.160		0.0600	10	10/15/2016 09:26	WG916688
Benzo(b)fluoranthene	0.0782		0.0600	10	10/15/2016 09:26	WG916688
Benzo(g,h,i)perylene	0.235		0.0600	10	10/15/2016 09:26	WG916688
Benzo(k)fluoranthene	ND		0.0600	10	10/15/2016 09:26	WG916688
Chrysene	ND		0.0600	10	10/15/2016 09:26	WG916688
Dibenz(a,h)anthracene	ND		0.0600	10	10/15/2016 09:26	WG916688
Fluoranthene	ND		0.0600	10	10/15/2016 09:26	WG916688
Fluorene	ND		0.0600	10	10/15/2016 09:26	WG916688
Indeno(1,2,3-cd)pyrene	ND		0.0600	10	10/15/2016 09:26	WG916688
Naphthalene	ND		0.200	10	10/15/2016 09:26	WG916688
Phenanthrene	ND		0.0600	10	10/15/2016 09:26	WG916688
Pyrene	0.128		0.0600	10	10/15/2016 09:26	WG916688
1-Methylnaphthalene	ND		0.200	10	10/15/2016 09:26	WG916688
2-Methylnaphthalene	ND		0.200	10	10/15/2016 09:26	WG916688
2-Chloronaphthalene	ND		0.200	10	10/15/2016 09:26	WG916688
(S) Nitrobenzene-d5	*80.2*		*22.1-146*		*10/15/2016 09:26*	WG916688
(S) 2-Fluorobiphenyl	*79.9*		*40.6-122*		*10/15/2016 09:26*	WG916688
(S) p-Terphenyl-d14	*70.7*		*32.2-131*		*10/15/2016 09:26*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.4		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.138		0.0600	10	10/15/2016 07:59	WG916688
Acenaphthene	ND		0.0600	10	10/15/2016 07:59	WG916688
Acenaphthylene	0.138		0.0600	10	10/15/2016 07:59	WG916688
Benzo(a)anthracene	0.224		0.0600	10	10/15/2016 07:59	WG916688
Benzo(a)pyrene	0.234		0.0600	10	10/15/2016 07:59	WG916688
Benzo(b)fluoranthene	0.416		0.0600	10	10/15/2016 07:59	WG916688
Benzo(g,h,i)perylene	0.259		0.0600	10	10/15/2016 07:59	WG916688
Benzo(k)fluoranthene	0.117		0.0600	10	10/15/2016 07:59	WG916688
Chrysene	0.301		0.0600	10	10/15/2016 07:59	WG916688
Dibenz(a,h)anthracene	ND		0.0600	10	10/15/2016 07:59	WG916688
Fluoranthene	0.373		0.0600	10	10/15/2016 07:59	WG916688
Fluorene	ND		0.0600	10	10/15/2016 07:59	WG916688
Indeno(1,2,3-cd)pyrene	0.167		0.0600	10	10/15/2016 07:59	WG916688
Naphthalene	ND		0.200	10	10/15/2016 07:59	WG916688
Phenanthrene	0.111		0.0600	10	10/15/2016 07:59	WG916688
Pyrene	0.402		0.0600	10	10/15/2016 07:59	WG916688
1-Methylnaphthalene	ND		0.200	10	10/15/2016 07:59	WG916688
2-Methylnaphthalene	ND		0.200	10	10/15/2016 07:59	WG916688
2-Chloronaphthalene	ND		0.200	10	10/15/2016 07:59	WG916688
(S) Nitrobenzene-d5	*96.5*		*22.1-146*		*10/15/2016 07:59*	WG916688
(S) 2-Fluorobiphenyl	*83.8*		*40.6-122*		*10/15/2016 07:59*	WG916688
(S) p-Terphenyl-d14	*60.5*		*32.2-131*		*10/15/2016 07:59*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.3		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0120	2	10/15/2016 03:59	WG916688
Acenaphthene	ND		0.0120	2	10/15/2016 03:59	WG916688
Acenaphthylene	ND		0.0120	2	10/15/2016 03:59	WG916688
Benzo(a)anthracene	ND		0.0120	2	10/15/2016 03:59	WG916688
Benzo(a)pyrene	ND		0.0120	2	10/15/2016 03:59	WG916688
Benzo(b)fluoranthene	ND		0.0120	2	10/15/2016 03:59	WG916688
Benzo(g,h,i)perylene	ND		0.0120	2	10/15/2016 03:59	WG916688
Benzo(k)fluoranthene	ND		0.0120	2	10/15/2016 03:59	WG916688
Chrysene	ND		0.0120	2	10/15/2016 03:59	WG916688
Dibenz(a,h)anthracene	ND		0.0120	2	10/15/2016 03:59	WG916688
Fluoranthene	ND		0.0120	2	10/15/2016 03:59	WG916688
Fluorene	ND		0.0120	2	10/15/2016 03:59	WG916688
Indeno(1,2,3-cd)pyrene	ND		0.0120	2	10/15/2016 03:59	WG916688
Naphthalene	ND		0.0400	2	10/15/2016 03:59	WG916688
Phenanthrene	ND		0.0120	2	10/15/2016 03:59	WG916688
Pyrene	ND		0.0120	2	10/15/2016 03:59	WG916688
1-Methylnaphthalene	ND		0.0400	2	10/15/2016 03:59	WG916688
2-Methylnaphthalene	ND		0.0400	2	10/15/2016 03:59	WG916688
2-Chloronaphthalene	ND		0.0400	2	10/15/2016 03:59	WG916688
(S) Nitrobenzene-d5	*78.1*		*22.1-146*		*10/15/2016 03:59*	WG916688
(S) 2-Fluorobiphenyl	*73.3*		*40.6-122*		*10/15/2016 03:59*	WG916688
(S) p-Terphenyl-d14	*62.1*		*32.2-131*		*10/15/2016 03:59*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.7		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0211		0.00600	1	10/15/2016 02:54	WG916688
Acenaphthene	ND		0.00600	1	10/15/2016 02:54	WG916688
Acenaphthylene	0.0198		0.00600	1	10/15/2016 02:54	WG916688
Benzo(a)anthracene	0.0831		0.00600	1	10/15/2016 02:54	WG916688
Benzo(a)pyrene	0.0809		0.00600	1	10/15/2016 02:54	WG916688
Benzo(b)fluoranthene	0.141		0.00600	1	10/15/2016 02:54	WG916688
Benzo(g,h,i)perylene	0.0758		0.00600	1	10/15/2016 02:54	WG916688
Benzo(k)fluoranthene	0.0440		0.00600	1	10/15/2016 02:54	WG916688
Chrysene	0.123		0.00600	1	10/15/2016 02:54	WG916688
Dibenz(a,h)anthracene	0.0170		0.00600	1	10/15/2016 02:54	WG916688
Fluoranthene	0.158		0.00600	1	10/15/2016 02:54	WG916688
Fluorene	ND		0.00600	1	10/15/2016 02:54	WG916688
Indeno(1,2,3-cd)pyrene	0.0568		0.00600	1	10/15/2016 02:54	WG916688
Naphthalene	ND		0.0200	1	10/15/2016 02:54	WG916688
Phenanthrene	0.0218		0.00600	1	10/15/2016 02:54	WG916688
Pyrene	0.171		0.00600	1	10/15/2016 02:54	WG916688
1-Methylnaphthalene	ND		0.0200	1	10/15/2016 02:54	WG916688
2-Methylnaphthalene	ND		0.0200	1	10/15/2016 02:54	WG916688
2-Chloronaphthalene	ND		0.0200	1	10/15/2016 02:54	WG916688
(S) Nitrobenzene-d5	*95.4*		*22.1-146*		*10/15/2016 02:54*	WG916688
(S) 2-Fluorobiphenyl	*59.4*		*40.6-122*		*10/15/2016 02:54*	WG916688
(S) p-Terphenyl-d14	*52.4*		*32.2-131*		*10/15/2016 02:54*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.6		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0144		0.0120	2	10/15/2016 04:21	WG916688
Acenaphthene	ND		0.0120	2	10/15/2016 04:21	WG916688
Acenaphthylene	0.0123		0.0120	2	10/15/2016 04:21	WG916688
Benzo(a)anthracene	ND		0.0120	2	10/15/2016 04:21	WG916688
Benzo(a)pyrene	0.0154		0.0120	2	10/15/2016 04:21	WG916688
Benzo(b)fluoranthene	0.0260		0.0120	2	10/15/2016 04:21	WG916688
Benzo(g,h,i)perylene	0.0267		0.0120	2	10/15/2016 04:21	WG916688
Benzo(k)fluoranthene	ND		0.0120	2	10/15/2016 04:21	WG916688
Chrysene	0.0231		0.0120	2	10/15/2016 04:21	WG916688
Dibenz(a,h)anthracene	ND		0.0120	2	10/15/2016 04:21	WG916688
Fluoranthene	0.0300		0.0120	2	10/15/2016 04:21	WG916688
Fluorene	ND		0.0120	2	10/15/2016 04:21	WG916688
Indeno(1,2,3-cd)pyrene	0.0161		0.0120	2	10/15/2016 04:21	WG916688
Naphthalene	ND		0.0400	2	10/15/2016 04:21	WG916688
Phenanthrene	0.0221		0.0120	2	10/15/2016 04:21	WG916688
Pyrene	0.0239		0.0120	2	10/15/2016 04:21	WG916688
1-Methylnaphthalene	ND		0.0400	2	10/15/2016 04:21	WG916688
2-Methylnaphthalene	ND		0.0400	2	10/15/2016 04:21	WG916688
2-Chloronaphthalene	ND		0.0400	2	10/15/2016 04:21	WG916688
(S) Nitrobenzene-d5	*84.2*		*22.1-146*		*10/15/2016 04:21*	WG916688
(S) 2-Fluorobiphenyl	*77.1*		*40.6-122*		*10/15/2016 04:21*	WG916688
(S) p-Terphenyl-d14	*59.8*		*32.2-131*		*10/15/2016 04:21*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.1		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0348		0.0120	2	10/15/2016 04:43	WG916688
Acenaphthene	0.0150		0.0120	2	10/15/2016 04:43	WG916688
Acenaphthylene	0.0123		0.0120	2	10/15/2016 04:43	WG916688
Benzo(a)anthracene	0.0249		0.0120	2	10/15/2016 04:43	WG916688
Benzo(a)pyrene	0.0263		0.0120	2	10/15/2016 04:43	WG916688
Benzo(b)fluoranthene	0.0528		0.0120	2	10/15/2016 04:43	WG916688
Benzo(g,h,i)perylene	0.0452		0.0120	2	10/15/2016 04:43	WG916688
Benzo(k)fluoranthene	0.0130		0.0120	2	10/15/2016 04:43	WG916688
Chrysene	0.0481		0.0120	2	10/15/2016 04:43	WG916688
Dibenz(a,h)anthracene	ND		0.0120	2	10/15/2016 04:43	WG916688
Fluoranthene	0.0940		0.0120	2	10/15/2016 04:43	WG916688
Fluorene	ND		0.0120	2	10/15/2016 04:43	WG916688
Indeno(1,2,3-cd)pyrene	0.0259		0.0120	2	10/15/2016 04:43	WG916688
Naphthalene	0.0693		0.0400	2	10/15/2016 04:43	WG916688
Phenanthrene	0.0769		0.0120	2	10/15/2016 04:43	WG916688
Pyrene	0.0711		0.0120	2	10/15/2016 04:43	WG916688
1-Methylnaphthalene	ND		0.0400	2	10/15/2016 04:43	WG916688
2-Methylnaphthalene	0.0417		0.0400	2	10/15/2016 04:43	WG916688
2-Chloronaphthalene	ND		0.0400	2	10/15/2016 04:43	WG916688
(S) Nitrobenzene-d5	*90.8*		*22.1-146*		*10/15/2016 04:43*	WG916688
(S) 2-Fluorobiphenyl	*82.7*		*40.6-122*		*10/15/2016 04:43*	WG916688
(S) p-Terphenyl-d14	*63.5*		*32.2-131*		*10/15/2016 04:43*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	94.3		1	10/12/2016 09:06	WG916302

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0571		0.00600	1	10/15/2016 03:38	WG916688
Acenaphthene	ND		0.00600	1	10/15/2016 03:38	WG916688
Acenaphthylene	0.0617		0.00600	1	10/15/2016 03:38	WG916688
Benzo(a)anthracene	0.0856		0.00600	1	10/15/2016 03:38	WG916688
Benzo(a)pyrene	0.121		0.00600	1	10/15/2016 03:38	WG916688
Benzo(b)fluoranthene	0.196		0.00600	1	10/15/2016 03:38	WG916688
Benzo(g,h,i)perylene	0.130		0.00600	1	10/15/2016 03:38	WG916688
Benzo(k)fluoranthene	0.0634		0.00600	1	10/15/2016 03:38	WG916688
Chrysene	0.125		0.00600	1	10/15/2016 03:38	WG916688
Dibenz(a,h)anthracene	0.0288		0.00600	1	10/15/2016 03:38	WG916688
Fluoranthene	0.142		0.00600	1	10/15/2016 03:38	WG916688
Fluorene	ND		0.00600	1	10/15/2016 03:38	WG916688
Indeno(1,2,3-cd)pyrene	0.0960		0.00600	1	10/15/2016 03:38	WG916688
Naphthalene	ND		0.0200	1	10/15/2016 03:38	WG916688
Phenanthrene	0.0340		0.00600	1	10/15/2016 03:38	WG916688
Pyrene	0.175		0.00600	1	10/15/2016 03:38	WG916688
1-Methylnaphthalene	ND		0.0200	1	10/15/2016 03:38	WG916688
2-Methylnaphthalene	ND		0.0200	1	10/15/2016 03:38	WG916688
2-Chloronaphthalene	ND		0.0200	1	10/15/2016 03:38	WG916688
(S) Nitrobenzene-d5	*99.3*		*22.1-146*		*10/15/2016 03:38*	WG916688
(S) 2-Fluorobiphenyl	*91.3*		*40.6-122*		*10/15/2016 03:38*	WG916688
(S) p-Terphenyl-d14	*75.9*		*32.2-131*		*10/15/2016 03:38*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	93.4		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.563		0.0600	10	10/15/2016 08:21	WG916688
Acenaphthene	0.126		0.0600	10	10/15/2016 08:21	WG916688
Acenaphthylene	0.657		0.0600	10	10/15/2016 08:21	WG916688
Benzo(a)anthracene	1.92		0.0600	10	10/15/2016 08:21	WG916688
Benzo(a)pyrene	1.81		0.0600	10	10/15/2016 08:21	WG916688
Benzo(b)fluoranthene	3.06		0.0600	10	10/15/2016 08:21	WG916688
Benzo(g,h,i)perylene	1.14		0.0600	10	10/15/2016 08:21	WG916688
Benzo(k)fluoranthene	1.03		0.0600	10	10/15/2016 08:21	WG916688
Chrysene	2.85		0.0600	10	10/15/2016 08:21	WG916688
Dibenz(a,h)anthracene	0.330		0.0600	10	10/15/2016 08:21	WG916688
Fluoranthene	3.56		0.0600	10	10/15/2016 08:21	WG916688
Fluorene	ND		0.0600	10	10/15/2016 08:21	WG916688
Indeno(1,2,3-cd)pyrene	1.01		0.0600	10	10/15/2016 08:21	WG916688
Naphthalene	0.581		0.200	10	10/15/2016 08:21	WG916688
Phenanthrene	0.798		0.0600	10	10/15/2016 08:21	WG916688
Pyrene	3.62		0.0600	10	10/15/2016 08:21	WG916688
1-Methylnaphthalene	ND		0.200	10	10/15/2016 08:21	WG916688
2-Methylnaphthalene	ND		0.200	10	10/15/2016 08:21	WG916688
2-Chloronaphthalene	ND		0.200	10	10/15/2016 08:21	WG916688
(S) Nitrobenzene-d5	*90.8*		*22.1-146*		*10/15/2016 08:21*	WG916688
(S) 2-Fluorobiphenyl	*82.0*		*40.6-122*		*10/15/2016 08:21*	WG916688
(S) p-Terphenyl-d14	*71.0*		*32.2-131*		*10/15/2016 08:21*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.9		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0120	2	10/15/2016 05:05	WG916688
Acenaphthene	ND		0.0120	2	10/15/2016 05:05	WG916688
Acenaphthylene	ND		0.0120	2	10/15/2016 05:05	WG916688
Benzo(a)anthracene	0.0153		0.0120	2	10/15/2016 05:05	WG916688
Benzo(a)pyrene	0.0217		0.0120	2	10/15/2016 05:05	WG916688
Benzo(b)fluoranthene	0.0419		0.0120	2	10/15/2016 05:05	WG916688
Benzo(g,h,i)perylene	0.0213		0.0120	2	10/15/2016 05:05	WG916688
Benzo(k)fluoranthene	0.0124		0.0120	2	10/15/2016 05:05	WG916688
Chrysene	0.0333		0.0120	2	10/15/2016 05:05	WG916688
Dibenz(a,h)anthracene	ND		0.0120	2	10/15/2016 05:05	WG916688
Fluoranthene	0.0348		0.0120	2	10/15/2016 05:05	WG916688
Fluorene	ND		0.0120	2	10/15/2016 05:05	WG916688
Indeno(1,2,3-cd)pyrene	0.0149		0.0120	2	10/15/2016 05:05	WG916688
Naphthalene	ND		0.0400	2	10/15/2016 05:05	WG916688
Phenanthrene	ND		0.0120	2	10/15/2016 05:05	WG916688
Pyrene	0.0379		0.0120	2	10/15/2016 05:05	WG916688
1-Methylnaphthalene	ND		0.0400	2	10/15/2016 05:05	WG916688
2-Methylnaphthalene	ND		0.0400	2	10/15/2016 05:05	WG916688
2-Chloronaphthalene	ND		0.0400	2	10/15/2016 05:05	WG916688
(S) Nitrobenzene-d5	*93.5*		*22.1-146*		*10/15/2016 05:05*	WG916688
(S) 2-Fluorobiphenyl	*61.8*		*40.6-122*		*10/15/2016 05:05*	WG916688
(S) p-Terphenyl-d14	*56.1*		*32.2-131*		*10/15/2016 05:05*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.7		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0120	2	10/15/2016 05:27	WG916688
Acenaphthene	ND		0.0120	2	10/15/2016 05:27	WG916688
Acenaphthylene	ND		0.0120	2	10/15/2016 05:27	WG916688
Benzo(a)anthracene	0.0178		0.0120	2	10/15/2016 05:27	WG916688
Benzo(a)pyrene	0.0215		0.0120	2	10/15/2016 05:27	WG916688
Benzo(b)fluoranthene	0.0484		0.0120	2	10/15/2016 05:27	WG916688
Benzo(g,h,i)perylene	0.0252		0.0120	2	10/15/2016 05:27	WG916688
Benzo(k)fluoranthene	0.0128		0.0120	2	10/15/2016 05:27	WG916688
Chrysene	0.0383		0.0120	2	10/15/2016 05:27	WG916688
Dibenz(a,h)anthracene	ND		0.0120	2	10/15/2016 05:27	WG916688
Fluoranthene	0.0377		0.0120	2	10/15/2016 05:27	WG916688
Fluorene	ND		0.0120	2	10/15/2016 05:27	WG916688
Indeno(1,2,3-cd)pyrene	0.0170		0.0120	2	10/15/2016 05:27	WG916688
Naphthalene	ND		0.0400	2	10/15/2016 05:27	WG916688
Phenanthrene	ND		0.0120	2	10/15/2016 05:27	WG916688
Pyrene	0.0391		0.0120	2	10/15/2016 05:27	WG916688
1-Methylnaphthalene	ND		0.0400	2	10/15/2016 05:27	WG916688
2-Methylnaphthalene	ND		0.0400	2	10/15/2016 05:27	WG916688
2-Chloronaphthalene	ND		0.0400	2	10/15/2016 05:27	WG916688
(S) Nitrobenzene-d5	*92.9*		*22.1-146*		*10/15/2016 05:27*	WG916688
(S) 2-Fluorobiphenyl	*66.2*		*40.6-122*		*10/15/2016 05:27*	WG916688
(S) p-Terphenyl-d14	*58.3*		*32.2-131*		*10/15/2016 05:27*	WG916688

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.6		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.00793		0.00600	1	10/14/2016 05:31	WG916919
Acenaphthene	ND		0.00600	1	10/14/2016 05:31	WG916919
Acenaphthylene	ND		0.00600	1	10/14/2016 05:31	WG916919
Benzo(a)anthracene	0.00799		0.00600	1	10/14/2016 05:31	WG916919
Benzo(a)pyrene	0.00904		0.00600	1	10/14/2016 05:31	WG916919
Benzo(b)fluoranthene	0.0210		0.00600	1	10/14/2016 05:31	WG916919
Benzo(g,h,i)perylene	0.0167		0.00600	1	10/14/2016 05:31	WG916919
Benzo(k)fluoranthene	ND		0.00600	1	10/14/2016 05:31	WG916919
Chrysene	0.0163		0.00600	1	10/14/2016 05:31	WG916919
Dibenz(a,h)anthracene	ND		0.00600	1	10/14/2016 05:31	WG916919
Fluoranthene	0.0223		0.00600	1	10/14/2016 05:31	WG916919
Fluorene	ND		0.00600	1	10/14/2016 05:31	WG916919
Indeno(1,2,3-cd)pyrene	0.00986		0.00600	1	10/14/2016 05:31	WG916919
Naphthalene	ND		0.0200	1	10/14/2016 05:31	WG916919
Phenanthrene	0.00779		0.00600	1	10/14/2016 05:31	WG916919
Pyrene	0.0215		0.00600	1	10/14/2016 05:31	WG916919
1-Methylnaphthalene	ND		0.0200	1	10/14/2016 05:31	WG916919
2-Methylnaphthalene	ND		0.0200	1	10/14/2016 05:31	WG916919
2-Chloronaphthalene	ND		0.0200	1	10/14/2016 05:31	WG916919
(S) Nitrobenzene-d5	*114*		*22.1-146*		*10/14/2016 05:31*	WG916919
(S) 2-Fluorobiphenyl	*99.7*		*40.6-122*		*10/14/2016 05:31*	WG916919
(S) p-Terphenyl-d14	*86.7*		*32.2-131*		*10/14/2016 05:31*	WG916919

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	90.2		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.120	20	10/14/2016 12:04	WG916919
Acenaphthene	ND		0.120	20	10/14/2016 12:04	WG916919
Acenaphthylene	ND		0.120	20	10/14/2016 12:04	WG916919
Benzo(a)anthracene	ND		0.120	20	10/14/2016 12:04	WG916919
Benzo(a)pyrene	ND		0.120	20	10/14/2016 12:04	WG916919
Benzo(b)fluoranthene	ND		0.120	20	10/14/2016 12:04	WG916919
Benzo(g,h,i)perylene	ND		0.120	20	10/14/2016 12:04	WG916919
Benzo(k)fluoranthene	ND		0.120	20	10/14/2016 12:04	WG916919
Chrysene	ND		0.120	20	10/14/2016 12:04	WG916919
Dibenz(a,h)anthracene	ND		0.120	20	10/14/2016 12:04	WG916919
Fluoranthene	ND		0.120	20	10/14/2016 12:04	WG916919
Fluorene	ND		0.120	20	10/14/2016 12:04	WG916919
Indeno(1,2,3-cd)pyrene	ND		0.120	20	10/14/2016 12:04	WG916919
Naphthalene	ND		0.400	20	10/14/2016 12:04	WG916919
Phenanthrene	ND		0.120	20	10/14/2016 12:04	WG916919
Pyrene	ND		0.120	20	10/14/2016 12:04	WG916919
1-Methylnaphthalene	ND		0.400	20	10/14/2016 12:04	WG916919
2-Methylnaphthalene	ND		0.400	20	10/14/2016 12:04	WG916919
2-Chloronaphthalene	ND		0.400	20	10/14/2016 12:04	WG916919
(S) Nitrobenzene-d5	*98.1*	J7	*22.1-146*		*10/14/2016 12:04*	WG916919
(S) 2-Fluorobiphenyl	*92.5*	J7	*40.6-122*		*10/14/2016 12:04*	WG916919
(S) p-Terphenyl-d14	*76.7*	J7	*32.2-131*		*10/14/2016 12:04*	WG916919

Sample Narrative:

8270D-SIM L865222-22 WG916919: Dilution due to matrix

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.3		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0125		0.0120	2	10/14/2016 11:20	WG916919
Acenaphthene	ND		0.0120	2	10/14/2016 11:20	WG916919
Acenaphthylene	ND		0.0120	2	10/14/2016 11:20	WG916919
Benzo(a)anthracene	0.0164		0.0120	2	10/14/2016 11:20	WG916919
Benzo(a)pyrene	0.0195		0.0120	2	10/14/2016 11:20	WG916919
Benzo(b)fluoranthene	0.0417		0.0120	2	10/14/2016 11:20	WG916919
Benzo(g,h,i)perylene	0.0217		0.0120	2	10/14/2016 11:20	WG916919
Benzo(k)fluoranthene	ND		0.0120	2	10/14/2016 11:20	WG916919
Chrysene	0.0190		0.0120	2	10/14/2016 11:20	WG916919
Dibenz(a,h)anthracene	ND		0.0120	2	10/14/2016 11:20	WG916919
Fluoranthene	0.0439		0.0120	2	10/14/2016 11:20	WG916919
Fluorene	ND		0.0120	2	10/14/2016 11:20	WG916919
Indeno(1,2,3-cd)pyrene	0.0151		0.0120	2	10/14/2016 11:20	WG916919
Naphthalene	ND		0.0400	2	10/14/2016 11:20	WG916919
Phenanthrene	0.0198		0.0120	2	10/14/2016 11:20	WG916919
Pyrene	0.0367		0.0120	2	10/14/2016 11:20	WG916919
1-Methylnaphthalene	ND		0.0400	2	10/14/2016 11:20	WG916919
2-Methylnaphthalene	ND		0.0400	2	10/14/2016 11:20	WG916919
2-Chloronaphthalene	ND		0.0400	2	10/14/2016 11:20	WG916919
(S) Nitrobenzene-d5	*80.2*		*22.1-146*		*10/14/2016 11:20*	WG916919
(S) 2-Fluorobiphenyl	*76.9*		*40.6-122*		*10/14/2016 11:20*	WG916919
(S) p-Terphenyl-d14	*65.8*		*32.2-131*		*10/14/2016 11:20*	WG916919

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.7		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0120	2	10/14/2016 11:42	WG916919
Acenaphthene	ND		0.0120	2	10/14/2016 11:42	WG916919
Acenaphthylene	ND		0.0120	2	10/14/2016 11:42	WG916919
Benzo(a)anthracene	0.0129		0.0120	2	10/14/2016 11:42	WG916919
Benzo(a)pyrene	0.0159		0.0120	2	10/14/2016 11:42	WG916919
Benzo(b)fluoranthene	0.0305		0.0120	2	10/14/2016 11:42	WG916919
Benzo(g,h,i)perylene	0.0188		0.0120	2	10/14/2016 11:42	WG916919
Benzo(k)fluoranthene	ND		0.0120	2	10/14/2016 11:42	WG916919
Chrysene	0.0170		0.0120	2	10/14/2016 11:42	WG916919
Dibenz(a,h)anthracene	ND		0.0120	2	10/14/2016 11:42	WG916919
Fluoranthene	0.0314		0.0120	2	10/14/2016 11:42	WG916919
Fluorene	ND		0.0120	2	10/14/2016 11:42	WG916919
Indeno(1,2,3-cd)pyrene	ND		0.0120	2	10/14/2016 11:42	WG916919
Naphthalene	ND		0.0400	2	10/14/2016 11:42	WG916919
Phenanthrene	0.0172		0.0120	2	10/14/2016 11:42	WG916919
Pyrene	0.0263		0.0120	2	10/14/2016 11:42	WG916919
1-Methylnaphthalene	ND		0.0400	2	10/14/2016 11:42	WG916919
2-Methylnaphthalene	ND		0.0400	2	10/14/2016 11:42	WG916919
2-Chloronaphthalene	ND		0.0400	2	10/14/2016 11:42	WG916919
(S) Nitrobenzene-d5	*80.2*		*22.1-146*		*10/14/2016 11:42*	WG916919
(S) 2-Fluorobiphenyl	*76.3*		*40.6-122*		*10/14/2016 11:42*	WG916919
(S) p-Terphenyl-d14	*64.1*		*32.2-131*		*10/14/2016 11:42*	WG916919

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	89.5		1	10/12/2016 10:53	WG916394

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0300	5	10/15/2016 05:11	WG917280
Acenaphthene	ND		0.0300	5	10/15/2016 05:11	WG917280
Acenaphthylene	ND		0.0300	5	10/15/2016 05:11	WG917280
Benzo(a)anthracene	ND		0.0300	5	10/15/2016 05:11	WG917280
Benzo(a)pyrene	ND		0.0300	5	10/15/2016 05:11	WG917280
Benzo(b)fluoranthene	0.0330		0.0300	5	10/15/2016 05:11	WG917280
Benzo(g,h,i)perylene	ND		0.0300	5	10/15/2016 05:11	WG917280
Benzo(k)fluoranthene	ND		0.0300	5	10/15/2016 05:11	WG917280
Chrysene	0.0319		0.0300	5	10/15/2016 05:11	WG917280
Dibenz(a,h)anthracene	ND		0.0300	5	10/15/2016 05:11	WG917280
Fluoranthene	0.0378		0.0300	5	10/15/2016 05:11	WG917280
Fluorene	ND		0.0300	5	10/15/2016 05:11	WG917280
Indeno(1,2,3-cd)pyrene	ND		0.0300	5	10/15/2016 05:11	WG917280
Naphthalene	ND		0.100	5	10/15/2016 05:11	WG917280
Phenanthrene	ND		0.0300	5	10/15/2016 05:11	WG917280
Pyrene	0.0372		0.0300	5	10/15/2016 05:11	WG917280
1-Methylnaphthalene	ND		0.100	5	10/15/2016 05:11	WG917280
2-Methylnaphthalene	ND		0.100	5	10/15/2016 05:11	WG917280
2-Chloronaphthalene	ND		0.100	5	10/15/2016 05:11	WG917280
(S) Nitrobenzene-d5	*53.0*		*22.1-146*		*10/15/2016 05:11*	WG917280
(S) 2-Fluorobiphenyl	*67.0*		*40.6-122*		*10/15/2016 05:11*	WG917280
(S) p-Terphenyl-d14	*54.2*		*32.2-131*		*10/15/2016 05:11*	WG917280

Sample Narrative:

8270D-SIM L865222-25 WG917280: Dilution due to matrix

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acenaphthene	ND		0.00100	1	10/14/2016 17:44	WG916690
Acenaphthylene	ND		0.00100	1	10/14/2016 17:44	WG916690
Anthracene	ND		0.00100	1	10/14/2016 17:44	WG916690
Benzidine	ND		0.0100	1	10/14/2016 17:44	WG916690
Benzo(a)anthracene	ND		0.00100	1	10/14/2016 17:44	WG916690
Benzo(b)fluoranthene	ND		0.00100	1	10/14/2016 17:44	WG916690
Benzo(k)fluoranthene	ND		0.00100	1	10/14/2016 17:44	WG916690
Benzo(g,h,i)perylene	ND		0.00100	1	10/14/2016 17:44	WG916690
Benzo(a)pyrene	ND		0.00100	1	10/14/2016 17:44	WG916690
Bis(2-chlorethoxy)methane	ND		0.0100	1	10/14/2016 17:44	WG916690
Bis(2-chloroethyl)ether	ND		0.0100	1	10/14/2016 17:44	WG916690
Bis(2-chloroisopropyl)ether	ND		0.0100	1	10/14/2016 17:44	WG916690
4-Bromophenyl-phenylether	ND		0.0100	1	10/14/2016 17:44	WG916690
2-Chloronaphthalene	ND		0.00100	1	10/14/2016 17:44	WG916690
4-Chlorophenyl-phenylether	ND		0.0100	1	10/14/2016 17:44	WG916690
Chrysene	ND		0.00100	1	10/14/2016 17:44	WG916690
Dibenz(a,h)anthracene	ND		0.00100	1	10/14/2016 17:44	WG916690
3,3-Dichlorobenzidine	ND		0.0100	1	10/14/2016 17:44	WG916690
2,4-Dinitrotoluene	ND		0.0100	1	10/14/2016 17:44	WG916690
2,6-Dinitrotoluene	ND		0.0100	1	10/14/2016 17:44	WG916690
Fluoranthene	ND		0.00100	1	10/14/2016 17:44	WG916690
Fluorene	ND		0.00100	1	10/14/2016 17:44	WG916690
Hexachlorobenzene	ND		0.00100	1	10/14/2016 17:44	WG916690
Hexachloro-1,3-butadiene	ND		0.0100	1	10/14/2016 17:44	WG916690
Hexachlorocyclopentadiene	ND		0.0100	1	10/14/2016 17:44	WG916690
Hexachloroethane	ND		0.0100	1	10/14/2016 17:44	WG916690
Indeno(1,2,3-cd)pyrene	ND		0.00100	1	10/14/2016 17:44	WG916690
Isophorone	ND		0.0100	1	10/14/2016 17:44	WG916690
Naphthalene	ND		0.00100	1	10/14/2016 17:44	WG916690
Nitrobenzene	ND		0.0100	1	10/14/2016 17:44	WG916690
n-Nitrosodimethylamine	ND		0.0100	1	10/14/2016 17:44	WG916690
n-Nitrosodiphenylamine	ND		0.0100	1	10/14/2016 17:44	WG916690
n-Nitrosodi-n-propylamine	ND		0.0100	1	10/14/2016 17:44	WG916690
Phenanthrene	ND		0.00100	1	10/14/2016 17:44	WG916690
Benzylbutyl phthalate	ND		0.00300	1	10/14/2016 17:44	WG916690
Bis(2-ethylhexyl)phthalate	ND		0.00300	1	10/14/2016 17:44	WG916690
Di-n-butyl phthalate	ND		0.00300	1	10/14/2016 17:44	WG916690
Diethyl phthalate	ND		0.00300	1	10/14/2016 17:44	WG916690
Dimethyl phthalate	ND		0.00300	1	10/14/2016 17:44	WG916690
Di-n-octyl phthalate	ND		0.00300	1	10/14/2016 17:44	WG916690
Pyrene	ND		0.00100	1	10/14/2016 17:44	WG916690
1,2,4-Trichlorobenzene	ND		0.0100	1	10/14/2016 17:44	WG916690
4-Chloro-3-methylphenol	ND		0.0100	1	10/14/2016 17:44	WG916690
2-Chlorophenol	ND		0.0100	1	10/14/2016 17:44	WG916690
2,4-Dichlorophenol	ND		0.0100	1	10/14/2016 17:44	WG916690
2,4-Dimethylphenol	ND		0.0100	1	10/14/2016 17:44	WG916690
4,6-Dinitro-2-methylphenol	ND		0.0100	1	10/14/2016 17:44	WG916690
2,4-Dinitrophenol	ND		0.0100	1	10/14/2016 17:44	WG916690
2-Nitrophenol	ND		0.0100	1	10/14/2016 17:44	WG916690
4-Nitrophenol	ND		0.0100	1	10/14/2016 17:44	WG916690
Pentachlorophenol	ND		0.0100	1	10/14/2016 17:44	WG916690
Phenol	ND		0.0100	1	10/14/2016 17:44	WG916690
2,4,6-Trichlorophenol	ND		0.0100	1	10/14/2016 17:44	WG916690
(S) 2-Fluorophenol	*35.2*		*10.0-77.9*		*10/14/2016 17:44*	WG916690
(S) Phenol-d5	*27.3*		*5.00-70.1*		*10/14/2016 17:44*	WG916690
(S) Nitrobenzene-d5	*42.9*		*21.8-123*		*10/14/2016 17:44*	WG916690

Semi Volatile Organic Compounds (GC/MS) by Method 8270D

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
(S) 2-Fluorobiphenyl	*53.7*		*29.5-131*		*10/14/2016 17:44*	WG916690
(S) 2,4,6-Tribromophenol	*48.3*		*11.2-130*		*10/14/2016 17:44*	WG916690
(S) p-Terphenyl-d14	*56.8*		*29.3-137*		*10/14/2016 17:44*	WG916690

Semi Volatile Organic Compounds (GC/MS) by Method 8270D-SIM

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Acenaphthene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Acenaphthylene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Benzo(a)anthracene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Benzo(a)pyrene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Benzo(b)fluoranthene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Benzo(g,h,i)perylene	ND	J3	0.0000500	1	10/14/2016 19:15	WG916567
Benzo(k)fluoranthene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Chrysene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Dibenz(a,h)anthracene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Fluoranthene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Fluorene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Naphthalene	ND		0.000250	1	10/14/2016 19:15	WG916567
Phenanthrene	ND		0.0000500	1	10/14/2016 19:15	WG916567
Pyrene	ND		0.0000500	1	10/14/2016 19:15	WG916567
1-Methylnaphthalene	ND		0.000250	1	10/14/2016 19:15	WG916567
2-Methylnaphthalene	ND		0.000250	1	10/14/2016 19:15	WG916567
2-Chloronaphthalene	ND		0.000250	1	10/14/2016 19:15	WG916567
(S) Nitrobenzene-d5	*83.1*		*45.1-170*		*10/14/2016 19:15*	WG916567
(S) 2-Fluorobiphenyl	*112*		*57.7-153*		*10/14/2016 19:15*	WG916567
(S) p-Terphenyl-d14	*107*		*53.2-156*		*10/14/2016 19:15*	WG916567

Method Blank (MB)

(MB) R3170195-1 10/12/16 09:15

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.00100			

L865199-11 Original Sample (OS) • Duplicate (DUP)

(OS) L865199-11 10/12/16 09:15 • (DUP) R3170195-3 10/12/16 09:15

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	80.8	80.5	1	0.325		5

Laboratory Control Sample (LCS)

(LCS) R3170195-2 10/12/16 09:15

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	99.9	85.0-115	

Method Blank (MB)

(MB) R3170194-1 10/12/16 09:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.000500			

L865222-13 Original Sample (OS) • Duplicate (DUP)

(OS) L865222-13 10/12/16 09:06 • (DUP) R3170194-3 10/12/16 09:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	90.3	90.4	1	0.0889		5

Laboratory Control Sample (LCS)

(LCS) R3170194-2 10/12/16 09:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3170201-1 10/12/16 10:53

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.000			

L865232-02 Original Sample (OS) • Duplicate (DUP)

(OS) L865232-02 10/12/16 10:53 • (DUP) R3170201-3 10/12/16 10:53

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	88.4	87.9	1	0.496		5

Laboratory Control Sample (LCS)

(LCS) R3170201-2 10/12/16 10:53

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

Method Blank (MB)

(MB) R3170881-3 10/14/16 12:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00642	0.0330
Acenaphthylene	U		0.00671	0.0330
Anthracene	U		0.00632	0.0330
Benzidine	U		0.0637	0.333
Benzo(a)anthracene	U		0.00428	0.0330
Benzo(b)fluoranthene	U		0.00695	0.0330
Benzo(k)fluoranthene	U		0.00582	0.0330
Benzo(g,h,i)perylene	U		0.00721	0.0330
Benzo(a)pyrene	U		0.00548	0.0330
Bis(2-chlorethoxy)methane	U		0.00770	0.333
Bis(2-chloroethyl)ether	U		0.00896	0.333
Bis(2-chloroisopropyl)ether	U		0.00760	0.333
4-Bromophenyl-phenylether	U		0.0114	0.333
2-Chloronaphthalene	U		0.00639	0.0330
4-Chlorophenyl-phenylether	U		0.00627	0.333
Chrysene	U		0.00555	0.0330
Dibenz(a,h)anthracene	U		0.00821	0.0330
3,3-Dichlorobenzidine	U		0.0794	0.333
2,4-Dinitrotoluene	U		0.00607	0.333
2,6-Dinitrotoluene	U		0.00737	0.333
Fluoranthene	U		0.00496	0.0330
Fluorene	U		0.00682	0.0330
Hexachlorobenzene	U		0.00856	0.333
Hexachloro-1,3-butadiene	U		0.0100	0.333
Hexachlorocyclopentadiene	U		0.0587	0.333
Hexachloroethane	U		0.0134	0.333
Indeno(1,2,3-cd)pyrene	U		0.00772	0.0330
Isophorone	U		0.00522	0.333
Naphthalene	U		0.00889	0.0330
Nitrobenzene	U		0.00695	0.333
n-Nitrosodimethylamine	U		0.0647	0.333
n-Nitrosodiphenylamine	U		0.00594	0.333
n-Nitrosodi-n-propylamine	U		0.00906	0.333
Phenanthrene	U		0.00528	0.0330
Benzylbutyl phthalate	U		0.0103	0.333
Bis(2-ethylhexyl)phthalate	U		0.0120	0.333
Di-n-butyl phthalate	U		0.0109	0.333
Diethyl phthalate	U		0.00691	0.333
Dimethyl phthalate	U		0.00540	0.333
Di-n-octyl phthalate	U		0.00907	0.333

Method Blank (MB)

(MB) R3170881-3 10/14/16 12:06

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Pyrene	U		0.0123	0.0330
1,2,4-Trichlorobenzene	U		0.00876	0.333
4-Chloro-3-methylphenol	U		0.00477	0.333
2-Chlorophenol	U		0.00831	0.333
2,4-Dichlorophenol	U		0.00746	0.333
2,4-Dimethylphenol	U		0.0471	0.333
4,6-Dinitro-2-methylphenol	U		0.124	0.333
2,4-Dinitrophenol	U		0.0980	0.333
2-Nitrophenol	U		0.0130	0.333
4-Nitrophenol	U		0.0525	0.333
Pentachlorophenol	U		0.0480	0.333
Phenol	U		0.00695	0.333
2,4,6-Trichlorophenol	U		0.00779	0.333
(S) Nitrobenzene-d5	*59.0*			*21.9-129*
(S) 2-Fluorobiphenyl	*65.9*			*34.9-129*
(S) p-Terphenyl-d14	*64.8*			*21.5-128*
(S) Phenol-d5	*59.4*			*26.3-121*
(S) 2-Fluorophenol	*57.0*			*21.1-116*
(S) 2,4,6-Tribromophenol	*71.6*			*21.6-142*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170881-1 10/14/16 11:17 • (LCSD) R3170881-2 10/14/16 11:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.667	0.399	0.430	59.9	64.4	48.9-107			7.32	20
Acenaphthylene	0.667	0.423	0.460	63.5	68.9	49.2-111			8.27	20
Anthracene	0.667	0.402	0.418	60.3	62.7	52.0-112			3.91	20
Benzidine	0.667	ND	ND	0.000	0.000	0.000-48.0			0.000	40
Benzo(a)anthracene	0.667	0.426	0.439	63.9	65.8	52.3-106			2.91	20
Benzo(b)fluoranthene	0.667	0.422	0.421	63.2	63.1	51.3-106			0.190	20
Benzo(k)fluoranthene	0.667	0.380	0.421	57.0	63.1	52.9-107			10.1	20
Benzo(g,h,i)perylene	0.667	0.406	0.421	60.8	63.2	45.8-108			3.84	20
Benzo(a)pyrene	0.667	0.409	0.422	61.3	63.3	51.9-106			3.18	20
Bis(2-chlorethoxy)methane	0.667	0.376	0.400	56.4	60.0	44.9-108			6.22	20
Bis(2-chloroethyl)ether	0.667	0.329	0.358	49.3	53.7	32.5-112			8.54	26
Bis(2-chloroisopropyl)ether	0.667	0.385	0.408	57.8	61.2	40.4-99.0			5.68	20.7
4-Bromophenyl-phenylether	0.667	0.424	0.449	63.5	67.3	51.4-110			5.83	20
2-Chloronaphthalene	0.667	0.384	0.418	57.5	62.7	47.1-105			8.58	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170881-1 10/14/16 11:17 • (LCSD) R3170881-2 10/14/16 11:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Chlorophenyl-phenylether	0.667	0.412	0.452	61.8	67.8	48.1-108			9.22	20
Chrysene	0.667	0.446	0.462	66.9	69.3	54.4-110			3.53	20
Dibenz(a,h)anthracene	0.667	0.393	0.417	59.0	62.5	45.7-111			5.83	20
3,3-Dichlorobenzidine	0.667	0.354	0.349	53.0	52.4	21.0-101			1.19	22
2,4-Dinitrotoluene	0.667	0.441	0.482	66.2	72.2	53.0-112			8.74	20
2,6-Dinitrotoluene	0.667	0.412	0.465	61.8	69.7	51.6-110			12.0	20
Fluoranthene	0.667	0.415	0.429	62.2	64.4	53.7-110			3.42	20
Fluorene	0.667	0.399	0.430	59.8	64.4	51.1-109			7.44	20
Hexachlorobenzene	0.667	0.430	0.450	64.5	67.5	43.2-104			4.58	20.1
Hexachloro-1,3-butadiene	0.667	0.412	0.424	61.7	63.6	41.5-112			3.00	20
Hexachlorocyclopentadiene	0.667	0.498	0.549	74.6	82.4	13.5-123			9.86	20.7
Hexachloroethane	0.667	0.320	0.349	47.9	52.4	36.2-103			8.87	22.7
Indeno(1,2,3-cd)pyrene	0.667	0.400	0.418	60.0	62.7	47.5-109			4.44	20
Isophorone	0.667	0.412	0.438	61.7	65.7	28.8-104			6.19	20
Naphthalene	0.667	0.376	0.390	56.4	58.5	43.4-103			3.60	20
Nitrobenzene	0.667	0.375	0.400	56.3	60.0	40.7-109			6.41	21
n-Nitrosodimethylamine	0.667	0.329	0.360	49.3	54.0	18.1-122			9.08	23.5
n-Nitrosodiphenylamine	0.667	0.370	0.382	55.5	57.2	48.8-107			3.00	20
n-Nitrosodi-n-propylamine	0.667	0.384	0.418	57.6	62.6	43.3-109			8.35	20
Phenanthrene	0.667	0.391	0.412	58.6	61.8	51.6-107			5.38	20
Benzylbutyl phthalate	0.667	0.379	0.392	56.8	58.8	47.5-115			3.49	20
Bis(2-ethylhexyl)phthalate	0.667	0.376	0.382	56.4	57.2	48.1-116			1.47	20.5
Di-n-butyl phthalate	0.667	0.395	0.415	59.2	62.3	49.7-113			4.98	20
Diethyl phthalate	0.667	0.418	0.444	62.6	66.5	52.0-112			6.04	20
Dimethyl phthalate	0.667	0.402	0.438	60.2	65.7	51.4-108			8.60	20
Di-n-octyl phthalate	0.667	0.370	0.383	55.4	57.4	49.6-112			3.55	22
Pyrene	0.667	0.392	0.405	58.8	60.7	47.1-108			3.04	20
1,2,4-Trichlorobenzene	0.667	0.392	0.417	58.7	62.5	39.8-100			6.17	20
4-Chloro-3-methylphenol	0.667	0.400	0.421	60.0	63.2	51.1-113			5.14	20
2-Chlorophenol	0.667	0.350	0.373	52.4	55.9	40.8-103			6.32	20
2,4-Dichlorophenol	0.667	0.412	0.435	61.8	65.2	46.2-109			5.44	20
2,4-Dimethylphenol	0.667	0.351	0.370	52.6	55.4	42.2-110			5.20	20
4,6-Dinitro-2-methylphenol	0.667	0.433	0.428	64.9	64.2	23.1-119			1.08	23.7
2,4-Dinitrophenol	0.667	0.301	0.263	45.2	39.4	10.0-105			13.8	36.5
2-Nitrophenol	0.667	0.419	0.442	62.8	66.3	44.2-113			5.37	20.9
4-Nitrophenol	0.667	0.398	0.424	59.6	63.6	34.8-109			6.42	20
Pentachlorophenol	0.667	0.427	0.429	64.1	64.2	16.2-102			0.270	22.9
Phenol	0.667	0.350	0.384	52.5	57.5	41.5-106			9.03	20
2,4,6-Trichlorophenol	0.667	0.426	0.467	63.8	70.0	44.4-108			9.19	20
(S) Nitrobenzene-d5				*55.8*	*59.5*	*21.9-129*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170881-1 10/14/16 11:17 • (LCSD) R3170881-2 10/14/16 11:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) 2-Fluorobiphenyl				*59.1*	*64.5*	*34.9-129*				
(S) p-Terphenyl-d14				*54.9*	*56.7*	*21.5-128*				
(S) Phenol-d5				*56.2*	*60.4*	*26.3-121*				
(S) 2-Fluorophenol				*53.7*	*56.9*	*21.1-116*				
(S) 2,4,6-Tribromophenol				*66.6*	*72.4*	*21.6-142*				

L865222-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L865222-03 10/14/16 18:09 • (MS) R3170881-4 10/14/16 18:33 • (MSD) R3170881-5 10/14/16 18:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0667	ND	0.375	0.345	56.2	51.7	10	32.2-134			8.33	27.3
Acenaphthylene	0.0667	ND	0.387	0.366	58.0	54.8	10	38.7-129			5.69	25.9
Anthracene	0.0667	ND	0.370	0.338	55.5	50.7	10	32.3-137			9.03	28.4
Benzidine	0.0667	ND	ND	ND	0.000	0.000	10	0.000-49.9			0.000	40
Benzo(a)anthracene	0.0667	ND	0.390	0.363	58.4	54.4	10	33.3-124			7.16	29
Benzo(b)fluoranthene	0.0667	ND	0.372	0.355	55.7	53.2	10	23.3-133			4.65	30.3
Benzo(k)fluoranthene	0.0667	ND	0.369	0.356	55.2	53.3	10	31.0-129			3.55	26.7
Benzo(g,h,i)perylene	0.0667	ND	0.262	0.222	39.2	33.3	10	10.0-127			16.2	31.9
Benzo(a)pyrene	0.0667	ND	0.348	0.351	52.2	52.6	10	28.2-128			0.710	28.4
Bis(2-chlorethoxy)methane	0.0667	ND	0.351	0.321	52.7	48.2	10	35.0-132			8.87	26.1
Bis(2-chloroethyl)ether	0.0667	ND	0.284	0.288	42.5	43.1	10	28.8-128			1.38	33.6
Bis(2-chloroisopropyl)ether	0.0667	ND	0.303	0.287	45.5	43.0	10	31.8-118			5.56	31.7
4-Bromophenyl-phenylether	0.0667	ND	0.404	0.363	60.6	54.4	10	39.0-130			10.9	26
2-Chloronaphthalene	0.0667	ND	0.369	0.344	55.4	51.6	10	37.5-123			7.10	26.5
4-Chlorophenyl-phenylether	0.0667	ND	0.378	0.366	56.6	54.9	10	37.9-123			3.10	25.9
Chrysene	0.0667	ND	0.403	0.383	60.4	57.4	10	36.3-129			4.99	28
Dibenz(a,h)anthracene	0.0667	ND	0.268	0.251	40.2	37.6	10	10.5-128			6.55	29.5
3,3-Dichlorobenzidine	0.0667	ND	ND	ND	0.000	0.000	10	10.0-129	J6	J6	0.000	40
2,4-Dinitrotoluene	0.0667	ND	0.374	0.323	56.0	48.4	10	27.8-147			14.5	29.7
2,6-Dinitrotoluene	0.0667	ND	0.369	0.346	55.3	51.9	10	36.5-137			6.29	29.7
Fluoranthene	0.0667	ND	0.394	0.357	59.1	53.6	10	27.9-138			9.77	26.9
Fluorene	0.0667	ND	0.386	0.350	57.9	52.4	10	34.0-133			9.96	27.1
Hexachlorobenzene	0.0667	ND	0.394	0.368	59.0	55.1	10	34.4-116			6.79	25.4
Hexachloro-1,3-butadiene	0.0667	ND	0.385	0.397	57.7	59.5	10	36.5-125			3.05	29.7
Hexachlorocyclopentadiene	0.0667	ND	ND	ND	0.000	0.000	10	10.0-124	J6	J6	0.000	37.5
Hexachloroethane	0.0667	ND	0.247	0.261	37.0	39.1	10	11.3-143			5.48	31.9
Indeno(1,2,3-cd)pyrene	0.0667	ND	0.270	0.245	40.5	36.7	10	10.0-128			9.92	31.5
Isophorone	0.0667	ND	0.363	0.351	54.4	52.6	10	25.7-116			3.35	27.7

L865222-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L865222-03 10/14/16 18:09 • (MS) R3170881-4 10/14/16 18:33 • (MSD) R3170881-5 10/14/16 18:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Naphthalene	0.0667	ND	0.382	0.364	57.2	54.6	10	36.4-121			4.72	27.2
Nitrobenzene	0.0667	ND	0.350	0.333	52.4	50.0	10	30.9-134			4.72	27.8
n-Nitrosodimethylamine	0.0667	ND	ND	ND	0.000	0.000	10	19.2-127	J6	J6	0.000	32
n-Nitrosodiphenylamine	0.0667	ND	0.333	0.313	50.0	46.9	10	26.8-133			6.34	25.9
n-Nitrosodi-n-propylamine	0.0667	ND	0.330	0.303	49.5	45.4	10	33.0-134			8.64	28.2
Phenanthrene	0.0667	ND	0.372	0.346	55.7	51.8	10	30.8-137			7.28	26.5
Benzylbutyl phthalate	0.0667	ND	0.319	0.314	47.9	47.1	10	33.4-128			1.67	28.5
Bis(2-ethylhexyl)phthalate	0.0667	ND	0.346	0.311	51.9	46.6	10	21.8-141			10.6	35.2
Di-n-butyl phthalate	0.0667	ND	0.361	0.324	54.1	48.6	10	32.2-133			10.6	25.9
Diethyl phthalate	0.0667	ND	0.372	0.338	55.7	50.7	10	39.4-136			9.49	25.5
Dimethyl phthalate	0.0667	ND	0.385	0.341	57.7	51.1	10	35.8-137			12.2	25.4
Di-n-octyl phthalate	0.0667	ND	0.348	0.303	52.1	45.5	10	28.5-128			13.6	32.5
Pyrene	0.0667	ND	0.345	0.318	51.8	47.6	10	24.1-130			8.33	29.9
1,2,4-Trichlorobenzene	0.0667	ND	0.388	0.355	58.1	53.2	10	36.5-114			8.94	28.4
4-Chloro-3-methylphenol	0.0667	ND	0.371	0.336	55.6	50.4	10	27.0-154			9.85	26.6
2-Chlorophenol	0.0667	ND	0.304	0.305	45.6	45.7	10	33.2-121			0.0700	29.3
2,4-Dichlorophenol	0.0667	ND	0.381	0.363	57.1	54.5	10	34.8-134			4.65	27.3
2,4-Dimethylphenol	0.0667	ND	ND	ND	0.000	0.000	10	12.3-149	J6	J6	0.000	32.3
4,6-Dinitro-2-methylphenol	0.0667	ND	ND	ND	0.000	0.000	10	10.0-144	J6	J6	0.000	32.7
2,4-Dinitrophenol	0.0667	ND	ND	ND	0.000	0.000	10	10.0-121	J6	J6	0.000	39.4
2-Nitrophenol	0.0667	ND	0.360	0.356	54.0	53.4	10	29.5-144			1.14	29.9
4-Nitrophenol	0.0667	ND	ND	ND	0.000	0.000	10	20.0-133	J6	J6	0.000	30.2
Pentachlorophenol	0.0667	ND	ND	ND	0.000	0.000	10	10.0-139	J6	J6	0.000	28.3
Phenol	0.0667	ND	0.323	0.292	48.4	43.8	10	25.1-130			9.99	29.6
2,4,6-Trichlorophenol	0.0667	ND	0.402	0.359	60.2	53.9	10	33.8-133			11.2	28.1
(S) Nitrobenzene-d5					*53.7*	*55.0*		*21.9-129*				
(S) 2-Fluorobiphenyl					*60.2*	*57.7*		*34.9-129*				
(S) p-Terphenyl-d14					*51.5*	*50.4*		*21.5-128*				
(S) Phenol-d5					*52.2*	*51.0*		*26.3-121*				
(S) 2-Fluorophenol					*45.5*	*51.2*		*21.1-116*				
(S) 2,4,6-Tribromophenol					*64.4*	*64.8*		*21.6-142*				

Method Blank (MB)

(MB) R3170768-1 10/14/16 12:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acenaphthene	U		0.000316	0.00100
Acenaphthylene	U		0.000309	0.00100
Anthracene	U		0.000291	0.00100
Benzidine	U		0.00432	0.0100
Benzo(a)anthracene	U		0.0000975	0.00100
Benzo(b)fluoranthene	U		0.0000896	0.00100
Benzo(k)fluoranthene	U		0.000355	0.00100
Benzo(g,h,i)perylene	U		0.000161	0.00100
Benzo(a)pyrene	U		0.000340	0.00100
Bis(2-chlorethoxy)methane	U		0.000329	0.0100
Bis(2-chloroethyl)ether	U		0.00162	0.0100
Bis(2-chloroisopropyl)ether	U		0.000445	0.0100
4-Bromophenyl-phenylether	U		0.000335	0.0100
2-Chloronaphthalene	U		0.000330	0.00100
4-Chlorophenyl-phenylether	U		0.000303	0.0100
Chrysene	U		0.000332	0.00100
Dibenz(a,h)anthracene	U		0.000279	0.00100
3,3-Dichlorobenzidine	U		0.00202	0.0100
2,4-Dinitrotoluene	U		0.00165	0.0100
2,6-Dinitrotoluene	U		0.000279	0.0100
Fluoranthene	U		0.000310	0.00100
Fluorene	U		0.000323	0.00100
Hexachlorobenzene	U		0.000341	0.00100
Hexachloro-1,3-butadiene	U		0.000329	0.0100
Hexachlorocyclopentadiene	U		0.00233	0.0100
Hexachloroethane	U		0.000365	0.0100
Indeno(1,2,3-cd)pyrene	U		0.000279	0.00100
Isophorone	U		0.000272	0.0100
Naphthalene	U		0.000372	0.00100
Nitrobenzene	U		0.000367	0.0100
n-Nitrosodimethylamine	U		0.00126	0.0100
n-Nitrosodiphenylamine	U		0.000304	0.0100
n-Nitrosodi-n-propylamine	U		0.000403	0.0100
Phenanthrene	U		0.000366	0.00100
Benzylbutyl phthalate	U		0.000275	0.00300
Bis(2-ethylhexyl)phthalate	U		0.000709	0.00300
Di-n-butyl phthalate	0.000702	J	0.000266	0.00300
Diethyl phthalate	U		0.000282	0.00300
Dimethyl phthalate	U		0.000283	0.00300
Di-n-octyl phthalate	U		0.000278	0.00300

Method Blank (MB)

(MB) R3170768-1 10/14/16 12:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Pyrene	U		0.000330	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.0100
4-Chloro-3-methylphenol	U		0.000263	0.0100
2-Chlorophenol	U		0.000283	0.0100
2,4-Dichlorophenol	U		0.000284	0.0100
2,4-Dimethylphenol	U		0.000264	0.0100
4,6-Dinitro-2-methylphenol	U		0.00262	0.0100
2,4-Dinitrophenol	U		0.00325	0.0100
2-Nitrophenol	U		0.000320	0.0100
4-Nitrophenol	U		0.00201	0.0100
Pentachlorophenol	U		0.000313	0.0100
Phenol	U		0.000334	0.0100
2,4,6-Trichlorophenol	U		0.000297	0.0100
(S) Nitrobenzene-d5	*42.4*			*21.8-123*
(S) 2-Fluorobiphenyl	*56.3*			*29.5-131*
(S) p-Terphenyl-d14	*57.8*			*29.3-137*
(S) Phenol-d5	*29.5*			*5.00-70.1*
(S) 2-Fluorophenol	*38.6*			*10.0-77.9*
(S) 2,4,6-Tribromophenol	*48.3*			*11.2-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170768-2 10/14/16 11:29 • (LCSD) R3170768-3 10/14/16 11:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0500	0.0279	0.0314	55.8	62.8	38.7-109			11.8	21.5
Acenaphthylene	0.0500	0.0277	0.0312	55.5	62.3	36.0-106			11.7	21
Anthracene	0.0500	0.0270	0.0295	54.0	59.1	43.6-113			9.01	18.8
Benzidine	0.0500	0.00924	0.0117	18.5	23.4	10.0-165			23.4	40
Benzo(a)anthracene	0.0500	0.0271	0.0301	54.3	60.1	51.2-112			10.2	20
Benzo(b)fluoranthene	0.0500	0.0275	0.0307	54.9	61.3	47.6-111			11.0	20
Benzo(k)fluoranthene	0.0500	0.0279	0.0301	55.9	60.3	49.4-114			7.53	20
Benzo(g,h,i)perylene	0.0500	0.0284	0.0310	56.8	62.0	45.2-117			8.80	20
Benzo(a)pyrene	0.0500	0.0277	0.0305	55.5	61.1	45.6-106			9.64	20
Bis(2-chlorethoxy)methane	0.0500	0.0247	0.0284	49.3	56.8	37.2-111			14.1	24.1
Bis(2-chloroethyl)ether	0.0500	0.0215	0.0242	43.0	48.5	22.6-108			12.0	27.9
Bis(2-chloroisopropyl)ether	0.0500	0.0248	0.0286	49.6	57.1	32.9-100			14.2	25.1
4-Bromophenyl-phenylether	0.0500	0.0273	0.0294	54.6	58.8	40.7-116			7.34	21
2-Chloronaphthalene	0.0500	0.0260	0.0294	52.0	58.9	33.6-105			12.3	23

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170768-2 10/14/16 11:29 • (LCSD) R3170768-3 10/14/16 11:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Chlorophenyl-phenylether	0.0500	0.0290	0.0326	58.0	65.2	39.0-113			11.8	20.9
Chrysene	0.0500	0.0286	0.0318	57.3	63.5	54.6-120			10.3	20
Dibenz(a,h)anthracene	0.0500	0.0285	0.0314	57.1	62.8	42.8-118			9.56	20
3,3-Dichlorobenzidine	0.0500	0.0249	0.0267	49.8	53.4	27.2-142			7.01	22.3
2,4-Dinitrotoluene	0.0500	0.0310	0.0340	62.0	68.1	31.2-105			9.34	22
2,6-Dinitrotoluene	0.0500	0.0268	0.0296	53.7	59.2	30.6-106			9.79	23.1
Fluoranthene	0.0500	0.0306	0.0326	61.3	65.2	45.9-115			6.18	20
Fluorene	0.0500	0.0292	0.0326	58.3	65.1	41.0-112			11.1	20.2
Hexachlorobenzene	0.0500	0.0278	0.0301	55.5	60.2	38.5-116			8.11	20.1
Hexachloro-1,3-butadiene	0.0500	0.0262	0.0302	52.3	60.4	16.1-104			14.4	31.2
Hexachlorocyclopentadiene	0.0500	0.0280	0.0323	56.1	64.6	10.0-121			14.1	27.9
Hexachloroethane	0.0500	0.0226	0.0260	45.2	52.0	16.5-89.8			13.9	30.7
Indeno(1,2,3-cd)pyrene	0.0500	0.0288	0.0314	57.6	62.7	45.0-116			8.56	20
Isophorone	0.0500	0.0232	0.0268	46.4	53.5	35.4-112			14.3	21.5
Naphthalene	0.0500	0.0256	0.0298	51.2	59.6	32.2-101			15.1	23.8
Nitrobenzene	0.0500	0.0221	0.0256	44.2	51.2	31.4-106			14.7	25.7
n-Nitrosodimethylamine	0.0500	0.0121	0.0135	24.1	27.1	10.0-80.1			11.6	37.5
n-Nitrosodiphenylamine	0.0500	0.0263	0.0298	52.6	59.5	44.4-113			12.4	20
n-Nitrosodi-n-propylamine	0.0500	0.0220	0.0246	44.1	49.2	33.2-106			11.0	23.7
Phenanthrene	0.0500	0.0273	0.0297	54.6	59.5	46.4-113			8.66	20
Benzylbutyl phthalate	0.0500	0.0243	0.0268	48.7	53.6	31.8-123			9.58	20.7
Bis(2-ethylhexyl)phthalate	0.0500	0.0247	0.0278	49.5	55.7	36.9-134			11.9	23.6
Di-n-butyl phthalate	0.0500	0.0277	0.0297	55.3	59.4	41.8-120			7.01	20.2
Diethyl phthalate	0.0500	0.0287	0.0307	57.4	61.3	36.5-129			6.61	20
Dimethyl phthalate	0.0500	0.0278	0.0308	55.5	61.6	35.3-128			10.4	20.8
Di-n-octyl phthalate	0.0500	0.0249	0.0277	49.7	55.5	39.7-112			10.9	21.1
Pyrene	0.0500	0.0265	0.0297	52.9	59.4	46.3-117			11.4	20
1,2,4-Trichlorobenzene	0.0500	0.0246	0.0289	49.2	57.8	22.9-96.1			16.2	27.5
4-Chloro-3-methylphenol	0.0500	0.0267	0.0307	53.4	61.4	35.7-100			13.9	22.9
2-Chlorophenol	0.0500	0.0231	0.0265	46.2	53.0	26.2-91.5			13.7	26.5
2,4-Dichlorophenol	0.0500	0.0261	0.0302	52.1	60.3	31.4-103			14.6	24.9
2,4-Dimethylphenol	0.0500	0.0244	0.0282	48.7	56.4	31.9-107			14.5	25.7
4,6-Dinitro-2-methylphenol	0.0500	0.0298	0.0325	59.6	65.1	18.4-148			8.73	24.4
2,4-Dinitrophenol	0.0500	0.0243	0.0257	48.7	51.4	24.2-128			5.52	20.5
2-Nitrophenol	0.0500	0.0264	0.0307	52.9	61.5	25.9-106			15.1	26.9
4-Nitrophenol	0.0500	0.0165	0.0177	33.1	35.3	10.0-52.7			6.60	40
Pentachlorophenol	0.0500	0.0240	0.0270	48.0	54.1	10.0-97.4			11.9	35.1
Phenol	0.0500	0.0141	0.0159	28.1	31.7	10.0-57.9			12.0	35
2,4,6-Trichlorophenol	0.0500	0.0274	0.0309	54.9	61.7	29.8-107			11.8	24.1
(S) Nitrobenzene-d5				*43.7*	*51.2*	*21.8-123*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170768-2 10/14/16 11:29 • (LCSD) R3170768-3 10/14/16 11:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) 2-Fluorobiphenyl				*52.1*	*59.2*	*29.5-131*				
(S) p-Terphenyl-d14				*54.2*	*61.7*	*29.3-137*				
(S) Phenol-d5				*28.6*	*31.3*	*5.00-70.1*				
(S) 2-Fluorophenol				*35.9*	*41.1*	*10.0-77.9*				
(S) 2,4,6-Tribromophenol				*57.4*	*66.4*	*11.2-130*				

Method Blank (MB)

(MB) R3170993-2 10/14/16 11:59

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000140	0.0000500
Acenaphthene	U		0.0000100	0.0000500
Acenaphthylene	U		0.0000120	0.0000500
Benzo(a)anthracene	0.00000627	J	0.00000410	0.0000500
Benzo(a)pyrene	U		0.0000116	0.0000500
Benzo(b)fluoranthene	U		0.00000212	0.0000500
Benzo(g,h,i)perylene	U		0.00000227	0.0000500
Benzo(k)fluoranthene	U		0.0000136	0.0000500
Chrysene	U		0.0000108	0.0000500
Dibenz(a,h)anthracene	U		0.00000396	0.0000500
Fluoranthene	U		0.0000157	0.0000500
Fluorene	U		0.00000850	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000148	0.0000500
Naphthalene	0.0000293	J	0.0000198	0.000250
Phenanthrene	0.00000833	J	0.00000820	0.0000500
Pyrene	U		0.0000117	0.0000500
1-Methylnaphthalene	0.0000181	J	0.00000821	0.000250
2-Methylnaphthalene	0.0000243	J	0.00000902	0.000250
2-Chloronaphthalene	U		0.00000647	0.000250
(S) Nitrobenzene-d5	*81.2*			*33.8-179*
(S) 2-Fluorobiphenyl	*112*			*55.5-150*
(S) p-Terphenyl-d14	*106*			*46.2-163*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170993-3 10/14/16 12:21 • (LCSD) R3170993-1 10/14/16 11:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00230	0.00206	115	103	68.9-153			11.2	20
Acenaphthene	0.00200	0.00217	0.00215	108	107	67.7-141			0.950	20
Acenaphthylene	0.00200	0.00219	0.00217	109	109	66.9-141			0.600	20
Benzo(a)anthracene	0.00200	0.00199	0.00209	99.3	104	63.1-147			4.92	20
Benzo(a)pyrene	0.00200	0.00224	0.00224	112	112	62.2-150			0.160	20
Benzo(b)fluoranthene	0.00200	0.00207	0.00184	103	92.2	58.4-148			11.3	20
Benzo(g,h,i)perylene	0.00200	0.00157	0.00207	78.3	104	57.4-152		J3	27.8	20
Benzo(k)fluoranthene	0.00200	0.00221	0.00202	110	101	60.5-154			8.84	20
Chrysene	0.00200	0.00227	0.00220	113	110	64.8-155			2.78	20
Dibenz(a,h)anthracene	0.00200	0.00173	0.00183	86.4	91.5	53.5-153			5.80	20
Fluoranthene	0.00200	0.00253	0.00229	127	115	68.6-153			9.90	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170993-3 10/14/16 12:21 • (LCSD) R3170993-1 10/14/16 11:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00197	0.00196	98.3	97.8	67.3-141			0.460	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00188	0.00191	94.1	95.3	57.0-155			1.22	20
Naphthalene	0.00200	0.00198	0.00206	99.2	103	66.7-135			3.75	20
Phenanthrene	0.00200	0.00206	0.00190	103	94.9	64.3-143			8.17	20
Pyrene	0.00200	0.00259	0.00259	129	130	60.2-154			0.120	20
1-Methylnaphthalene	0.00200	0.00212	0.00215	106	107	68.3-144			1.40	20
2-Methylnaphthalene	0.00200	0.00210	0.00219	105	109	67.6-143			4.17	20
2-Chloronaphthalene	0.00200	0.00204	0.00207	102	103	69.7-144			1.40	20
(S) Nitrobenzene-d5				*83.1*	*87.0*	*33.8-179*				
(S) 2-Fluorobiphenyl				*119*	*119*	*55.5-150*				
(S) p-Terphenyl-d14				*105*	*104*	*46.2-163*				

L864627-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L864627-02 10/14/16 13:05 • (MS) R3170993-4 10/14/16 13:26 • (MSD) R3170993-5 10/14/16 13:48

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	U	0.00205	0.00211	103	106	1	68.9-153			2.90	20
Acenaphthene	0.00200	U	0.00201	0.00210	101	105	1	67.7-141			4.34	20
Acenaphthylene	0.00200	U	0.00202	0.00210	101	105	1	66.9-141			3.51	20
Benzo(a)anthracene	0.00200	U	0.00197	0.00197	98.6	98.4	1	63.1-147			0.210	20
Benzo(a)pyrene	0.00200	U	0.00208	0.00216	104	108	1	62.2-150			3.54	20
Benzo(b)fluoranthene	0.00200	0.00000405	0.00199	0.00200	99.4	99.6	1	58.4-148			0.190	20
Benzo(g,h,i)perylene	0.00200	0.00000405	0.00189	0.00197	94.1	98.2	1	57.4-152			4.19	20
Benzo(k)fluoranthene	0.00200	U	0.00186	0.00196	92.8	98.2	1	60.5-154			5.70	20
Chrysene	0.00200	U	0.00209	0.00204	104	102	1	64.8-155			2.48	20
Dibenz(a,h)anthracene	0.00200	U	0.00160	0.00166	79.8	83.1	1	53.5-153			4.07	20
Fluoranthene	0.00200	U	0.00229	0.00225	114	113	1	68.6-153			1.53	20
Fluorene	0.00200	0.00000958	0.00181	0.00193	89.9	96.1	1	67.3-141			6.55	20
Indeno(1,2,3-cd)pyrene	0.00200	U	0.00174	0.00181	86.9	90.7	1	57.0-155			4.25	20
Naphthalene	0.00200	0.0000621	0.00204	0.00240	98.7	117	1	66.7-135			16.4	20
Phenanthrene	0.00200	0.0000124	0.00194	0.00202	96.5	100	1	64.3-143			3.72	20
Pyrene	0.00200	U	0.00241	0.00249	120	124	1	60.2-154			3.19	20
1-Methylnaphthalene	0.00200	0.0000653	0.00204	0.00231	99.0	112	1	68.3-144			12.3	20
2-Methylnaphthalene	0.00200	0.0000336	0.00207	0.00217	102	107	1	67.6-143			4.60	20
2-Chloronaphthalene	0.00200	0.0000278	0.00197	0.00203	97.2	100	1	69.7-140			2.78	20
(S) Nitrobenzene-d5					*79.7*	*80.9*		*33.8-179*				
(S) 2-Fluorobiphenyl					*110*	*114*		*55.5-150*				
(S) p-Terphenyl-d14					*96.4*	*98.9*		*46.2-163*				

Method Blank (MB)

(MB) R3170950-3 10/15/16 02:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) p-Terphenyl-d14	*75.2*			*32.2-131*
(S) Nitrobenzene-d5	*82.2*			*22.1-146*
(S) 2-Fluorobiphenyl	*79.0*			*40.6-122*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170950-1 10/15/16 01:49 • (LCSD) R3170950-2 10/15/16 02:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	0.0727	0.0720	90.9	90.0	50.3-130			1.06	20
Acenaphthene	0.0800	0.0711	0.0704	88.9	88.0	52.4-120			0.950	20
Acenaphthylene	0.0800	0.0735	0.0724	91.9	90.6	49.6-120			1.46	20
Benzo(a)anthracene	0.0800	0.0737	0.0724	92.1	90.5	46.7-125			1.77	20
Benzo(a)pyrene	0.0800	0.0713	0.0716	89.1	89.5	42.3-119			0.470	20
Benzo(b)fluoranthene	0.0800	0.0711	0.0692	88.9	86.5	43.6-124			2.72	20
Benzo(g,h,i)perylene	0.0800	0.0686	0.0674	85.8	84.3	45.1-132			1.78	20
Benzo(k)fluoranthene	0.0800	0.0720	0.0720	90.0	90.0	46.1-131			0.0300	20
Chrysene	0.0800	0.0744	0.0746	92.9	93.2	49.5-131			0.270	20
Dibenz(a,h)anthracene	0.0800	0.0646	0.0639	80.7	79.9	44.8-133			1.02	20
Fluoranthene	0.0800	0.0810	0.0793	101	99.1	49.3-128			2.07	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170950-1 10/15/16 01:49 • (LCSD) R3170950-2 10/15/16 02:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0800	0.0710	0.0704	88.8	88.0	50.6-121			0.920	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0670	0.0655	83.7	81.8	46.1-135			2.27	20
Naphthalene	0.0800	0.0689	0.0686	86.1	85.7	49.6-115			0.490	20
Phenanthrene	0.0800	0.0704	0.0695	88.0	86.9	48.8-121			1.17	20
Pyrene	0.0800	0.0810	0.0795	101	99.4	44.7-130			1.81	20
1-Methylnaphthalene	0.0800	0.0708	0.0718	88.5	89.7	50.6-122			1.42	20
2-Methylnaphthalene	0.0800	0.0712	0.0698	89.0	87.2	50.4-120			2.04	20
2-Chloronaphthalene	0.0800	0.0695	0.0694	86.8	86.8	53.9-121			0.0200	20
(S) p-Terphenyl-d14				*82.7*	*81.3*	*32.2-131*				
(S) Nitrobenzene-d5				*99.1*	*96.0*	*22.1-146*				
(S) 2-Fluorobiphenyl				*90.3*	*90.7*	*40.6-122*				

L865222-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L865222-02 10/15/16 09:48 • (MS) R3170950-4 10/15/16 10:10 • (MSD) R3170950-5 10/15/16 10:31

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00800	0.331	0.399	0.371	85.9	50.5	10	26.5-141			7.35	21.2
Acenaphthene	0.00800	ND	0.0934	0.0865	83.2	74.5	10	31.9-130			7.70	20
Acenaphthylene	0.00800	0.286	0.360	0.337	92.2	64.3	10	33.7-129			6.40	20
Benzo(a)anthracene	0.00800	0.420	0.527	0.484	135	80.7	10	18.3-136			8.54	24.6
Benzo(a)pyrene	0.00800	0.562	0.634	0.585	89.9	29.1	10	16.9-135			7.98	25.2
Benzo(b)fluoranthene	0.00800	0.882	0.964	0.872	103	0.000	10	10.0-134		V	9.98	30.9
Benzo(g,h,i)perylene	0.00800	0.604	0.652	0.602	59.9	0.000	10	14.1-140		V	7.94	25.5
Benzo(k)fluoranthene	0.00800	0.272	0.317	0.290	56.5	22.9	10	18.2-138			8.85	25.6
Chrysene	0.00800	0.593	0.673	0.613	101	25.4	10	17.1-145			9.36	24.2
Dibenz(a,h)anthracene	0.00800	0.118	0.174	0.163	70.8	56.2	10	18.5-138			6.94	24.3
Fluoranthene	0.00800	0.766	0.823	0.751	72.1	0.000	10	15.4-144		V	9.17	27.1
Fluorene	0.00800	ND	0.0999	0.0911	91.2	80.2	10	23.5-136			9.24	20
Indeno(1,2,3-cd)pyrene	0.00800	0.386	0.442	0.408	69.7	27.1	10	14.5-142			8.02	25.8
Naphthalene	0.00800	ND	0.115	0.107	80.2	69.6	10	29.2-128			7.65	20
Phenanthrene	0.00800	0.145	0.187	0.169	52.0	29.4	10	20.1-134			10.2	23.6
Pyrene	0.00800	0.852	0.921	0.854	86.0	2.44	10	11.0-148		V	7.53	26.1
1-Methylnaphthalene	0.00800	ND	0.0850	0.0773	106	96.6	10	28.4-137			9.47	20
2-Methylnaphthalene	0.00800	ND	0.0907	0.0832	87.1	77.7	10	26.6-137			8.66	20
2-Chloronaphthalene	0.00800	ND	0.0696	0.0630	87.1	78.8	10	38.6-126			9.95	20
(S) p-Terphenyl-d14					*81.4*	*72.3*		*32.2-131*				
(S) Nitrobenzene-d5					*91.3*	*82.3*		*22.1-146*				
(S) 2-Fluorobiphenyl					*92.7*	*84.9*		*40.6-122*				

Method Blank (MB)

(MB) R3170689-3 10/14/16 04:44

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) p-Terphenyl-d14	*89.9*			*32.2-131*
(S) Nitrobenzene-d5	*101*			*22.1-146*
(S) 2-Fluorobiphenyl	*91.3*			*40.6-122*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170689-1 10/14/16 04:00 • (LCSD) R3170689-2 10/14/16 04:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	0.0692	0.0722	86.5	90.2	50.3-130			4.23	20
Acenaphthene	0.0800	0.0693	0.0726	86.6	90.8	52.4-120			4.71	20
Acenaphthylene	0.0800	0.0712	0.0751	89.0	93.9	49.6-120			5.34	20
Benzo(a)anthracene	0.0800	0.0714	0.0753	89.2	94.1	46.7-125			5.37	20
Benzo(a)pyrene	0.0800	0.0689	0.0700	86.2	87.5	42.3-119			1.54	20
Benzo(b)fluoranthene	0.0800	0.0719	0.0763	89.8	95.4	43.6-124			5.96	20
Benzo(g,h,i)perylene	0.0800	0.0654	0.0686	81.8	85.7	45.1-132			4.68	20
Benzo(k)fluoranthene	0.0800	0.0674	0.0696	84.3	87.0	46.1-131			3.21	20
Chrysene	0.0800	0.0715	0.0756	89.4	94.5	49.5-131			5.62	20
Dibenz(a,h)anthracene	0.0800	0.0601	0.0635	75.1	79.3	44.8-133			5.44	20
Fluoranthene	0.0800	0.0773	0.0810	96.6	101	49.3-128			4.78	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170689-1 10/14/16 04:00 • (LCSD) R3170689-2 10/14/16 04:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0800	0.0692	0.0728	86.5	91.0	50.6-121			5.14	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0629	0.0662	78.6	82.7	46.1-135			5.05	20
Naphthalene	0.0800	0.0669	0.0701	83.6	87.6	49.6-115			4.68	20
Phenanthrene	0.0800	0.0687	0.0719	85.9	89.9	48.8-121			4.61	20
Pyrene	0.0800	0.0811	0.0850	101	106	44.7-130			4.79	20
1-Methylnaphthalene	0.0800	0.0685	0.0718	85.6	89.8	50.6-122			4.74	20
2-Methylnaphthalene	0.0800	0.0690	0.0722	86.3	90.2	50.4-120			4.50	20
2-Chloronaphthalene	0.0800	0.0670	0.0706	83.7	88.2	53.9-121			5.27	20
(S) p-Terphenyl-d14				*79.7*	*86.5*	*32.2-131*				
(S) Nitrobenzene-d5				*97.0*	*105*	*22.1-146*				
(S) 2-Fluorobiphenyl				*86.6*	*93.9*	*40.6-122*				

Method Blank (MB)

(MB) R3170924-1 10/15/16 02:29

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) p-Terphenyl-d14	*68.1*			*32.2-131*
(S) Nitrobenzene-d5	*87.2*			*22.1-146*
(S) 2-Fluorobiphenyl	*79.8*			*40.6-122*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170924-2 10/15/16 02:52 • (LCSD) R3170924-3 10/15/16 03:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0800	0.0656	0.0627	82.1	78.3	50.3-130			4.64	20
Acenaphthene	0.0800	0.0644	0.0633	80.5	79.1	52.4-120			1.64	20
Acenaphthylene	0.0800	0.0701	0.0682	87.6	85.2	49.6-120			2.77	20
Benzo(a)anthracene	0.0800	0.0765	0.0741	95.6	92.7	46.7-125			3.07	20
Benzo(a)pyrene	0.0800	0.0657	0.0631	82.1	78.9	42.3-119			3.92	20
Benzo(b)fluoranthene	0.0800	0.0666	0.0664	83.2	83.0	43.6-124			0.250	20
Benzo(g,h,i)perylene	0.0800	0.0641	0.0628	80.1	78.5	45.1-132			2.07	20
Benzo(k)fluoranthene	0.0800	0.0646	0.0607	80.7	75.9	46.1-131			6.19	20
Chrysene	0.0800	0.0806	0.0778	101	97.2	49.5-131			3.63	20
Dibenz(a,h)anthracene	0.0800	0.0637	0.0626	79.7	78.3	44.8-133			1.80	20
Fluoranthene	0.0800	0.0653	0.0632	81.6	79.0	49.3-128			3.21	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3170924-2 10/15/16 02:52 • (LCSD) R3170924-3 10/15/16 03:15

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.0800	0.0656	0.0637	82.0	79.6	50.6-121			2.93	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0615	0.0596	76.9	74.5	46.1-135			3.07	20
Naphthalene	0.0800	0.0651	0.0630	81.3	78.7	49.6-115			3.30	20
Phenanthrene	0.0800	0.0636	0.0623	79.4	77.9	48.8-121			1.97	20
Pyrene	0.0800	0.0836	0.0807	104	101	44.7-130			3.55	20
1-Methylnaphthalene	0.0800	0.0694	0.0667	86.7	83.3	50.6-122			3.95	20
2-Methylnaphthalene	0.0800	0.0703	0.0680	87.9	85.0	50.4-120			3.36	20
2-Chloronaphthalene	0.0800	0.0645	0.0626	80.7	78.3	53.9-121			3.03	20
(S) p-Terphenyl-d14				*69.3*	*67.7*	*32.2-131*				
(S) Nitrobenzene-d5				*80.3*	*68.6*	*22.1-146*				
(S) 2-Fluorobiphenyl				*84.2*	*81.9*	*40.6-122*				

L865222-25 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L865222-25 10/15/16 05:11 • (MS) R3170924-4 10/15/16 05:34 • (MSD) R3170924-5 10/15/16 05:57

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0160	ND	0.0740	0.0758	77.3	79.6	5	26.5-141			2.41	21.2
Acenaphthene	0.0160	ND	0.0584	0.0644	73.0	80.5	5	31.9-130			9.78	20
Acenaphthylene	0.0160	ND	0.0571	0.0666	71.3	83.3	5	33.7-129			15.5	20
Benzo(a)anthracene	0.0160	ND	0.0921	0.0840	92.1	82.0	5	18.3-136			9.21	24.6
Benzo(a)pyrene	0.0160	ND	0.0766	0.0716	75.4	69.1	5	16.9-135			6.81	25.2
Benzo(b)fluoranthene	0.0160	0.0330	0.0894	0.0844	70.6	64.3	5	10.0-134			5.79	30.9
Benzo(g,h,i)perylene	0.0160	ND	0.0716	0.0736	64.4	66.9	5	14.1-140			2.77	25.5
Benzo(k)fluoranthene	0.0160	ND	0.0641	0.0637	70.0	69.5	5	18.2-138			0.620	25.6
Chrysene	0.0160	0.0319	0.103	0.0954	88.3	79.5	5	17.1-145			7.16	24.2
Dibenz(a,h)anthracene	0.0160	ND	0.0456	0.0519	52.1	60.0	5	18.5-138			13.0	24.3
Fluoranthene	0.0160	0.0378	0.117	0.0965	99.3	73.4	5	15.4-144			19.4	27.1
Fluorene	0.0160	ND	0.0577	0.0647	67.6	76.4	5	23.5-136			11.5	20
Indeno(1,2,3-cd)pyrene	0.0160	ND	0.0594	0.0591	59.5	59.1	5	14.5-142			0.530	25.8
Naphthalene	0.0160	ND	0.0824	0.0865	74.6	79.7	5	29.2-128			4.88	20
Phenanthrene	0.0160	ND	0.101	0.0824	94.1	71.0	5	20.1-134			20.1	23.6
Pyrene	0.0160	0.0372	0.130	0.109	117	90.2	5	11.0-148			17.6	26.1
1-Methylnaphthalene	0.0160	ND	0.0628	0.0696	78.5	87.0	5	28.4-137			10.3	20
2-Methylnaphthalene	0.0160	ND	0.0698	0.0749	73.6	80.0	5	26.6-137			7.11	20
2-Chloronaphthalene	0.0160	ND	0.0515	0.0614	64.4	76.7	5	38.6-126			17.4	20
(S) p-Terphenyl-d14					*56.1*	*64.7*		*32.2-131*				
(S) Nitrobenzene-d5					*55.2*	*65.7*		*22.1-146*				
(S) 2-Fluorobiphenyl					*69.8*	*82.2*		*40.6-122*				

Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [1 4]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

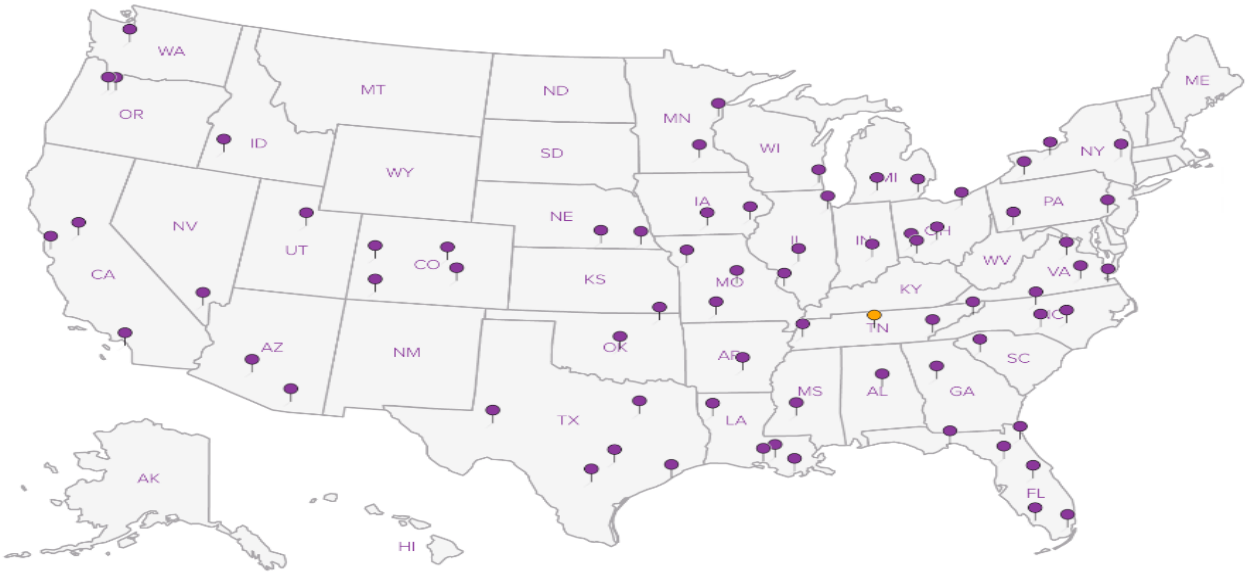
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



Company Name/Address:
TerraGraphics Environmental Engi
988 S. Longmont Ave., Ste. 200
Boise, ID 83706

Billing Information:
Accounts Payable
121 S. Jackson St.
Moscow, ID 83843

Report to: Rachel Gibeault

Email To: rachel.gibeault@terragraphics.com

Project Description: Coeur d'Alene BNSF ROW soil sampling

City/State Collected: Coeur d'Alene, ID

Phone: 208-336-7080
Fax: 208-908-4980

Client Project # 15137-02

Lab Project #

Collected by (print): Shelley Hicks

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N___ Y✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PAHSIMLVID 10mLAmb-NoPres-WT	SV8270D 4ozClr-NoPres	SV8270PAHSIMD,TS 4ozClr-NoPres	full suite PAHs/SVOCs 8270DSIM and 8270D 4ozClr							Rem./Contaminant	Sample # (lab only)
CDA-BNSF-ROW-DU2.2B	Comp	SS	12"	10/3/16	13:30	1				X								-01
*-DU2.2B-FD	Comp	SS	12"	10/3/16	13:30	1				X								-02
CDA-BNSF-ROW-DU2.2C	Comp	SS	12"	10/3/16	15:00	1				X								-03
CDA-BNSF-ROW-DU2.2A	Comp	SS	12"	10/3/16	17:00	1				X								-04
CDA-BNSF-ROW-DU2.1B	Comp	SS	12"	10/3/16	16:00	1			X									-05
CDA-BNSF-ROW-DU2.1C	Comp	SS	12"	10/4/16	11:00	1			X									-06
CDA-BNSF-ROW-DU2.1A	Comp	SS	12"	10/4/16	13:30	1			X									-07
CDA-BNSF-ROW-DU1.3B	Comp	SS	12"	10/4/16	13:00	1			X									-08
CDA-BNSF-ROW-DU1.3A	Comp	SS	12"	10/4/16	16:30	1			X									-09
CDA-BNSF-ROW-DU3.1C	Comp	SS	12"	10/5/16	10:00	1			X									-10

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other Rinsate

pH _____ Temp _____

Remarks: ***All sample IDs begin with "CDA-BNSF-ROW-". The prefix was dropped to fit in the cell.***

Flow _____ Other _____

6617 3649 6659

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Bea Radford	10/10/16	14:25	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____

Temp: 2.3 °C Bottles Received: 32

Date: 10-11-16 Time: 0900

Condition: NON (lab use only)

COC Seal Intact: ✓Y ___N ___NA

pH Checked: NCF:

Chain of Custody Page 1 of 3

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L865222
J056

Acctnum: BNSF1TERRA
Template:
Prelogin:
TSR:
Cooler:
Shipped Via: FedX

Company Name/Address:
TerraGraphics Environmental Engi
988 S. Longmont Ave., Ste. 200
Boise, ID 83706

Billing Information:
Accounts Payable
121 S. Jackson St.
Moscow, ID 83843

Report to: Rachel Gibeault

Email To: rachel.gibeault@terragraphics.com

Project Description: Coeur d'Alene BNSF ROW soil sampling

City/State Collected: Coeur d'Alene, ID

Phone: 208-336-7080
Fax: 208-908-4980

Client Project # 15137-02

Lab Project #

Collected by (print): Shelley Hicks

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ____ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 2 of 3

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L # L866222
Table #
Acctnum: BNSF1TERRA
Template:
Prelogin:
TSR:
Cooler:
Shipped Via: FedX

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	PAHSIMLVID 10mLAmb-NoPres-WT	SV8270D 4ozClr-NoPres	SV8270PAHSIMD,TS 4ozClr-NoPres	full suite PAHs/SVOCs 8270DSIM and 8270D 4ozClr	Rem./Contaminant	Sample # (lab only)
CDA-BNSF-ROW-DU3.2C	Comp	SS	12"	10/5/16	11:30	1			X			-11
CDA-BNSF-ROW-DU3.2B	Comp	SS	12"	10/5/16	12:00	1			X			-12
CDA-BNSF-ROW-DU1.3C	Comp	SS	12"	10/5/16	15:30	1			X			-13
*DU1.2-1	Comp	SS	12"	10/5/16	16:00	1			X			-14
*DU3.1A-GB	Grab	SS	12"	10/6/16	8:00	1			X			-15
CDA-BNSF-ROW-DU3.2A	Comp	SS	12"	10/6/16	9:30	1			X			-16
CDA-BNSF-ROW-DU3.1B	Comp	SS	12"	10/6/16	10:00	1			X			-17
*DU3.1B-GB	Grab	SS	12"	10/6/16	10:30	1			X			-18
*DU1.2-2	Comp	SS	12"	10/6/16	13:00	1			X		lab dup	-19
*DU1.2-2-FD	Comp	SS	12"	10/6/16	13:00	1			X			-20

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other Rinsate

pH _____ Temp _____

Flow _____ Other _____

Remarks: *All sample IDs begin with "CDA-BNSF-ROW-". The prefix was dropped to fit in the cell.

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Bea Radford	10/10/16	14:25	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ ____

Temp: 2.3 °C Bottles Received: 32

Date: 10-11-16 Time: 0900

Condition: NA (lab use only) a

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Company Name/Address:
TerraGraphics Environmental Engi
988 S. Longmont Ave., Ste. 200
Boise, ID 83706

Billing Information:
Accounts Payable
121 S. Jackson St.
Moscow, ID 83843

Report to: Rachel Gibeault

Email To: rachel.gibeault@terragraphics.com

Project Description: Coeur d'Alene BNSF ROW soil sampling

City/State Collected: Coeur d'Alene, ID

Phone: 208-336-7080
Fax: 208-908-4980

Client Project # 15137-02

Lab Project #

Collected by (print): Shelley Hicks

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	full suite PAHs 8270DSIM/8270D 10mLAmb-NoPres-WT	SV8270D 4ozClr-NoPres	SV8270PAHSIMD,TS 4ozClr-NoPres	full suite PAHs/SVOCs 8270DSIM and 8270D 4ozClr	full suite SVOCs 8270DSIM/8270D 100mLAmb-NoPres	Rem./Contaminant	Sample # (lab only)
*DU1.2-3	Comp	SS	12"	10/6/16	13:00	1			X				-21
CDA-BNSF-ROW-DU1.1	Comp	SS	12"	10/7/16	10:30	2			X			MS/D	-22
*DU3.1A-1	Comp	SS	12"	10/7/16	11:00	1			X				-23
*DU3.1A-2	Comp	SS	12"	10/7/16	11:00	1			X				-24
DU3.1A-3	Comp	SS	12"	10/7/16	11:00	1			X				-25
*DU3.1A-2-RB	Grab	Other	N/A	10/10/16	12:25	6	X				X		-26

Chain of Custody Page 3 of 3

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L605722

Table #

Acctnum: BNSF1TERRA

Template:

Prelogin:

TSR:

Cooler:

Shipped Via: FedX

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other Rinsate

pH _____ Temp _____

Flow _____ Other _____

Remarks: *All sample IDs begin with "CDA-BNSF-ROW-". The prefix was dropped to fit in the cell.

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Bea Radford	10/10/16	14:25	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐ _____

Temp: 2.3 °C Bottles Received: 32

Date: 10-11-16 Time: 0900

Condition: DB9 (lab use only) 6

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

Cooler Receipt Form

Client:	SDG#	L865222
Cooler Received/Opened On: **10/12/16**	Temperature Upon Receipt:	2,3 °c
Received By: **Richard Hughes**		
Signature:		

Receipt Check List	Yes	No	N/A
Were custody seals on outside of cooler and intact?	✓		
Were custody papers properly filled out?	✓		
Did all bottles arrive in good condition?	✓		
Were correct bottles used for the analyses requested?	✓		
Was sufficient amount of sample sent in each bottle?			✓
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)			✓
If applicable, was an observable VOA headspace present?			✓
Non Conformance Generated. (If yes see attached NCF)			

www.svl.net One Government Gulch - PO Box 929 Kellogg ID 83837-0929 (208) 784-1258 Fax (208) 783-0891

Terragraphics - Boise
988 S. Longmont Ave., Suite 200
Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
CDA-BNSF-ROW-DU3.1B	W6J0250-01	Soil	06-Oct-16 10:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.2-2	W6J0250-02	Soil	06-Oct-16 13:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.2-2DUP	W6J0250-03	Soil	06-Oct-16 13:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.2-2-FD	W6J0250-04	Soil	06-Oct-16 13:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.2-3	W6J0250-05	Soil	06-Oct-16 13:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.1	W6J0250-06	Soil	07-Oct-16 10:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.1A-1	W6J0250-07	Soil	07-Oct-16 11:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.1A-2	W6J0250-08	Soil	07-Oct-16 11:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.1A-3	W6J0250-09	Soil	07-Oct-16 11:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.1A-2-RB	W6J0250-10	Rinsate	10-Oct-16 12:25	SH	12-Oct-2016	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative: W6J0250

10/13/16 DG Bulk samples were air-dried, -80 sieved, and a 10g sub-sample was collected for analysis using the Japanese 2D slabcake method. Client requested ISM duplicate is sample W6J0250-03.

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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU3.1B**
SVL Sample ID: **W6J0250-01 (Soil)**

Sampled: 06-Oct-16 10:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	13.4	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:06	
EPA 6010C	**Barium**	201	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:06	
EPA 6010C	Cadmium	< 0.20	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:06	
EPA 6010C	**Chromium**	19.0	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:06	
EPA 6010C	**Lead**	23.6	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:06	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:06	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:06	
EPA 7471B	**Mercury**	0.310	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:34	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.5	%	0.1			W644005	JAA	10/25/16 09:30	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU1.2-2**
SVL Sample ID: **W6J0250-02 (Soil)**

Sampled: 06-Oct-16 13:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	18.6	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:24	
EPA 6010C	**Barium**	187	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:24	
EPA 6010C	**Cadmium**	0.32	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:24	
EPA 6010C	**Chromium**	26.9	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:24	
EPA 6010C	**Lead**	35.4	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:24	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:24	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:24	
EPA 7471B	**Mercury**	0.713	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:36	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.6	%	0.1			W644005	JAA	10/25/16 09:30	

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU1.2-2DUP**
SVL Sample ID: **W6J0250-03 (Soil)**

Sampled: 06-Oct-16 13:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	19.0	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:27	
EPA 6010C	**Barium**	196	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:27	
EPA 6010C	**Cadmium**	0.31	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:27	
EPA 6010C	**Chromium**	27.7	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:27	
EPA 6010C	**Lead**	36.9	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:27	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:27	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:27	
EPA 7471B	**Mercury**	0.863	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:42	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.5	%	0.1			W644005	JAA	10/25/16 09:30	

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU1.2-2-FD**
SVL Sample ID: **W6J0250-04 (Soil)**

Sampled: 06-Oct-16 13:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	18.2	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:30	
EPA 6010C	**Barium**	182	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:30	
EPA 6010C	**Cadmium**	0.29	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:30	
EPA 6010C	**Chromium**	23.2	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:30	
EPA 6010C	**Lead**	36.1	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:30	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:30	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:30	
EPA 7471B	**Mercury**	0.910	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:44	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.6	%	0.1			W644005	JAA	10/25/16 09:30	

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU1.2-3**
SVL Sample ID: **W6J0250-05 (Soil)**

Sampled: 06-Oct-16 13:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	20.7	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:38	
EPA 6010C	**Barium**	172	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:38	
EPA 6010C	**Cadmium**	0.30	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:38	
EPA 6010C	**Chromium**	24.9	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:38	
EPA 6010C	**Lead**	59.0	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:38	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:38	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:38	
EPA 7471B	**Mercury**	0.108	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:47	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.8	%	0.1			W644005	JAA	10/25/16 09:30	

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU1.1**
SVL Sample ID: **W6J0250-06 (Soil)**

Sampled: 07-Oct-16 10:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	25.6	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:41	
EPA 6010C	**Barium**	171	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:41	
EPA 6010C	**Cadmium**	0.41	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:41	
EPA 6010C	**Chromium**	24.6	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:41	
EPA 6010C	**Lead**	63.9	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:41	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:41	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:41	
EPA 7471B	**Mercury**	0.268	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:49	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.4	%	0.1			W644005	JAA	10/25/16 09:30	

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU3.1A-1**
SVL Sample ID: **W6J0250-07 (Soil)**

Sampled: 07-Oct-16 11:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	14.4	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:49	
EPA 6010C	**Barium**	281	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:49	
EPA 6010C	**Cadmium**	0.58	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:49	
EPA 6010C	**Chromium**	19.2	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:49	
EPA 6010C	**Lead**	48.1	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:49	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:49	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:49	
EPA 7471B	**Mercury**	0.152	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:55	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.0	%	0.1			W644005	JAA	10/25/16 09:30	

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Terragraphics - Boise
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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU3.1A-2**
SVL Sample ID: **W6J0250-08 (Soil)**

Sampled: 07-Oct-16 11:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	13.8	mg/kg	2.5	0.6		W644004	SMB	10/26/16 10:59	
EPA 6010C	**Barium**	255	mg/kg	0.20	0.14		W644004	SMB	10/26/16 10:59	
EPA 6010C	**Cadmium**	0.54	mg/kg	0.20	0.06		W644004	SMB	10/26/16 10:59	
EPA 6010C	**Chromium**	19.6	mg/kg	0.60	0.13		W644004	SMB	10/26/16 10:59	
EPA 6010C	**Lead**	60.5	mg/kg	0.8	0.3		W644004	SMB	10/26/16 10:59	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 10:59	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 10:59	
EPA 7471B	**Mercury**	0.067	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:57	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.0	%	0.1			W644005	JAA	10/25/16 09:30	

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John Kern
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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU3.1A-3**
SVL Sample ID: **W6J0250-09 (Soil)**

Sampled: 07-Oct-16 11:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	14.1	mg/kg	2.5	0.6		W644004	SMB	10/26/16 11:02	
EPA 6010C	**Barium**	297	mg/kg	0.20	0.14		W644004	SMB	10/26/16 11:02	
EPA 6010C	**Cadmium**	0.61	mg/kg	0.20	0.06		W644004	SMB	10/26/16 11:02	
EPA 6010C	**Chromium**	18.7	mg/kg	0.60	0.13		W644004	SMB	10/26/16 11:02	
EPA 6010C	**Lead**	58.4	mg/kg	0.8	0.3		W644004	SMB	10/26/16 11:02	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644004	SMB	10/26/16 11:02	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644004	SMB	10/26/16 11:02	
EPA 7471B	**Mercury**	0.100	mg/kg	0.033	0.009		W644052	MWD	10/25/16 15:59	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	98.8	%	0.1			W644005	JAA	10/25/16 09:30	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

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Laboratory Director

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Client Sample ID: **CDA-BNSF-ROW-DU3.1A-2-RB**
SVL Sample ID: **W6J0250-10 (Rinsate)**

Sampled: 10-Oct-16 12:25
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000053		W644021	MWD	10/24/16 18:54	
Metals (Total Recoverable)										
EPA 6010C	Arsenic	< 0.025	mg/L	0.025	0.008		W643141	AS	10/21/16 09:24	
EPA 6010C	Barium	< 0.0020	mg/L	0.0020	0.0010		W643141	AS	10/21/16 09:24	
EPA 6010C	Cadmium	< 0.0020	mg/L	0.0020	0.0009		W643141	AS	10/21/16 09:24	
EPA 6010C	Chromium	< 0.0060	mg/L	0.0060	0.0015		W643141	AS	10/21/16 09:24	
EPA 6010C	Lead	< 0.0075	mg/L	0.0075	0.0036		W643141	AS	10/21/16 09:24	
EPA 6010C	Selenium	< 0.040	mg/L	0.040	0.018		W643141	AS	10/21/16 09:24	
EPA 6010C	Silver	< 0.0050	mg/L	0.0050	0.0016		W643141	AS	10/21/16 08:48	

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John Kern
Laboratory Director

SVL holds the following certifications:
AZ:0538, **CA**:2080, **ID**:ID00019 & ID00965 (Microbiology), **NV**:ID000192007A, **UT**(**TNI**):ID000192015-1, **WA**:C573

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Terragraphics - Boise
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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total)								
EPA 7470A	Mercury	mg/L	<0.00020	0.000053	0.00020	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010C	Arsenic	mg/kg	<2.5	0.6	2.5	W644004	26-Oct-16	
EPA 6010C	Barium	mg/kg	<0.20	0.14	0.20	W644004	26-Oct-16	
EPA 6010C	Cadmium	mg/kg	<0.20	0.06	0.20	W644004	26-Oct-16	
EPA 6010C	Chromium	mg/kg	<0.60	0.13	0.60	W644004	26-Oct-16	
EPA 6010C	Lead	mg/kg	<0.8	0.3	0.8	W644004	26-Oct-16	
EPA 6010C	Selenium	mg/kg	<4.0	1.4	4.0	W644004	26-Oct-16	
EPA 6010C	Silver	mg/kg	<0.50	0.14	0.50	W644004	26-Oct-16	
EPA 7471B	Mercury	mg/kg	<0.033	0.009	0.033	W644052	25-Oct-16	
Metals (Total Recoverable)								
EPA 6010C	Arsenic	mg/L	<0.025	0.008	0.025	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	<0.0020	0.0010	0.0020	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	<0.0020	0.0009	0.0020	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	<0.0060	0.0015	0.0060	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	<0.0075	0.0036	0.0075	W643141	21-Oct-16	
EPA 6010C	Selenium	mg/L	<0.040	0.018	0.040	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	<0.0050	0.0016	0.0050	W643141	21-Oct-16	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total)									
EPA 7470A	Mercury	mg/L	0.00513	0.00500	103	80 - 120	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010C	Arsenic	mg/kg	106	100	106	80 - 120	W644004	26-Oct-16	
EPA 6010C	Barium	mg/kg	110	100	110	80 - 120	W644004	26-Oct-16	
EPA 6010C	Cadmium	mg/kg	105	100	105	80 - 120	W644004	26-Oct-16	
EPA 6010C	Chromium	mg/kg	114	100	114	80 - 120	W644004	26-Oct-16	
EPA 6010C	Lead	mg/kg	107	100	107	80 - 120	W644004	26-Oct-16	
EPA 6010C	Selenium	mg/kg	100	100	100	80 - 120	W644004	26-Oct-16	
EPA 6010C	Silver	mg/kg	5.43	5.00	109	80 - 120	W644004	26-Oct-16	
EPA 7471B	Mercury	mg/kg	0.783	0.833	94.0	80 - 120	W644052	25-Oct-16	
Metals (Total Recoverable)									
EPA 6010C	Arsenic	mg/L	1.07	1.00	107	80 - 120	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	1.06	1.00	106	80 - 120	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	1.06	1.00	106	80 - 120	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	1.07	1.00	107	80 - 120	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	1.05	1.00	105	80 - 120	W643141	21-Oct-16	
EPA 6010C	Selenium	mg/L	1.06	1.00	106	80 - 120	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	0.0472	0.0500	94.3	80 - 120	W643141	21-Oct-16	

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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Percent Solids / Percent Moisture									
Percent Solids	% Solids	%	100	99.4	0.6	20	W644005	25-Oct-16	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	mg/L	0.00101	<0.00020	0.00100	101	75 - 125	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	Arsenic	mg/kg	126	25.6	100	101	75 - 125	W644004	26-Oct-16	
EPA 6010C	Barium	mg/kg	281	171	100	110	75 - 125	W644004	26-Oct-16	
EPA 6010C	Cadmium	mg/kg	99.0	0.41	100	98.6	75 - 125	W644004	26-Oct-16	
EPA 6010C	Chromium	mg/kg	129	24.6	100	104	75 - 125	W644004	26-Oct-16	
EPA 6010C	Lead	mg/kg	158	63.9	100	94.3	75 - 125	W644004	26-Oct-16	
EPA 6010C	Selenium	mg/kg	94.7	<4.0	100	94.7	75 - 125	W644004	26-Oct-16	
EPA 6010C	Silver	mg/kg	5.14	<0.50	5.00	103	75 - 125	W644004	26-Oct-16	
EPA 7471B	Mercury	mg/kg	0.570	0.268	0.333	90.5	75 - 125	W644052	25-Oct-16	
Metals (Total Recoverable)										
EPA 6010C	Arsenic	mg/L	1.08	<0.025	1.00	108	75 - 125	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	1.11	0.0453	1.00	106	75 - 125	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	1.05	<0.0020	1.00	105	75 - 125	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	1.06	<0.0060	1.00	106	75 - 125	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	1.05	<0.0075	1.00	104	75 - 125	W643141	21-Oct-16	
EPA 6010C	Selenium	mg/L	1.06	<0.040	1.00	106	75 - 125	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	0.0478	<0.0050	0.0500	95.6	75 - 125	W643141	21-Oct-16	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total)											
EPA 7470A	Mercury	mg/L	0.00091	0.00101	0.00100	90.9	10.5	20	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods											
EPA 6010C	Arsenic	mg/kg	132	126	100	106	4.4	20	W644004	26-Oct-16	
EPA 6010C	Barium	mg/kg	297	281	100	125	5.4	20	W644004	26-Oct-16	
EPA 6010C	Cadmium	mg/kg	102	99.0	100	102	3.1	20	W644004	26-Oct-16	
EPA 6010C	Chromium	mg/kg	134	129	100	109	3.9	20	W644004	26-Oct-16	
EPA 6010C	Lead	mg/kg	162	158	100	98.5	2.7	20	W644004	26-Oct-16	
EPA 6010C	Selenium	mg/kg	98.4	94.7	100	98.4	3.8	20	W644004	26-Oct-16	
EPA 6010C	Silver	mg/kg	5.33	5.14	5.00	107	3.5	20	W644004	26-Oct-16	
EPA 7471B	Mercury	mg/kg	0.598	0.570	0.333	99.0	4.9	20	W644052	25-Oct-16	
Metals (Total Recoverable)											
EPA 6010C	Arsenic	mg/L	1.06	1.08	1.00	106	2.2	20	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	1.09	1.11	1.00	105	1.5	20	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	1.03	1.05	1.00	103	1.6	20	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	1.04	1.06	1.00	104	1.5	20	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	1.03	1.05	1.00	103	1.4	20	W643141	21-Oct-16	

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Project Name: CDA BNSF 2016
Work Order: **W6J0250**
Reported: 26-Oct-16 13:18

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total Recoverable) (Continued)											
EPA 6010C	Selenium	mg/L	1.04	1.06	1.00	104	1.5	20	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	0.0487	0.0478	0.0500	97.4	1.8	20	W643141	21-Oct-16	

Notes and Definitions

LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
CDA-BNSF-ROW-DU2.2B	W6J0238-01	Soil	03-Oct-16 13:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU2.2B-FD	W6J0238-02	Soil	03-Oct-16 13:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU2.2C	W6J0238-03	Soil	03-Oct-16 15:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU2.2A	W6J0238-04	Soil	03-Oct-16 17:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU2.1B	W6J0238-05	Soil	03-Oct-16 16:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU2.1B-RB	W6J0238-06	Rinsate	03-Oct-16 16:52	SH	12-Oct-2016	
CDA-BNSF-ROW-DU2.1C	W6J0238-07	Soil	04-Oct-16 11:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU2.1A	W6J0238-08	Soil	04-Oct-16 13:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.3B	W6J0238-09	Soil	04-Oct-16 13:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.3A	W6J0238-10	Soil	04-Oct-16 16:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.3A-RB	W6J0238-11	Rinsate	04-Oct-16 17:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.1C	W6J0238-12	Soil	05-Oct-16 10:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.2C	W6J0238-13	Soil	05-Oct-16 11:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.2B	W6J0238-14	Soil	05-Oct-16 12:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.3C	W6J0238-15	Soil	05-Oct-16 15:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.2-1	W6J0238-16	Soil	05-Oct-16 16:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU1.2-1-RB	W6J0238-17	Rinsate	05-Oct-16 16:30	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.1A-GB-RB	W6J0238-18	Rinsate	06-Oct-16 08:45	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.2A	W6J0238-19	Soil	06-Oct-16 09:30	SH	12-Oct-2016	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative: W6J0238

10/13/16 DG Bulk samples were air-dried, -80 sieved, and a 10g sub-sample was collected for analysis using the Japanese 2D slabcake method.

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.2B**
SVL Sample ID: **W6J0238-01 (Soil)**

Sampled: 03-Oct-16 13:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	14.4	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:17	
EPA 6010C	**Barium**	190	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:17	B7
EPA 6010C	**Cadmium**	0.39	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:17	
EPA 6010C	**Chromium**	20.2	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:17	
EPA 6010C	**Lead**	36.4	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:17	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:17	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:17	
EPA 7471B	**Mercury**	0.193	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:25	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.4	%	0.1			W644003	JAA	10/25/16 08:20	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.2B-FD**
SVL Sample ID: **W6J0238-02 (Soil)**

Sampled: 03-Oct-16 13:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	14.5	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:27	
EPA 6010C	**Barium**	186	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:27	B7
EPA 6010C	**Cadmium**	0.40	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:27	
EPA 6010C	**Chromium**	20.5	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:27	
EPA 6010C	**Lead**	32.2	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:27	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:27	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:27	
EPA 7471B	**Mercury**	0.192	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:27	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.3	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.2C**
SVL Sample ID: **W6J0238-03 (Soil)**

Sampled: 03-Oct-16 15:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	13.7	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:30	
EPA 6010C	**Barium**	187	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:30	B7
EPA 6010C	**Cadmium**	0.75	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:30	
EPA 6010C	**Chromium**	23.7	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:30	
EPA 6010C	**Lead**	35.5	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:30	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:30	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:30	
EPA 7471B	**Mercury**	0.038	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:29	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.2	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.2A**
SVL Sample ID: **W6J0238-04 (Soil)**

Sampled: 03-Oct-16 17:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	15.7	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:33	
EPA 6010C	**Barium**	173	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:33	B7
EPA 6010C	**Cadmium**	0.44	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:33	
EPA 6010C	**Chromium**	22.5	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:33	
EPA 6010C	**Lead**	35.6	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:33	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:33	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:33	
EPA 7471B	**Mercury**	0.132	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:31	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.5	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.1B**
SVL Sample ID: **W6J0238-05 (Soil)**

Sampled: 03-Oct-16 16:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	10.3	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:36	
EPA 6010C	**Barium**	174	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:36	B7
EPA 6010C	**Cadmium**	0.40	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:36	
EPA 6010C	**Chromium**	21.4	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:36	
EPA 6010C	**Lead**	42.2	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:36	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:36	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:36	
EPA 7471B	**Mercury**	0.160	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:33	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.2	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.1B-RB**
SVL Sample ID: **W6J0238-06 (Rinsate)**

Sampled: 03-Oct-16 16:52
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000053		W644021	MWD	10/24/16 18:32	
Metals (Total Recoverable)										
EPA 6010C	Arsenic	< 0.025	mg/L	0.025	0.008		W643141	AS	10/21/16 09:04	
EPA 6010C	Barium	< 0.0020	mg/L	0.0020	0.0010		W643141	AS	10/21/16 09:04	
EPA 6010C	Cadmium	< 0.0020	mg/L	0.0020	0.0009		W643141	AS	10/21/16 09:04	
EPA 6010C	Chromium	< 0.0060	mg/L	0.0060	0.0015		W643141	AS	10/21/16 09:04	
EPA 6010C	Lead	< 0.0075	mg/L	0.0075	0.0036		W643141	AS	10/21/16 09:04	
EPA 6010C	Selenium	< 0.040	mg/L	0.040	0.018		W643141	AS	10/21/16 09:04	
EPA 6010C	Silver	< 0.0050	mg/L	0.0050	0.0016		W643141	AS	10/21/16 08:25	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.1C**
SVL Sample ID: **W6J0238-07 (Soil)**

Sampled: 04-Oct-16 11:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	10.7	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:40	
EPA 6010C	**Barium**	218	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:40	B7
EPA 6010C	**Cadmium**	0.38	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:40	
EPA 6010C	**Chromium**	20.7	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:40	
EPA 6010C	**Lead**	48.2	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:40	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:40	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:40	
EPA 7471B	**Mercury**	0.115	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:40	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.1	%	0.1			W644003	JAA	10/25/16 08:20	

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John Kern
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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU2.1A**
SVL Sample ID: **W6J0238-08 (Soil)**

Sampled: 04-Oct-16 13:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	14.8	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:51	
EPA 6010C	**Barium**	227	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:51	B7
EPA 6010C	**Cadmium**	0.42	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:51	
EPA 6010C	**Chromium**	20.9	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:51	
EPA 6010C	**Lead**	35.6	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:51	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:51	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:51	
EPA 7471B	**Mercury**	0.285	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:42	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.1	%	0.1			W644003	JAA	10/25/16 08:20	

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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU1.3B**
SVL Sample ID: **W6J0238-09 (Soil)**

Sampled: 04-Oct-16 13:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	12.2	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:54	
EPA 6010C	**Barium**	140	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:54	B7
EPA 6010C	**Cadmium**	0.51	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:54	
EPA 6010C	**Chromium**	21.4	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:54	
EPA 6010C	**Lead**	31.6	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:54	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:54	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:54	
EPA 7471B	Mercury	< 0.033	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:44	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.1	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU1.3A**
SVL Sample ID: **W6J0238-10 (Soil)**

Sampled: 04-Oct-16 16:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	13.1	mg/kg	2.5	0.6		W644002	SMB	10/26/16 10:57	
EPA 6010C	**Barium**	224	mg/kg	0.20	0.14		W644002	SMB	10/26/16 10:57	B7
EPA 6010C	**Cadmium**	0.37	mg/kg	0.20	0.06		W644002	SMB	10/26/16 10:57	
EPA 6010C	**Chromium**	18.8	mg/kg	0.60	0.13		W644002	SMB	10/26/16 10:57	
EPA 6010C	**Lead**	24.2	mg/kg	0.8	0.3		W644002	SMB	10/26/16 10:57	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 10:57	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 10:57	
EPA 7471B	**Mercury**	0.035	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:46	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.3	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU1.3A-RB**
SVL Sample ID: **W6J0238-11 (Rinsate)**

Sampled: 04-Oct-16 17:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000053		W644021	MWD	10/24/16 18:35	
Metals (Total Recoverable)										
EPA 6010C	Arsenic	< 0.025	mg/L	0.025	0.008		W643141	AS	10/21/16 09:07	
EPA 6010C	Barium	< 0.0020	mg/L	0.0020	0.0010		W643141	AS	10/21/16 09:07	
EPA 6010C	Cadmium	< 0.0020	mg/L	0.0020	0.0009		W643141	AS	10/21/16 09:07	
EPA 6010C	Chromium	< 0.0060	mg/L	0.0060	0.0015		W643141	AS	10/21/16 09:07	
EPA 6010C	**Lead**	0.0512	mg/L	0.0075	0.0036		W643141	AS	10/21/16 09:07	
EPA 6010C	Selenium	< 0.040	mg/L	0.040	0.018		W643141	AS	10/21/16 09:07	
EPA 6010C	Silver	< 0.0050	mg/L	0.0050	0.0016		W643141	AS	10/21/16 08:28	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU3.1C**
SVL Sample ID: **W6J0238-12 (Soil)**

Sampled: 05-Oct-16 10:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	12.3	mg/kg	2.5	0.6		W644002	SMB	10/26/16 11:01	
EPA 6010C	**Barium**	147	mg/kg	0.20	0.14		W644002	SMB	10/26/16 11:01	B7
EPA 6010C	**Cadmium**	0.40	mg/kg	0.20	0.06		W644002	SMB	10/26/16 11:01	
EPA 6010C	**Chromium**	16.6	mg/kg	0.60	0.13		W644002	SMB	10/26/16 11:01	
EPA 6010C	**Lead**	37.1	mg/kg	0.8	0.3		W644002	SMB	10/26/16 11:01	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 11:01	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 11:01	
EPA 7471B	**Mercury**	0.098	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:52	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.2	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU3.2C**
SVL Sample ID: **W6J0238-13 (Soil)**

Sampled: 05-Oct-16 11:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	11.7	mg/kg	2.5	0.6		W644002	SMB	10/26/16 11:04	
EPA 6010C	**Barium**	99.3	mg/kg	0.20	0.14		W644002	SMB	10/26/16 11:04	B7
EPA 6010C	**Cadmium**	0.25	mg/kg	0.20	0.06		W644002	SMB	10/26/16 11:04	
EPA 6010C	**Chromium**	14.9	mg/kg	0.60	0.13		W644002	SMB	10/26/16 11:04	
EPA 6010C	**Lead**	18.6	mg/kg	0.8	0.3		W644002	SMB	10/26/16 11:04	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 11:04	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 11:04	
EPA 7471B	Mercury	< 0.033	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:55	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.5	%	0.1			W644003	JAA	10/25/16 08:20	

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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU3.2B**
SVL Sample ID: **W6J0238-14 (Soil)**

Sampled: 05-Oct-16 12:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	12.5	mg/kg	2.5	0.6		W644002	SMB	10/26/16 11:07	
EPA 6010C	**Barium**	209	mg/kg	0.20	0.14		W644002	SMB	10/26/16 11:07	B7
EPA 6010C	**Cadmium**	0.42	mg/kg	0.20	0.06		W644002	SMB	10/26/16 11:07	
EPA 6010C	**Chromium**	17.5	mg/kg	0.60	0.13		W644002	SMB	10/26/16 11:07	
EPA 6010C	**Lead**	40.4	mg/kg	0.8	0.3		W644002	SMB	10/26/16 11:07	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 11:07	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 11:07	
EPA 7471B	**Mercury**	0.342	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:57	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	97.9	%	0.1			W644003	JAA	10/25/16 08:20	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU1.3C**
SVL Sample ID: **W6J0238-15 (Soil)**

Sampled: 05-Oct-16 15:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	11.6	mg/kg	2.5	0.6		W644002	SMB	10/26/16 11:10	
EPA 6010C	**Barium**	173	mg/kg	0.20	0.14		W644002	SMB	10/26/16 11:10	B7
EPA 6010C	**Cadmium**	0.52	mg/kg	0.20	0.06		W644002	SMB	10/26/16 11:10	
EPA 6010C	**Chromium**	18.4	mg/kg	0.60	0.13		W644002	SMB	10/26/16 11:10	
EPA 6010C	**Lead**	34.0	mg/kg	0.8	0.3		W644002	SMB	10/26/16 11:10	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 11:10	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 11:10	
EPA 7471B	**Mercury**	0.058	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:59	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	98.9	%	0.1			W644003	JAA	10/25/16 08:20	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU1.2-1**
SVL Sample ID: **W6J0238-16 (Soil)**

Sampled: 05-Oct-16 16:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	19.4	mg/kg	2.5	0.6		W644002	SMB	10/26/16 11:14	
EPA 6010C	**Barium**	172	mg/kg	0.20	0.14		W644002	SMB	10/26/16 11:14	B7
EPA 6010C	**Cadmium**	0.34	mg/kg	0.20	0.06		W644002	SMB	10/26/16 11:14	
EPA 6010C	**Chromium**	25.6	mg/kg	0.60	0.13		W644002	SMB	10/26/16 11:14	
EPA 6010C	**Lead**	35.9	mg/kg	0.8	0.3		W644002	SMB	10/26/16 11:14	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 11:14	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 11:14	
EPA 7471B	**Mercury**	0.117	mg/kg	0.033	0.009		W644051	MWD	10/25/16 17:05	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.8	%	0.1			W644003	JAA	10/25/16 08:20	

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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU1.2-1-RB**
SVL Sample ID: **W6J0238-17 (Rinsate)**

Sampled: 05-Oct-16 16:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000053		W644021	MWD	10/24/16 18:37	
Metals (Total Recoverable)										
EPA 6010C	Arsenic	< 0.025	mg/L	0.025	0.008		W643141	AS	10/21/16 09:10	
EPA 6010C	Barium	< 0.0020	mg/L	0.0020	0.0010		W643141	AS	10/21/16 09:10	
EPA 6010C	Cadmium	< 0.0020	mg/L	0.0020	0.0009		W643141	AS	10/21/16 09:10	
EPA 6010C	Chromium	< 0.0060	mg/L	0.0060	0.0015		W643141	AS	10/21/16 09:10	
EPA 6010C	Lead	< 0.0075	mg/L	0.0075	0.0036		W643141	AS	10/21/16 09:10	
EPA 6010C	Selenium	< 0.040	mg/L	0.040	0.018		W643141	AS	10/21/16 09:10	
EPA 6010C	Silver	< 0.0050	mg/L	0.0050	0.0016		W643141	AS	10/21/16 08:32	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU3.1A-GB-RB**
SVL Sample ID: **W6J0238-18 (Rinsate)**

Sampled: 06-Oct-16 08:45
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000053		W644021	MWD	10/24/16 18:52	
Metals (Total Recoverable)										
EPA 6010C	Arsenic	< 0.025	mg/L	0.025	0.008		W643141	AS	10/21/16 09:13	
EPA 6010C	Barium	< 0.0020	mg/L	0.0020	0.0010		W643141	AS	10/21/16 09:13	
EPA 6010C	Cadmium	< 0.0020	mg/L	0.0020	0.0009		W643141	AS	10/21/16 09:13	
EPA 6010C	Chromium	< 0.0060	mg/L	0.0060	0.0015		W643141	AS	10/21/16 09:13	
EPA 6010C	Lead	< 0.0075	mg/L	0.0075	0.0036		W643141	AS	10/21/16 09:13	
EPA 6010C	Selenium	< 0.040	mg/L	0.040	0.018		W643141	AS	10/21/16 09:13	
EPA 6010C	Silver	< 0.0050	mg/L	0.0050	0.0016		W643141	AS	10/21/16 08:35	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Client Sample ID: **CDA-BNSF-ROW-DU3.2A**
SVL Sample ID: **W6J0238-19 (Soil)**

Sampled: 06-Oct-16 09:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	15.4	mg/kg	2.5	0.6		W644002	SMB	10/26/16 11:17	
EPA 6010C	**Barium**	209	mg/kg	0.20	0.14		W644002	SMB	10/26/16 11:17	B7
EPA 6010C	**Cadmium**	0.49	mg/kg	0.20	0.06		W644002	SMB	10/26/16 11:17	
EPA 6010C	**Chromium**	25.3	mg/kg	0.60	0.13		W644002	SMB	10/26/16 11:17	
EPA 6010C	**Lead**	49.4	mg/kg	0.8	0.3		W644002	SMB	10/26/16 11:17	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W644002	SMB	10/26/16 11:17	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W644002	SMB	10/26/16 11:17	
EPA 7471B	**Mercury**	0.042	mg/kg	0.033	0.009		W644051	MWD	10/25/16 17:07	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	99.4	%	0.1			W644003	JAA	10/25/16 08:20	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total)								
EPA 7470A	Mercury	mg/L	<0.00020	0.000053	0.00020	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010C	Arsenic	mg/kg	<2.5	0.6	2.5	W644002	26-Oct-16	
EPA 6010C	Barium	mg/kg	0.36	0.14	0.20	W644002	26-Oct-16	B7
EPA 6010C	Cadmium	mg/kg	<0.20	0.06	0.20	W644002	26-Oct-16	
EPA 6010C	Chromium	mg/kg	<0.60	0.13	0.60	W644002	26-Oct-16	
EPA 6010C	Lead	mg/kg	<0.8	0.3	0.8	W644002	26-Oct-16	
EPA 6010C	Selenium	mg/kg	<4.0	1.4	4.0	W644002	26-Oct-16	
EPA 6010C	Silver	mg/kg	<0.50	0.14	0.50	W644002	26-Oct-16	
EPA 7471B	Mercury	mg/kg	<0.033	0.009	0.033	W644051	25-Oct-16	
Metals (Total Recoverable)								
EPA 6010C	Arsenic	mg/L	<0.025	0.008	0.025	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	<0.0020	0.0010	0.0020	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	<0.0020	0.0009	0.0020	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	<0.0060	0.0015	0.0060	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	<0.0075	0.0036	0.0075	W643141	21-Oct-16	
EPA 6010C	Selenium	mg/L	<0.040	0.018	0.040	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	<0.0050	0.0016	0.0050	W643141	21-Oct-16	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total)									
EPA 7470A	Mercury	mg/L	0.00513	0.00500	103	80 - 120	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010C	Arsenic	mg/kg	99.9	100	99.9	80 - 120	W644002	26-Oct-16	
EPA 6010C	Barium	mg/kg	96.1	100	96.1	80 - 120	W644002	26-Oct-16	
EPA 6010C	Cadmium	mg/kg	97.3	100	97.3	80 - 120	W644002	26-Oct-16	
EPA 6010C	Chromium	mg/kg	103	100	103	80 - 120	W644002	26-Oct-16	
EPA 6010C	Lead	mg/kg	94.7	100	94.7	80 - 120	W644002	26-Oct-16	
EPA 6010C	Selenium	mg/kg	92.0	100	92.0	80 - 120	W644002	26-Oct-16	
EPA 6010C	Silver	mg/kg	4.69	5.00	93.7	80 - 120	W644002	26-Oct-16	
EPA 7471B	Mercury	mg/kg	0.803	0.833	96.4	80 - 120	W644051	25-Oct-16	
Metals (Total Recoverable)									
EPA 6010C	Arsenic	mg/L	1.07	1.00	107	80 - 120	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	1.06	1.00	106	80 - 120	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	1.06	1.00	106	80 - 120	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	1.07	1.00	107	80 - 120	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	1.05	1.00	105	80 - 120	W643141	21-Oct-16	
EPA 6010C	Selenium	mg/L	1.06	1.00	106	80 - 120	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	0.0472	0.0500	94.3	80 - 120	W643141	21-Oct-16	

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Terragraphics - Boise
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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Percent Solids / Percent Moisture									
Percent Solids	% Solids	%	99.4	99.4	0.0	20	W644003	25-Oct-16	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	mg/L	0.00101	<0.00020	0.00100	101	75 - 125	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	Arsenic	mg/kg	117	14.4	100	103	75 - 125	W644002	26-Oct-16	
EPA 6010C	Barium	mg/kg	298	190	100	108	75 - 125	W644002	26-Oct-16	
EPA 6010C	Cadmium	mg/kg	102	0.39	100	101	75 - 125	W644002	26-Oct-16	
EPA 6010C	Chromium	mg/kg	125	20.2	100	105	75 - 125	W644002	26-Oct-16	
EPA 6010C	Lead	mg/kg	127	36.4	100	90.2	75 - 125	W644002	26-Oct-16	
EPA 6010C	Selenium	mg/kg	95.2	<4.0	100	95.2	75 - 125	W644002	26-Oct-16	
EPA 6010C	Silver	mg/kg	4.83	<0.50	5.00	96.6	75 - 125	W644002	26-Oct-16	
EPA 7471B	Mercury	mg/kg	0.340	0.035	0.333	91.5	75 - 125	W644051	25-Oct-16	
Metals (Total Recoverable)										
EPA 6010C	Arsenic	mg/L	1.08	<0.025	1.00	108	75 - 125	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	1.11	0.0453	1.00	106	75 - 125	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	1.05	<0.0020	1.00	105	75 - 125	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	1.06	<0.0060	1.00	106	75 - 125	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	1.05	<0.0075	1.00	104	75 - 125	W643141	21-Oct-16	
EPA 6010C	Selenium	mg/L	1.06	<0.040	1.00	106	75 - 125	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	0.0478	<0.0050	0.0500	95.6	75 - 125	W643141	21-Oct-16	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total)											
EPA 7470A	Mercury	mg/L	0.00091	0.00101	0.00100	90.9	10.5	20	W644021	24-Oct-16	
Metals (Total) by EPA 6000/7000 Methods											
EPA 6010C	Arsenic	mg/kg	116	117	100	102	1.0	20	W644002	26-Oct-16	
EPA 6010C	Barium	mg/kg	289	298	100	99.3	3.0	20	W644002	26-Oct-16	
EPA 6010C	Cadmium	mg/kg	101	102	100	100	1.0	20	W644002	26-Oct-16	
EPA 6010C	Chromium	mg/kg	124	125	100	104	0.4	20	W644002	26-Oct-16	
EPA 6010C	Lead	mg/kg	125	127	100	89.0	1.0	20	W644002	26-Oct-16	
EPA 6010C	Selenium	mg/kg	94.1	95.2	100	94.1	1.1	20	W644002	26-Oct-16	
EPA 6010C	Silver	mg/kg	4.81	4.83	5.00	96.3	0.3	20	W644002	26-Oct-16	
EPA 7471B	Mercury	mg/kg	0.348	0.340	0.333	94.0	2.4	20	W644051	25-Oct-16	
Metals (Total Recoverable)											
EPA 6010C	Arsenic	mg/L	1.06	1.08	1.00	106	2.2	20	W643141	21-Oct-16	
EPA 6010C	Barium	mg/L	1.09	1.11	1.00	105	1.5	20	W643141	21-Oct-16	
EPA 6010C	Cadmium	mg/L	1.03	1.05	1.00	103	1.6	20	W643141	21-Oct-16	
EPA 6010C	Chromium	mg/L	1.04	1.06	1.00	104	1.5	20	W643141	21-Oct-16	
EPA 6010C	Lead	mg/L	1.03	1.05	1.00	103	1.4	20	W643141	21-Oct-16	

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Project Name: CDA BNSF 2016
Work Order: **W6J0238**
Reported: 26-Oct-16 13:15

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total Recoverable) (Continued)											
EPA 6010C	Selenium	mg/L	1.04	1.06	1.00	104	1.5	20	W643141	21-Oct-16	
EPA 6010C	Silver	mg/L	0.0487	0.0478	0.0500	97.4	1.8	20	W643141	21-Oct-16	

Notes and Definitions

B7	Target analyte detected in method blank exceeded method QC limits, but concentrations in the samples are at least 10x the blank concentration.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

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Terragraphics - Boise
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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0234**
Reported: 26-Oct-16 09:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
CDA-BNSF-ROW-DU3.1A-GB	W6J0234-01	Soil	06-Oct-16 08:00	SH	12-Oct-2016	
CDA-BNSF-ROW-DU3.1B-GB	W6J0234-02	Soil	06-Oct-16 10:30	SH	12-Oct-2016	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.
Sample preparation is defined by the client as per their Data Quality Objectives.
This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.
The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

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Terragraphics - Boise
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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0234**
Reported: 26-Oct-16 09:22

Client Sample ID: **CDA-BNSF-ROW-DU3.1A-GB**
SVL Sample ID: **W6J0234-01 (Soil)**

Sampled: 06-Oct-16 08:00
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	9.2	mg/kg	2.5	0.6		W643089	SMB	10/25/16 10:32	
EPA 6010C	**Barium**	109	mg/kg	0.20	0.14		W643089	SMB	10/25/16 10:32	
EPA 6010C	**Cadmium**	0.31	mg/kg	0.20	0.06		W643089	SMB	10/25/16 10:32	
EPA 6010C	**Chromium**	11.5	mg/kg	0.60	0.13		W643089	SMB	10/25/16 10:32	
EPA 6010C	**Lead**	21.3	mg/kg	0.8	0.3		W643089	SMB	10/25/16 10:32	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W643089	SMB	10/25/16 10:32	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W643089	SMB	10/25/16 10:32	
EPA 7471B	**Mercury**	0.043	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:20	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	88.0	%	0.1			W643091	ESB	10/19/16 07:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
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Project Name: CDA BNSF 2016
Work Order: **W6J0234**
Reported: 26-Oct-16 09:22

Client Sample ID: **CDA-BNSF-ROW-DU3.1B-GB**
SVL Sample ID: **W6J0234-02 (Soil)**

Sampled: 06-Oct-16 10:30
Received: 12-Oct-16
Sampled By: SH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	**Arsenic**	5.3	mg/kg	2.5	0.6		W643089	SMB	10/25/16 10:41	
EPA 6010C	**Barium**	94.4	mg/kg	0.20	0.14		W643089	SMB	10/25/16 10:41	
EPA 6010C	**Cadmium**	0.31	mg/kg	0.20	0.06		W643089	SMB	10/25/16 10:41	
EPA 6010C	**Chromium**	8.93	mg/kg	0.60	0.13		W643089	SMB	10/25/16 10:41	
EPA 6010C	**Lead**	12.3	mg/kg	0.8	0.3		W643089	SMB	10/25/16 10:41	
EPA 6010C	Selenium	< 4.0	mg/kg	4.0	1.4		W643089	SMB	10/25/16 10:41	
EPA 6010C	Silver	< 0.50	mg/kg	0.50	0.14		W643089	SMB	10/25/16 10:41	
EPA 7471B	**Mercury**	0.082	mg/kg	0.033	0.009		W644051	MWD	10/25/16 16:22	
Percent Solids / Percent Moisture										
Percent Solids	**% Solids**	91.0	%	0.1			W643091	ESB	10/19/16 07:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

John Kern
Laboratory Director

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Terragraphics - Boise
988 S. Longmont Ave., Suite 200
Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0234**
Reported: 26-Oct-16 09:22

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010C	Arsenic	mg/kg	<2.5	0.6	2.5	W643089	25-Oct-16	
EPA 6010C	Barium	mg/kg	<0.20	0.14	0.20	W643089	25-Oct-16	
EPA 6010C	Cadmium	mg/kg	<0.20	0.06	0.20	W643089	25-Oct-16	
EPA 6010C	Chromium	mg/kg	<0.60	0.13	0.60	W643089	25-Oct-16	
EPA 6010C	Lead	mg/kg	<0.8	0.3	0.8	W643089	25-Oct-16	
EPA 6010C	Selenium	mg/kg	<4.0	1.4	4.0	W643089	25-Oct-16	
EPA 6010C	Silver	mg/kg	<0.50	0.14	0.50	W643089	25-Oct-16	
EPA 7471B	Mercury	mg/kg	<0.033	0.009	0.033	W644051	25-Oct-16	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010C	Arsenic	mg/kg	97.9	100	97.9	80 - 120	W643089	25-Oct-16	
EPA 6010C	Barium	mg/kg	86.7	100	86.7	80 - 120	W643089	25-Oct-16	
EPA 6010C	Cadmium	mg/kg	94.2	100	94.2	80 - 120	W643089	25-Oct-16	
EPA 6010C	Chromium	mg/kg	98.7	100	98.7	80 - 120	W643089	25-Oct-16	
EPA 6010C	Lead	mg/kg	91.0	100	91.0	80 - 120	W643089	25-Oct-16	
EPA 6010C	Selenium	mg/kg	88.2	100	88.2	80 - 120	W643089	25-Oct-16	
EPA 6010C	Silver	mg/kg	4.24	5.00	84.8	80 - 120	W643089	25-Oct-16	
EPA 7471B	Mercury	mg/kg	0.803	0.833	96.4	80 - 120	W644051	25-Oct-16	

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
Percent Solids / Percent Moisture									
Percent Solids	% Solids	%	88.5	88.0	0.6	20	W643091	19-Oct-16	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010C	Arsenic	mg/kg	112	9.2	100	102	75 - 125	W643089	25-Oct-16	
EPA 6010C	Barium	mg/kg	192	109	100	82.7	75 - 125	W643089	25-Oct-16	
EPA 6010C	Cadmium	mg/kg	98.6	0.31	100	98.3	75 - 125	W643089	25-Oct-16	
EPA 6010C	Chromium	mg/kg	112	11.5	100	101	75 - 125	W643089	25-Oct-16	
EPA 6010C	Lead	mg/kg	119	21.3	100	97.7	75 - 125	W643089	25-Oct-16	
EPA 6010C	Selenium	mg/kg	91.5	<4.0	100	91.5	75 - 125	W643089	25-Oct-16	
EPA 6010C	Silver	mg/kg	4.49	<0.50	5.00	89.8	75 - 125	W643089	25-Oct-16	
EPA 7471B	Mercury	mg/kg	0.340	0.035	0.333	91.5	75 - 125	W644051	25-Oct-16	

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Terragraphics - Boise
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Boise, ID 83706

Project Name: CDA BNSF 2016
Work Order: **W6J0234**
Reported: 26-Oct-16 09:22

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	%R	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods											
EPA 6010C	Arsenic	mg/kg	109	112	100	99.5	2.6	20	W643089	25-Oct-16	
EPA 6010C	Barium	mg/kg	201	192	100	91.3	4.4	20	W643089	25-Oct-16	
EPA 6010C	Cadmium	mg/kg	96.8	98.6	100	96.5	1.8	20	W643089	25-Oct-16	
EPA 6010C	Chromium	mg/kg	113	112	100	102	0.8	20	W643089	25-Oct-16	
EPA 6010C	Lead	mg/kg	108	119	100	86.2	10.1	20	W643089	25-Oct-16	
EPA 6010C	Selenium	mg/kg	89.5	91.5	100	89.5	2.3	20	W643089	25-Oct-16	
EPA 6010C	Silver	mg/kg	4.38	4.49	5.00	87.6	2.5	20	W643089	25-Oct-16	
EPA 7471B	Mercury	mg/kg	0.348	0.340	0.333	94.0	2.4	20	W644051	25-Oct-16	

Notes and Definitions

LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Work Order: **W6J0234**
Terragraphics - Boise

SVL ANALYTICAL

Page 2 of 3

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 2.6°

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other_____

Report to Company: Terragraphics	**Invoice Sent To:** Terragraphics
Contact: Melody Studer	Contact: Pam Davis
Address: see page 1/3	Address: see page 1/3
Phone Number:	Phone Number:
FAX Number:	FAX Number:
E-mail:	PO#:

Project Name: CDA BNSF ROW

Sampler's Signature: SH

Indicate State of sample origination: ID

	Sample ID	Collection			Misc.		Preservative(s)							Analyses Required										Rush Instructions (Days)	Comments
	Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, ø and O. Thanks!	Date	Time	Collected by: (Init.)	Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	RCRA 8 Metals											
1	CDA-BNSF-ROW-DU1.3A-RB	10/4/16	17:00	SH	4	1			X					X											RCRA 8 Metals: 6010C: As, Ba, Cd, Cr, Pb, Se, Ag 7471B: Hg
2	CDA-BNSF-ROW-DU3.1C	10/5/16	10:00	SH	3	1	X							X											ISM Prep
3	CDA-BNSF-ROW-DU3.2C	10/5/16	11:30	SH	3	1	X							X											ISM Prep
4	CDA-BNSF-ROW-DU3.2B	10/5/16	12:00	SH	3	1	X							X											ISM Prep
5	CDA-BNSF-ROW-DU1.3C	10/5/16	15:30	SH	3	1	X							X											ISM Prep
6	CDA-BNSF-ROW-DU1.2-1	10/5/16	16:00	SH	3	1	X							X											ISM Prep
1• 7	CDA-BNSF-ROW-DU1.2-1-RB	10/5/16	16:30	SH	4	1			X					X											
• 8	CDA-BNSF-ROW-DU3.1A-GB	10/6/16	8:00	SH	3	1	X							X											* NO ISM Prep
9	CDA-BNSF-ROW-DU3.1A-GB-RB	10/6/16	8:45	SH	4	1			X					X											
10	CDA-BNSF-ROW-DU3.2A	10/6/16	9:30	SH	3	1	X							X											ISM Prep

Relinquished by:	Date: 10-12-16	Time: 0908	Received by:	Date: 10-12-16	Time: 0908
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

1. ID on label reads CDA-BNSF-ROW-DU1.2R1-RB, SH 10-12-16
• on this work order 10/12/16 CRS

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL JOB # W6J0234
TEMP on Receipt:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other

Report to Company: Terra Graphics
Contact: Melody Studer
Address: see page 1/3
Phone Number:
FAX Number:
E-mail:

Invoice Sent To: Terra Graphics
Contact: Pam Davis
Address: see page 1/3
Phone Number:
FAX Number:
PO#:

Project Name: CDA BNSF ROW
Sampler's Signature:

Indicate State of sample origination: ID

	Sample ID (Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, Ø and O. Thanks!)	Collection Date	Collection Time	Collected by: (Init.)	Misc. Matrix Type (From Table 1)	Misc. No. of Containers	Preservative(s) Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Analyses Required: RCRA 8 Metals	Rush Instructions (Days)	Comments
1	CDA-BNSF-ROW-DU3.1B	10/6/16	10:00	SH	3	1	X							X			ISM Prep
2	CDA-BNSF-ROW-DU3.1B-GB	10/6/16	10:30	SH	3	1	X							X			* NO ISM Prep
3	CDA-BNSF-ROW-DU1.2-2	10/6/16	13:00	SH	3	1	X							X			ISM Prep *Lab duplicate
4	CDA-BNSF-ROW-DU1.2-2-FD	10/6/16	13:00	SH	3	1	X							X			ISM Prep
5	CDA-BNSF-ROW-DU1.2-3	10/6/16	13:00	SH	3	1	X							X			ISM Prep
6	CDA-BNSF-ROW-DU1.1	10/7/16	10:30	SH	3	2	X							X			MS/D (extra volume 10oz. jar) ISM Prep
7	CDA-BNSF-ROW-DU3.1A-1	10/7/16	11:00	SH	3	1	X							X			ISM Prep
8	CDA-BNSF-ROW-DU3.1A-2	10/7/16	11:00	SH	3	1	X							X			ISM Prep
9	CDA-BNSF-ROW-DU3.1A-3	10/7/16	11:00	SH	3	1	X							X			ISM Prep
10	CDA-BNSF-ROW-DU3.1A-2-RB	10/10/16	12:25	SH	4	1			X					X			

Comments: RCRA 8 Metals: 6010C: As, Ba, Cd, Cr, Pb, Se, Ag; 7471B: Hg
Please conduct a lab duplicate on the sample indicated.

Relinquished by: CDProsswood	Date: 10-12-16	Time: 0908	Received by: S. Jacobson	Date: 10-12-16	Time: 0908
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

• on this work order 10/12/16 CPS

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 10-12-16 By: CRSeavy

SVL Work No: we10234

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				Terragraphics - Boise
2	Date and time of receipt at lab	✓				10-12-16 0908
3	Received by	✓				S. Jacobson
4	Temperature blank or cooler temperature	✓				Temp. 2.6°C.
5	Were the sample(s) received on ice	✓				yes
6	Custody tape/bottle seals	✓				yes
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				good
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested				✓	soil
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)				✓	
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	
19	Shipper's air bill	.			✓	Walk-in

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments: _____

Work Order: **W6J0238**
Terragraphics - Boise

Page 1 of 3

SVL ANALYTICAL

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 2.6°

Table 1. -- Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other_____

Report to Company: Terragraphics
Contact: Melody Studer / Rachel Gibeault
Address: 988 S. Longmont Ave., Ste. 200
Boise, Idaho 83706
Phone Number: 208-336-7080
FAX Number: 208-908-4980
E-mail: melody.studer@terragraphics.com
rachel.gibeault@terragraphics.com

Invoice Sent To: Terragraphics
Contact: Pam Davis
Address: 121 S. Jackson St.
Moscow, ID 83843
Phone Number: 208-882-7858
FAX Number: 208-883-3785
PO#:

Project Name: CDA BNSF ROW
Sampler's Signature: [signature]

Indicate State of sample origination: ID
USACE? ☐ Yes ☒ No

	Sample ID Please take care to distinguish between: 1 and I 2 and Z 5 and S ø and O Thanks!	Collection Date	Collection Time	Collected by: (Init.)	Misc. Matrix Type (From Table 1)	Misc. No. of Containers	Preservative(s) Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Analyses Required: RCRA 8 Metals	Rush Instructions (Days)	Comments
1	CDA-BNSF-ROW-DU2.2B	10/3/16	13:30	SH	3	1	X							X		ISM Prep
2	CDA-BNSF-ROW-DU2.2B-FD	10/3/16	13:30	SH	3	1	X							X		ISM Prep
3	CDA-BNSF-ROW-DU2.2C	10/3/16	15:00	SH	3	1	X							X		ISM Prep
4	CDA-BNSF-ROW-DU2.2A	10/3/16	17:00	SH	3	1	X							X		ISM Prep
5	CDA-BNSF-ROW-DU2.1B	10/3/16	16:00	SH	3	1	X							X		ISM Prep
6	CDA-BNSF-ROW-DU2.1B-RB	10/3/16	16:52	SH	4	1			X					X		
7	CDA-BNSF-ROW-DU2.1C	10/4/16	11:00	SH	3	1	X							X		ISM Prep
8	CDA-BNSF-ROW-DU2.1A	10/4/16	13:30	SH	3	1	X							X		ISM Prep
9	CDA-BNSF-ROW-DU1.3B	10/4/16	13:00	SH	3	1	X							X		ISM Prep
10	CDA-BNSF-ROW-DU1.3A	10/4/16	16:30	SH	3	1	X							X		ISM Prep

Comments: RCRA 8 Metals:
6010C: As, Ba, Cd, Cr, Pb, Se, Ag
7471B: Hg

Relinquished by: CD Presswood — Date: 10-12-16 — Time: 0908 — Received by: J. Jacobson — Date: 10-12-16 — Time: 0908

Relinquished by: — Date: — Time: — Received by: — Date: — Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

FOR SVL USE ONLY
SVL JOB # W650238
TEMP on Receipt:

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other_____

Report to Company: TerraGraphics
Contact: Melody Studer
Address: see page 1/3
Phone Number:
FAX Number:
E-mail:

Invoice Sent To: TerraGraphics
Contact: Pam Davis
Address: see page 1/3
Phone Number:
FAX Number:
PO#:

Project Name: CDA BNSF ROW
Sampler's Signature: [signature]

Indicate State of sample origination: ID

	Sample ID (Please take care to distinguish between: 1 and I, 2 and Z, 5 and S, ø and O. Thanks!)	Collection Date	Collection Time	Collected by: (Init.)	Misc. Matrix Type (From Table 1)	Misc. No. of Containers	Preservative(s) Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Analyses Required: RCRA 8 Metals	Rush Instructions (Days)	Comments
8	1 CDA-BNSF-ROW-DU1.3A-RB	10/4/16	17:00	SH	4	1			X					X		
	2 CDA-BNSF-ROW-DU3.1C	10/5/16	10:00	SH	3	1	X		*					X		ISM Prep
	3 CDA-BNSF-ROW-DU3.2C	10/5/16	11:30	SH	3	1	X							X		ISM Prep
	4 CDA-BNSF-ROW-DU3.2B	10/5/16	12:00	SH	3	1	X							X		ISM Prep
	5 CDA-BNSF-ROW-DU1.3C	10/5/16	15:30	SH	3	1	X							X		ISM Prep
	6 CDA-BNSF-ROW-DU1.2-1	10/5/16	16:00	SH	3	1	X							X		ISM Prep
1	7 CDA-BNSF-ROW-DU1.2-1-RB	10/5/16	16:30	SH	4	1			X					X		
	8 CDA-BNSF-ROW-DU3.1A-GB	10/6/16	8:00	SH	3	1	X							X		* NO ISM prep
	9 CDA-BNSF-ROW-DU3.1A-GB-RB	10/6/16	8:45	SH	4	1			X					X		
	10 CDA-BNSF-ROW-DU3.2A	10/6/16	9:30	SH	3	1	X							X		ISM Prep

Relinquished by: [signature]	Date: 10-12-16	Time: 0908	Received by: [signature]	Date: 10-12-16	Time: 0908
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

1. ID on Label reads CDA-BNSF-ROW-DU1.2R1-RB, sf 10-12-16
• on this work order 10/12/16 CRS

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 10-12-16 By: [signature]

SVL Work No: WJD238

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				Terraphics - Boise
2	Date and time of receipt at lab	✓				10-12-16 0908
3	Received by	✓				A. Jacobson
4	Temperature blank or cooler temperature	✓				Temp. 2.6 °C.
5	Were the sample(s) received on ice	✓				One cooler had packed ice with the water samples, and samples on glass jars. The other coolers with the Zip loc bags were not packed on ice.
6	Custody tape/bottle seals	Yes ✓				
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				good
8	Sample numbers/IDs agree with COC	✓				Sample #17- See cox note.
9	Sample date & time agree with COC	✓				
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested	✓				
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)				✓	
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	
19	Shipper's air bill				✓	Walk-in

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments: _____

Work Order: **W6J0250**
Terragraphics - Boise

SVL ANALYTICAL
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FOR SVL USE ONLY
SVL JOB #

TEMP on Receipt: 2.6°

Table 1. – Matrix Type
1 = Surface Water, 2 = Ground Water
3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
6 = Waste, 7 = Other_____

Report to Company:	Terra Graphics
Contact:	Melody Studer
Address:	see page 1/3
Phone Number:	
FAX Number:	
E-mail:	

Invoice Sent To:	Terra Graphics
Contact:	Pam Davis
Address:	see page 1/3
Phone Number:	
FAX Number:	
PO#:	

Project Name: CDA BNSF ROW
Sampler's Signature: Shy Hil

Indicate State of sample origination: ID

	Sample ID Please take care to distinguish between: 1 and I 2 and Z 5 and S Ø and O Thanks!	Collection: Date	Time	Collected by: (Init.)	Misc.: Matrix Type (From Table 1)	No. of Containers	Preservative(s): Unpreserved	HNO_3 Filtered	HNO_3 Unfiltered	HCl	H_2SO_4	NaOH	Other (Specify)	Analyses Required: RCRA 8 Metals	Rush Instructions (Days)	Comments
1	CDA-BNSF-ROW-DU3.1B	10/6/16	10:00	SH	3	1	X							X		ISM Prep
2	CDA-BNSF-ROW-DU3.1B-GB	10/6/16	10:30	SH	3	1	X							X		* NO ISM Prep
3	CDA-BNSF-ROW-DU1.2-2	10/6/16	13:00	SH	3	1	X							X		ISM Prep *Lab duplicate
4	CDA-BNSF-ROW-DU1.2-2-FD	10/6/16	13:00	SH	3	1	X							X		ISM Prep
5	CDA-BNSF-ROW-DU1.2-3	10/6/16	13:00	SH	3	1	X							X		ISM Prep
6	CDA-BNSF-ROW-DU1.1	10/7/16	10:30	SH	3	2	X							X		MS/D (extra volume 10oz. jar) ISM Prep
7	CDA-BNSF-ROW-DU3.1A-1	10/7/16	11:00	SH	3	1	X							X		ISM Prep
8	CDA-BNSF-ROW-DU3.1A-2	10/7/16	11:00	SH	3	1	X							X		ISM Prep
9	CDA-BNSF-ROW-DU3.1A-3	10/7/16	11:00	SH	3	1	X							X		ISM Prep
10	CDA-BNSF-ROW-DU3.1A-2-RB	10/10/16	12:25	SH	4	1			X					X		

Relinquished by: CDProwood	Date: 10-12-16	Time: 0908	Received by: S. Jacobson
Relinquished by:	Date:	Time:	Received by:

Date: 10-12-16 Time: 0908
Date: Time:

* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05

• on this work order 10/12/16 CS

SAMPLE RECEIPT/CHAIN-OF -CUSTODY CHECKLIST

The following items were checked for completeness, correctness, and compliance to project specifications using the Chain-of-Custody (COC) and other supporting information.

Date of acceptance: 10-12-16 By: CPSeely

SVL Work No: W16J0250

Item	Description	V	VC	NV	NA	Comments
1	Client or project name	✓				Terraphex - Boise
2	Date and time of receipt at lab	✓				10-12-16 0908
3	Received by	✓				S. Jacobson
4	Temperature blank or cooler temperature	✓				Temp. 2.6°C.
5	Were the sample(s) received on ice	✓				One cooler had packed ice with the water samples, and samples in glass jars. The other coolers with the ziplock bags were not packed on ice.
6	Custody tape/bottle seals	Yes ✓				
7	Condition of samples upon receipt (leaking; bubbles in VOA vials	✓				good
8	Sample numbers/IDs agree with COC	✓				
9	Sample date & time agree with COC	✓				
10	Number of containers for each sample	✓				
11	The correct preservative for the analysis requested	✓				
12	Did an SVL employee preserve sample(s) upon receipt				✓	
13	Type of container for each sample / volume received	✓				
14	Analysis requested for each sample	✓				
15	Sample matrix description	✓				
16	COC properly completed & legible	✓				
17	Corrections properly made (initials & date)				✓	
18	Additional comments or records of sample condition or treatment (unlisted or missing samples at laboratory, aliquot taken, sample hold, samples subcontracted, communications between client and laboratory)				✓	
19	Shipper's air bill				✓	Walk-in

V- Verified VC- Verified Corrections Made NV-Not Verified NA- Not Applicable

Additional Comments: _____

Appendix B

Investigation Derived Waste Manifest Documentation

SKO SK SHIP# 220992813

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
CESQG	1	1-800-468-1760	005638510 SKS

GENERATOR

5. Generator's Name and Mailing Address

Terra Graphics - Ideq
3320 Grand Mill Ln.
COEUR D' ALENE ID 83814-0000

Generator's Phone: 208-882-7858

Generator's Site Address (if different than mailing address)

6. Transporter 1 Company Name: SAFETY-KLEEN SYSTEMS, INC. U.S. EPA ID Number: TXR000081205

7. Transporter 2 Company Name U.S. EPA ID Number

8. Designated Facility Name and Site Address: CLEAN HARBORS GRASSY MOUNTAIN, LLC. U.S. EPA ID Number: UTD991301748

3 MILES EAST, 7 MILES NORTH KNOLLS EXIT 41, OFF I-80
ARAGONITE , UT 84029

Facility's Phone: 435-884-8915

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	1. NONE, NOT DOT REGULATED MATERIAL, (SOIL CUTTINGS), NONE	1	DM	600	P	NONE
	2. NONE, NON DOT REGULATED MATERIAL, (SAMPLING WATER), N/A	1	DM	100	P	NONE
	3.					
	4.					

14. Special Handling Instructions and Additional Information

TSD:GM 72206035 TE31806 CSG:

24 HR EMERGENCY #1-800-468-1760 (SK / TFI)
SEE ATTACHMENT

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Jason Fee Signature: [signature] Month: 12 Day: 5 Year: 16

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jesse Cusko Signature: [signature] Month: 12 Day: 5 Year: 16

Transporter 2 Printed/Typed Name Signature Month Day Year

DESIGNATED FACILITY

18. Discrepancy

18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

18b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator) Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name Signature Month Day Year

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete. GENERATOR'S INITIAL COPY

1) 7891985/1337393 2) 7892197/1337386

Appendix C

QA/QC Memorandum

TerraGraphics
Environmental Engineering, Inc.

www.terragraphics.com

Corporate Office:
121 S. Jackson St., Moscow, Idaho 83843
Ph: (208) 882-7858; Fax: (208) 883-3785

Other Office Locations:
Kellogg, Idaho
Boise, Idaho
Deer Lodge, Montana
Las Vegas, Nevada
Pasco, Washington

I N T E R N A L P R O J E C T M E M O R A N D U M

To: Melody Studer, Project Manager, Boise

From: Rachel Gibeault, QA/QC Manager, Boise

Date: November 8, 2016

Project Code: 16023

Subject: **QA/QC Review of the 2016 Sampling of the BNSF ROW R2R in Coeur d'Alene, Idaho**

1 Introduction

This memorandum provides a summary of the data validation and data quality assessment performed on the sample results for the characterization efforts of the Burlington Northern Santa Fe Railway Company (BNSF) Right of Way (ROW), River to Huetter section in Coeur d'Alene, Idaho. The field crew conducted field work from October 3 through 10, 2016, for the samples reviewed in this memorandum.

Sampling procedures and the quality assurance/quality control (QA/QC) review followed guidelines set forth in the following documents:

- *Final Quality Assurance Project Plan for BNSF ROW R2R, Coeur d'Alene, Idaho* (TerraGraphics 2016)
- *Incremental Sampling Methodology* (ITRC 2012)
- *National Functional Guidelines for Inorganic Superfund Data Review* (USEPA 2016a)
- *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2016b)
- *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (USEPA 2009)
- *USEPA Guidance on Environmental Data Verification and Data Validation* (USEPA 2002)

This memorandum discusses the data quality assessment and data validation performed for the Sample Delivery Group (SDG) listed in Table 1. Data qualifiers used in this review are defined by the U.S. Environmental Protection Agency (USEPA) (2016a and 2016b).

Table 1. SDG Data Validation

Laboratory	SDG / Work Order	Analyses	Matrix	Data Validation Level (USEPA 2009)	Review Conducted by
ESC	L864751	PAHs [a]	Rinsate Blank	Stage 2A	TerraGraphics
ESC	L865222	PAHs [a], SVOCs [b]	Soil, Rinsate Blank	Stage 2A	TerraGraphics
SVL	W6J0234	RCRA 8 Metals [c]	Soil	Stage 2A	TerraGraphics
SVL	W6J0238	RCRA 8 Metals [c]	Soil, Rinsate Blank	Stage 2A	TerraGraphics
SVL	W6J0250	RCRA 8 Metals [c]	Soil, Rinsate Blank	Stage 2A	TerraGraphics

[a] polycyclic aromatic hydrocarbons using USEPA Method 8270D – SIM (USEPA 1996).

[b] semivolatile organic compounds using USEPA Method 8270D (USEPA 1996).

[c] Resource Conservation and Recovery Act (RCRA) 8 Metals = arsenic, barium, cadmium, chromium, lead, selenium, and sliver, analyzed using USEPA Method 6010A (USEPA 1992) and mercury analyzed using USEPA Method 7471B (USEPA 1998).

ESC = ESC Lab Sciences, Inc. in Mt. Juliet, Tennessee.

SVL = SVL Analytical in Kellogg, Idaho.

2 Data Validation and Quality Assessment Summary of Soil Results

TerraGraphics' Stage 2A validation of the analytical data and review of the field data are summarized in Table 2. Procedures/checks that require further discussion are explained below the table, as necessary.

Table 2. Data Quality Review Summary for Soil

Data Validation Procedure or Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
Sample condition upon receipt at laboratory	--	Y	N	
Preservation	--	Y	N	
Holding times	--	Y	N	
Laboratories followed specified analytical methods	--	N	N	
Method Blanks	Y	N	N	1
Surrogate Recoveries/Deuterated Monitoring Compounds Recoveries	Y	N	N	2
Laboratory Control Samples (Tables 3-5)	Y	N	Y	3
Matrix Spikes (Tables 6-8)	Y	N	Y	4
Laboratory Control Sample Duplicates and Matrix Spike Duplicates (Tables 9-11)	Y	N	Y	5

Table 2. Data Quality Review Summary for Soil

Data Validation Procedure or Check	Acceptable Frequency? [a]	Acceptable Performance? [b]	Data Qualified?	Discussion Item Number
Dilutions	--	--	N	6
Post Digestion Spikes	--	--	--	
Trip Blanks	--	--	--	
Rinsate Blanks (Table 12)	Y	N	N	7
Field Blanks	--	--	--	
Field Duplicates and Laboratory Duplicates (Table 13)	Y	Y	N	
Field Replicates (Table 14)				

[a] Frequencies as defined in the QAPP (TerraGraphics 2016).
[b] As defined in the QAPP (TerraGraphics 2016) or based on professional judgement of the data validator.
-- = not applicable

1) Method Blanks

For SDG L864751, work group (WG) 915532 on page 9 (associated samples DU2.1B-RB, DU1.3A-RB, DU1.2-R1-RB, and DU3.1A-GB-RB), benzo(a)anthracene, with 0.00000639 milligrams per liter (mg/L), benzo(b)fluoranthene, with 0.00000223 mg/L, and naphthalene, with 0.0000237 mg/L, were detected in the method blank. However, as the National Functional Guidelines (NFG) for Organics states: "for any blank (including [a] method blank), if a target analyte is detected [in the blank], but it is not detected in the sample, [those] non-detects [in the sample] should not be qualified (USEPA 2016b)." Therefore, no data are qualified.

For SDG L865222, WG916567 on pages 47 and 51 (associated sample DU3.1A-2-RB), di-n-butyl phthalate (0.000702 mg/L), benzo(a)anthracene (0.00000627 mg/L), naphthalene (0.0000293 mg/L), phenanthrene (0.00000833 mg/L), 1-methylnaphthalene (0.0000181 mg/L), and 2-methylnaphthalene (0.0000243 mg/L), were detected in the method blank. However, as the NFG for Organics states: "for any blank (including [a] method blank), if a target analyte is detected [in the blank], but it is not detected in the sample, [those] non-detects [in the sample] should not be qualified (USEPA 2016b)." Therefore, no data are qualified.

For Work Order W6J0238, batch ID W64402 on page 21 (associated samples DU2.2B, DU2.2B-FD, DU2.2C, DU2.2A, DU2.1B, DU2.1C, DU2.1A, DU1.3B, DU1.3A, DU3.1C, DU3.2C, DU3.2B, DU1.3C, DU1.2-1, and DU3.2A), barium (0.36 milligrams per kilogram [mg/kg]), was detected in the method blank. The NFG for Inorganics states that if detections in the field results are greater than or equal to 10 times the method blank result, no qualification is needed; therefore, no data are qualified.

2) Surrogate Recoveries

For SDG L865222, field samples CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, and CDA-BNSF-ROW-DU1.1 had all of the surrogates qualified by the laboratory (with a J7 flag) as unusable for control limit evaluation due to sample dilution.

The TerraGraphics Quality Assurance Officer (QAO) contacted the laboratory regarding the reason for the sample dilution. The laboratory responded that the sample extracts were viscous and needed to be diluted to be processed through the laboratory's analytical machines. Therefore, the TerraGraphics QAO agrees with the laboratory's assessment and will not use these surrogate recoveries for control limit evaluations. No data are qualified.

3) Laboratory Control Samples

For SDG L865222, WG916690 on pages 48 through 50 (associated sample CDA-BNSF-ROW-DU3.1A-2-RB), the percent recovery for 4-nitrophenol (33%) and phenol (28.1%) were below the Quality Assurance Project Plan (QAPP) lower limits of 34.8% and 41.5%, respectively (Table 4). According the NFG for Organics, detections of these analytes in the associated sample should be qualified as estimates (*J*) and non-detects should be qualified as estimates (*UJ*).

4) Matrix Spikes

For SDG L865222, WG916690 on pages 45 and 46 (associated samples CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A), the sample matrix interfered with the ability to make an accurate determination of the following analytes: 3,3-dichlorobenzidine, hexachlorocyclopentadiene, n-nitrosodimethylamine, 2,4-dimethylphenol, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, 4-nitrophenol, and pentachlorophenol (Table 7). These analytes did not have a calculated percent recovery and the NFG for Organics states that if the percent recovery is outside the acceptance limits then "qualify the detects and non-detects in the original sample to include the consideration of the existence of interference in the raw data." Therefore, the TerraGraphics QAO considers detected results of the analytes in the associated samples as estimates (*J*) and non-detects as estimates (*UJ*).

5) Laboratory Control Sample Duplicates and Matrix Spike Duplicates

For SDG L865222, WG916567 on page 51 and 52 (associated sample CDA-BNSF-ROW-DU3.1A-2-RB), the relative percent difference (RPD) for benzo(g,h,i)perylene (27.8%) exceeds the QAPP guideline (20%) as shown in Table 9. According to the NFG for Organics, if the RPD is greater than the upper acceptance limit, detects should be estimated (*J*) and non-detects should not be qualified. Therefore, benzo(g,h,i)perylene in CDA-BNSF-ROW-DU3.1A-2-RB is not qualified (as shown in Table 12).

For SDG L865222, WG916680 on pages 45 and 46 (associated samples CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A), the sample matrix interfered with the ability to make an accurate determination of the following analytes: 3,3-dichlorobenzidine, hexachlorocyclopentadiene, n-nitrosodimethylamine, 2,4-dimethylphenol, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, 4-nitrophenol, and pentachlorophenol (Table 10). These analytes did not have a calculated RPD and the NFG for Organics states that if the percent recovery is outside the acceptance limits then "qualify the detects and non-detects in the original sample to include the consideration of the existence of interference in the raw data." Therefore, the TerraGraphics QAO considers detected results of the analytes in the associated samples as estimates (*J*) and non-detects as estimates (*UJ*). (These

analytes in these samples were previously qualified based on the matrix spike as explained above in bullet point 4.)

6) Dilutions

The TerraGraphics QAO contacted the laboratory regarding the dilutions for the following samples within SDG L865222, and the laboratory provided the following answers. No data are qualified due to the dilutions or the resultant raised reporting limits.

Work Group (Associated Samples)	Analytical Method	Dilution	Reason
WG916680 CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A	8270D	20 or 10	The sample extracts were viscous and were diluted by the laboratory in order to process through the analytical instrument. The dilutions also raised the reporting limits.
WG916688 CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A, CDA-BNSF-ROW-DU2.1B, CDA-BNSF-ROW-DU2.1C, CDA-BNSF-ROW-DU2.1A, CDA-BNSF-ROW-DU1.3B, CDA-BNSF-ROW-DU3.1C, CDA-BNSF-ROW-DU3.2C, CDA-BNSF-ROW-DU3.2B, CDA-BNSF-ROW-DU1.3C, CDA-BNSF-ROW-DU3.1A-GB, CDA-BNSF-ROW-DU3.2A, CDA-BNSF-ROW-DU3.1B-GB, CDA-BNSF-ROW-DU1.2-2, CDA-BNSF-ROW-DU1.2-2-FD	8270D-SIM	10, 5, 2	The sample extracts were viscous and were diluted by the laboratory in order to process through the analytical instrument. The dilutions also raised the reporting limits.
WG916919 CDA-BNSF-ROW-DU1.1, CDA-BNSF-ROW-DU3.1A-1, CDA-BNSF-ROW-DU3.1A-2, DU3.1A-3	8270D-SIM	20, 5, 2	Following the analytical method, the samples were diluted at the instrument by the analyst because the extracts were dark in color. The dilutions also raised the reporting limits.

7) Rinsate Blank

The crew collected rinsate blanks at the end of each sampling day with the exception of the last day. According to the field notes, a rinsate blank could not be collected that day since the laboratory did not send enough sample containers. The sampling equipment was decontaminated in the field according to the QAPP and then wrapped in plastic. The field crew collected the rinsate blank sample on October 10 according to the QAPP. It is the TerraGraphics QAO's opinion that the delayed sampling of the decontaminated equipment will not affect the outcome of the results. No data are qualified.

All rinsate blanks for SVOCs/PAHs had non-detects (Table 12). Lead was detected in the rinsate blank collected on October 4, 2016, at a concentration of 0.0512 milligrams per liter (mg/L). Samples collected on that day and their laboratory detected lead results include the following: CDA-BNSF-ROW-DU2.1A (35.6 mg/kg), CDA-BNSF-ROW-DU2.1C (48.2 mg/kg), CDA-BNSF-ROW-DU1.3A (24.2 mg/kg), and CDA-BNSF-

ROW-DU1.3B (31.6 mg/kg). Since the lead results in the field samples are greater than 10 times the lead result detected in the rinsate blank, no data are qualified according to the NFGs for Inorganics.

3 Field Replicates and Assessment of Error

The percent relative standard deviations (RSDs), or coefficients of variation, for decision units (DUs) 1.2 and 3.1A where replicate samples (or multiple rounds of samples) were collected and analyzed for PAHs and RCRA 8 metals, were calculated by dividing the mean by the standard deviation (as shown in Tables 14 and 15). The Interstate Technology Regulatory Council (ITRC) Incremental Sampling Methodology (ISM) states that RSDs greater than 30%-35% strongly suggest a substantial degree of heterogeneity (Section 7.3, ITRC 2012), whereas sample populations with RSDs lower than 35% may be homogeneous and may indicate that the field replicates are providing reproducible estimates of the average.

For DU1.2, PAHs showed high heterogeneity with RSDs ranging between 72% and 99% (Table 14). However, metals were more homogeneous with only mercury have a high RSD of 122% (Table 15). PAHs and RCRA 8 metals in DU3.1A were also more homogenous. Chrysene had an RSD of 36% (Table 14) and mercury had an RSD of 85%. These data suggest that DU1.2 is highly variable, whereas DU3.1A data likely represents field conditions.

To be conservative, the TerraGraphics QAO chose 30% as the limit and when RSDs were equal to or greater than 30%, then the QAO calculated a Chebyshev 95% upper confidence limit (UCL) using ITRC ISM calculator for 1-sided UCL for the mean (Section 4.2.2, ITRC 2012). As recommended by ITRC, the highest concentration of the replicate samples will be presented as the representative concentration for the DU when the analyte RSD is less than 30%. The calculated 95% UCL will be used as the representative concentration. No data were qualified based on ISM field replicate results.

4 Overall Assessment

Section 5.0 of the QAPP outlines the data quality objectives and criteria (TerraGraphics 2016). TerraGraphics' project QA officer (QAO) reviewed field documentation, results of field and laboratory QA/QC samples, and data reported by the laboratory to ensure that the data had been recorded, transmitted, and processed correctly, and to determine that data quality objectives were met. The subsections below provide a summary of the data usability assessment.

The laboratory and field data are determined to be of acceptable quality. Accuracy and precision are acceptable and meet data quality indicators stated in the QAPP (TerraGraphics 2016). However, the following samples are qualified provided the given basis:

1. The analytes 4-nitrophenol and phenol are qualified as estimates (*UJ*) in sample CDA-BNSF-ROW-DU3.1A-2-RB based on USEPA's National Functional Guidelines for Organics guidelines regarding the low percent recovery in the laboratory control samples (USEPA 2016b).
2. The analytes 3,3-dichlorobenzidine, hexachlorocyclopentadiene, n-nitrosodimethylamine, 2,4-dimethylphenol, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, 4-nitrophenol, and

pentachlorophenol are qualified as estimates (*UJ*) in samples CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A based on USEPA's National Functional Guidelines for Inorganics guidelines regarding the sample matrix interference in the matrix spike and matrix spike duplicate and the inability to calculate percent recoveries and relative percent differences (USEPA 2016a).

No analytes were rejected in any samples as part of this QA/QC review. Therefore, completeness for this sampling event is 100%, which meets the project data quality objective.

Based on ITRC ISM guidance, TerraGraphics recommends that for DU1.2 and DU3.1A, where replicate samples were collected, that the maximum concentration of an analyte be used if the RSD is less than 30% or that the Chebyshev 95% UCL of an analyte be used if the RSD is equal to or greater than 30%. The table below shows those analytes where a maximum concentration is used or where the 95% UCL will be used.

	When Analyte RSD <30%, Then Use Maximum Replicate Concentration	**When Analyte RSD ≥30%, Then Use Chebyshev 95% UCL**
DU1.2	anthracene, acenaphthylene, dibenz(a,h)anthracene, phenanthrene	benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, pyrene, and mercury
DU3.1A	anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene	chrysene and mercury

5 References

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TerraGraphics Environmental Engineering, Inc. (TerraGraphics), 2016. Final Quality Assurance Project Plan for BNSF ROW R2R, Coeur d'Alene, Idaho. Prepared for the Idaho Department of Environmental Quality Waste and Remediation Division. Revision #1, September 23.

U.S. Environmental Protection Agency (USEPA), 1992. Method 6010A: Inductively Coupled Plasma-Atomic Emission Spectroscopy. Revision 1, July.

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USEPA, 2016a. National Functional Guidelines for Inorganic Superfund Data Review, (ISM02.3) OLEM 9355.0-133, USEPA 540-R-2016-001; September.

USEPA, 2016b. National Functional Guidelines for Superfund Organic Methods Data Review, (SOM02.3), OLEM 9355.0-134, USEPA-540-R-2016-002; September.

Table 3. LCS of PAHs for the 2016 Sampling of the BNSF ROW R2R

LCS Percent Recovery

$$\%R = C_M / C_T \times 100\%$$

where: %R = percent recovery
C_M = Measured spike/LCS concentration
C_T = True spike/LCS concentration

				Percent Recovery			
PAHs	**USEPA Method**	**QAPP Low %**	**QAPP High %**	**Actual % WG916567**	**Actual % WG916688**	**Actual % WG916919**	**Actual % WG917280**
ANTHRACENE	USEPA 8270D-SIM	51.3	136	115	90.9	86.5	82.1
ACENAPHTHENE	USEPA 8270D-SIM	48.7	127	108	88.9	86.6	80.5
ACENAPHTHYLENE	USEPA 8270D-SIM	66.9	141	109	91.9	89.0	87.6
BENZO(A)ANTHRACENE	USEPA 8270D-SIM	55.0	126	99.3	92.1	89.2	95.6
BENZO(A)PYRENE	USEPA 8270D-SIM	51.9	127	112	89.1	86.2	82.1
BENZO(B)FLUORANTHENE	USEPA 8270D-SIM	54.0	125	103	88.9	89.8	83.2
BENZO(G,H,I)PERYLENE	USEPA 8270D-SIM	57.4	152	78.3	85.8	81.8	80.1
BENZO(K)FLUORANTHENE	USEPA 8270D-SIM	53.9	132	110	90.0	84.3	80.7
CHRYSENE	USEPA 8270D-SIM	55.7	133	113	92.9	89.4	101
DIBENZ(A,H)ANTHRACENE	USEPA 8270D-SIM	53.5	153	86.4	80.7	75.1	79.7
FLUORANTHENE	USEPA 8270D-SIM	54.0	132	127	101	96.6	81.6
FLUORENE	USEPA 8270D-SIM	48.7	127	98.3	88.8	86.5	82.0
INDENO(1,2,3-CD)PYRENE	USEPA 8270D-SIM	57.0	155	94.1	83.7	78.6	76.9
NAPHTHALENE	USEPA 8270D-SIM	66.7	135	99.2	86.1	83.6	81.3
PHENANTHRENE	USEPA 8270D-SIM	64.3	143	103	88.0	85.9	79.4
PYRENE	USEPA 8270D-SIM	54.0	129	129	101	101	104
1-METHYLNAPHTHALENE	USEPA 8270D-SIM	68.3	144	106	88.5	85.6	86.7
2-METHYLNAPHTHALENE	USEPA 8270D-SIM	67.6	143	105	89.0	86.3	87.9
2-CHLORONAPHTHALENE	USEPA 8270D-SIM	55.5	150	102	86.8	83.7	80.7

WG = Work Group

WG916567 = CDA-BNSF-ROW-DU3.1A-2-RB

WG916688 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A, CDA-BNSF-ROW-DU2.1B, CDA-BNSF-ROW-DU2.1C, CDA-BNSF-ROW-DU2.1A, CDA-BNSF-ROW-DU1.3B, CDA-BNSF-ROW-DU1.3A, CDA-BNSF-ROW-DU3.1C, CDA-BNSF-ROW-DU3.2C, CDA-BNSF-ROW-DU3.2B, CDA-BNSF-ROW-DU1.3C, CDA-BNSF-ROW-DU1.2-1, CDA-BNSF-ROW-DU3.1A-GB, CDA-BNSF-ROW-DU3.2A, CDA-BNSF-ROW-DU3.1B, CDA-BNSF-ROW-DU3.1B-GB, CDA-BNSF-ROW-DU1.2-2, CDA-BNSF-ROW-DU1.2-2-FD

WG916919 = CDA-BNSF-ROW-DU1.2-3, CDA-BNSF-ROW-DU1.1, CDA-BNSF-ROW-DU3.1A-1, CDA-BNSF-ROW-DU3.1A-2

WG917280 = CDA-BNSF-ROW-DU3.1A-3

Table 4. LCS of SVOCs for the 2016 Sampling of the BNSF ROW R2R

LCS Percent Recovery

$$\%R = C_M / C_T \times 100\%$$

where: %R = percent recovery
C_M = Measured spike/LCS concentration
C_T = True spike/LCS concentration

			Percent Recovery		
SVOCs	**USEPA Method**	**QAPP Low %**	**QAPP High %**	**Actual % WG916680**	**Actual % WG916690**
ACENAPHTHENE	USEPA 8270D	48.9	107	59.9	55.8
ACENAPHTHYLENE	USEPA 8270D	49.2	111	63.5	55.5
ANTHRACENE	USEPA 8270D	52.0	112	60.3	54.0
BENZIDINE	USEPA 8270D	0	48.0	0	18.5
BENZO(A)ANTHRACENE	USEPA 8270D	52.3	106	63.9	54.3
BENZO(B)FLUORANTHENE	USEPA 8270D	51.3	106	63.2	54.9
BENZO(K)FLUORANTHENE	USEPA 8270D	52.9	107	57.0	55.9
BENZO(G,H,I)PERYLENE	USEPA 8270D	45.8	108	60.8	56.8
BENZO(A)PYRENE	USEPA 8270D	51.9	106	61.3	55.5
BIS(2-CHLORETHOXY)METHANE	USEPA 8270D	44.9	108	56.4	49.3
BIS(2-CHLOROETHYL)ETHER	USEPA 8270D	32.5	112	49.3	43.0
BIS(2-CHLOROISOPROPYL)ETHER	USEPA 8270D	40.4	99.0	57.8	49.6
4-BROMOPHENYL-PHENYLETHER	USEPA 8270D	51.4	110	63.5	54.6
2-CHLORONAPHTHALENE	USEPA 8270D	47.1	105	57.5	52.0
4-CHLOROPHENYL-PHENYLETHER	USEPA 8270D	48.1	108	61.8	58.0
CHRYSENE	USEPA 8270D	54.4	110	66.9	57.3
DIBENZ(A,H)ANTHRACENE	USEPA 8270D	45.7	111	59.0	57.1
3,3-DICHLOROBENZIDINE	USEPA 8270D	21.0	101	53.0	49.8
2,4-DINITROTOLUENE	USEPA 8270D	53.0	112	66.2	62.0
2,6-DINITROTOLUENE	USEPA 8270D	51.6	110	61.8	53.7
FLUORANTHENE	USEPA 8270D	53.7	110	62.2	61.3
FLUORENE	USEPA 8270D	51.1	109	59.8	58.3
HEXACHLOROBENZENE	USEPA 8270D	43.2	104	64.5	55.5
HEXACHLORO-1,3-BUTADIENE	USEPA 8270D	41.5	112	61.7	52.3
HEXACHLOROCYCLOPENTADIENE	USEPA 8270D	13.5	123	74.6	56.1
HEXACHLOROETHANE	USEPA 8270D	36.2	103	47.9	45.2
INDENO(1,2,3-CD)PYRENE	USEPA 8270D	47.5	109	60.0	57.6
ISOPHORONE	USEPA 8270D	28.8	104	61.7	46.4
NAPHTHALENE	USEPA 8270D	43.4	103	56.4	51.2
NITROBENZENE	USEPA 8270D	40.7	109	56.3	44.2
N-NITROSODIMETHYLAMINE	USEPA 8270D	18.1	122	49.3	24.1
N-NITROSODIPHENYLAMINE	USEPA 8270D	48.8	107	55.5	52.6
N-NITROSODI-N-PROPYLAMINE	USEPA 8270D	43.3	109	57.6	44.1
PHENANTHRENE	USEPA 8270D	51.6	107	58.6	54.6
BENZYLBUTYL PHTHALATE	USEPA 8270D	47.5	115	56.8	48.7
BIS(2-ETHYLHEXYL)PHTHALATE	USEPA 8270D	48.1	116	56.4	49.5
DI-N-BUTYL PHTHALATE	USEPA 8270D	49.7	113	59.2	55.3
DIETHYL PHTHALATE	USEPA 8270D	52.0	112	62.6	57.4
DIMETHYL PHTHALATE	USEPA 8270D	51.4	108	60.2	55.5
DI-N-OCTYL PHTHALATE	USEPA 8270D	49.6	112	55.4	49.7
PYRENE	USEPA 8270D	47.1	108	58.8	52.9
1,2,4-TRICHLOROBENZENE	USEPA 8270D	39.8	100	58.7	49.2
4-CHLORO-3-METHYLPHENOL	USEPA 8270D	51.1	113	60.0	53.4
2-CHLOROPHENOL	USEPA 8270D	40.8	103	52.4	46.2
2,4-DICHLOROPHENOL	USEPA 8270D	46.2	109	61.8	52.1
2,4-DIMETHYLPHENOL	USEPA 8270D	42.2	110	52.6	48.7
4,6-DINITRO-2-METHYLPHENOL	USEPA 8270D	23.1	119	64.9	59.6
2,4-DINITROPHENOL	USEPA 8270D	10.0	105	45.2	48.7
2-NITROPHENOL	USEPA 8270D	44.2	113	62.8	52.9
4-NITROPHENOL	USEPA 8270D	34.8	109	59.6	**33.1**
PENTACHLOROPHENOL	USEPA 8270D	16.2	102	64.1	48.0
PHENOL	USEPA 8270D	41.5	106	52.5	**28.1**
2,4,6-TRICHLOROPHENOL	USEPA 8270D	44.4	108	63.8	54.9

Percent recoveries in **BOLD** are outside the acceptable QAPP range (TerraGraphics 2016).

WG = Work Group

WG916680 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A

WG916690 = CDA-BNSF-ROW-DU3.1A-2-RB

Table 5. LCS of RCRA 8 Metals for the 2016 Sampling of the BNSF ROW R2R

LCS Percent Recovery

$$\%R = C_M / C_T \times 100\%$$

where: %R = percent recovery
C_M = Measured spike/LCS concentration
C_T = True spike/LCS concentration

				Percent Recovery			
RCRA 8 Metals	**USEPA Method**	**QAPP Low %**	**QAPP High %**	**Actual % W643089**	**Actual % W644002**	**Actual % W643141**	**Actual % W644004**
ARSENIC	USEPA 6010C	80	120	97.9	99.9	107	106
BARIUM	USEPA 6010C	80	120	86.7	96.1	106	110
CADMIUM	USEPA 6010C	80	120	94.2	97.3	106	105
CHROMIUM	USEPA 6010C	80	120	98.7	103	107	114
LEAD	USEPA 6010C	80	120	91.0	94.7	105	107
SELENIUM	USEPA 6010C	80	120	88.2	92.0	106	100
SILVER	USEPA 6010C	80	120	84.8	93.7	94.3	109
				Actual % W644051	**Actual % W644051**	**Actual % W644021**	**Actual % W644052**
MERCURY	USEPA 7471B	80	120	96.4	96.4	103	94.0

W643089 and W644051 = CDA-BNSF-ROW-DU3.1A-GB and CDA-BNSF-ROW-DU3.1B-GB

W644002 and W644051 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A, CDA-BNSF-ROW-DU2.1B, CDA-BNSF-ROW-DU2.1C, CDA-BNSF-ROW-DU2.1A, CDA-BNSF-ROW-DU1.3B, CDA-BNSF-ROW-DU1.3A, CDA-BNSF-ROW-DU3.1C, CDA-BNSF-ROW-DU3.2C, CDA-BNSF-ROW-DU3.2B, CDA-BNSF-ROW-DU1.3C, CDA-BNSF-ROW-DU1.2-1, CDA-BNSF-ROW-DU3.2A

W643141 and W644021 = CDA-BNSF-ROW-DU2.1B-RB, CDA-BNSF-ROW-DU1.3A-RB, CDA-BNSF-ROW-DU1.2-1-RB, CDA-BNSF-ROW-DU3.1A-GB-RB, CDA-BNSF-ROW-DU3.1A-2-RB

W644004 and W644052 = CDA-BNSF-ROW-DU3.1B, CDA-BNSF-ROW-DU1.2-2, CDA-BNSF-ROW-DU1.2-2DUP, CDA-BNSF-ROW-DU1.2-2-FD, CDA-BNSF-ROW-DU1.2-3, CDA-BNSF-ROW-DU1.1, CDA-BNSF-ROW-DU3.1A-1, CDA-BNSF-ROW-DU3.1A-2, CDA-BNSF-ROW-DU3.1A-3

Table 6. MS of PAHs for the 2016 Sampling of the BNSF ROW R2R

MS and Surrogate Percent Recoveries

$$\%R = (C_S - C_{US}) / C_T \times 100\%$$

where:
- %R = percent recovery
- C_S = Measured concentration of Spiked Sample
- C_{US} = Measured concentration of Un-Spiked sample
- C_T = True concentration of Spike added

				Percent Recovery		
PAHs	**USEPA Method**	**QAPP Low %**	**QAPP High %**	**Actual % WG916567**	**Actual % WG916688**	**Actual % WG917280**
ANTHRACENE	USEPA 8270D-SIM	36.7	144	103	85.9	77.3
ACENAPHTHENE	USEPA 8270D-SIM	39.4	132	101	83.2	73.0
ACENAPHTHYLENE	USEPA 8270D-SIM	33.7	129	101	92.2	71.3
BENZO(A)ANTHRACENE	USEPA 8270D-SIM	28.0	144	98.6	135	92.1
BENZO(A)PYRENE	USEPA 8270D-SIM	23.8	147	104	89.9	75.4
BENZO(B)FLUORANTHENE	USEPA 8270D-SIM	18.2	147	99.4	103	70.6
BENZO(G,H,I)PERYLENE	USEPA 8270D-SIM	14.1	140	94.1	59.9	64.4
BENZO(K)FLUORANTHENE	USEPA 8270D-SIM	26.5	143	92.8	56.5	70.0
CHRYSENE	USEPA 8270D-SIM	27.4	150	104	101	88.3
DIBENZ(A,H)ANTHRACENE	USEPA 8270D-SIM	18.5	138	79.8	70.8	52.1
FLUORANTHENE	USEPA 8270D-SIM	23.2	158	114	72.1	99.3
FLUORENE	USEPA 8270D-SIM	30.8	139	89.9	91.2	67.6
INDENO(1,2,3-CD)PYRENE	USEPA 8270D-SIM	14.5	142	86.9	69.7	59.5
NAPHTHALENE	USEPA 8270D-SIM	29.2	128	98.7	80.2	74.6
PHENANTHRENE	USEPA 8270D-SIM	20.1	134	96.5	52.0	94.1
PYRENE	USEPA 8270D-SIM	22.6	151	120	86.0	117
1-METHYLNAPHTHALENE	USEPA 8270D-SIM	28.4	137	99.0	106	78.5
2-METHYLNAPHTHALENE	USEPA 8270D-SIM	26.6	137	28.6	126	73.6
2-CHLORONAPHTHALENE	USEPA 8270D-SIM	38.6	126	97.2	87.1	64.4

WG = Work Group

WG916567 = CDA-BNSF-ROW-DU3.1A-2-RB

WG916688 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A, CDA-BNSF-ROW-DU2.1B, CDA-BNSF-ROW-DU2.1C, CDA-BNSF-ROW-DU2.1A, CDA-BNSF-ROW-DU1.3B, CDA-BNSF-ROW-DU1.3A, CDA-BNSF-ROW-DU3.1C, CDA-BNSF-ROW-DU3.2C, CDA-BNSF-ROW-DU3.2B, CDA-BNSF-ROW-DU1.3C, CDA-BNSF-ROW-DU1.2-1, CDA-BNSF-ROW-DU3.1A-GB, CDA-BNSF-ROW-DU3.2A, CDA-BNSF-ROW-DU3.1B, CDA-BNSF-ROW-DU3.1B-GB, CDA-BNSF-ROW-DU1.2-2, CDA-BNSF-ROW-DU1.2-2-FD

WG916919 = CDA-BNSF-ROW-DU1.2-3, CDA-BNSF-ROW-DU1.1, CDA-BNSF-ROW-DU3.1A-1, CDA-BNSF-ROW-DU3.1A-2

WG917280 = CDA-BNSF-ROW-DU3.1A-3

Table 7. MS of SVOCs for the 2016 Sampling of the BNSF ROW R2R

MS and Surrogate Percent Recoveries

$$\%R = (C_S - C_{US})/C_T \times 100\%$$

where: %R = percent recovery
C_S = Measured concentration of Spiked Sample
C_{US} = Measured concentration of Un-Spiked sample
C_T = True concentration of Spike added

J = The sample matrix interfered with the ability to make any accurate determination

WG = Work Group

WG916680 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A

WG916690 = CDA-BNSF-ROW-DU3.1A-2-RB

		Percent Recovery		
SVOCs	**USEPA Method**	**QAPP Low %**	**QAPP High %**	**Actual % WG916680**
ACENAPHTHENE	USEPA 8270D	32.2	134	56.2
ACENAPHTHYLENE	USEPA 8270D	38.7	129	58.0
ANTHRACENE	USEPA 8270D	32.3	137	55.5
BENZIDINE	USEPA 8270D	0	49.9	0
BENZO(A)ANTHRACENE	USEPA 8270D	33.3	124	58.4
BENZO(B)FLUORANTHENE	USEPA 8270D	23.3	133	55.7
BENZO(K)FLUORANTHENE	USEPA 8270D	31.0	129	55.2
BENZO(G,H,I)PERYLENE	USEPA 8270D	10.0	127	39.2
BENZO(A)PYRENE	USEPA 8270D	28.2	128	52.2
BIS(2-CHLORETHOXY)METHANE	USEPA 8270D	35.0	132	52.7
BIS(2-CHLOROETHYL)ETHER	USEPA 8270D	28.8	128	42.5
BIS(2-CHLOROISOPROPYL)ETHER	USEPA 8270D	31.8	118	45.5
4-BROMOPHENYL-PHENYLETHER	USEPA 8270D	39.0	130	60.6
2-CHLORONAPHTHALENE	USEPA 8270D	37.5	123	55.4
4-CHLOROPHENYL-PHENYLETHER	USEPA 8270D	37.9	123	56.6
CHRYSENE	USEPA 8270D	36.3	129	60.4
DIBENZ(A,H)ANTHRACENE	USEPA 8270D	10.5	128	40.2
3,3-DICHLOROBENZIDINE	USEPA 8270D	10.0	129	0
2,4-DINITROTOLUENE	USEPA 8270D	27.8	147	56.0
2,6-DINITROTOLUENE	USEPA 8270D	36.5	137	55.3
FLUORANTHENE	USEPA 8270D	27.9	138	59.1
FLUORENE	USEPA 8270D	34.0	133	57.9
HEXACHLOROBENZENE	USEPA 8270D	34.4	116	59.0
HEXACHLORO-1,3-BUTADIENE	USEPA 8270D	36.5	125	57.7
HEXACHLOROCYCLOPENTADIENE	USEPA 8270D	10.0	124	0
HEXACHLOROETHANE	USEPA 8270D	11.3	143	37.0
INDENO(1,2,3-CD)PYRENE	USEPA 8270D	10.0	128	40.5
ISOPHORONE	USEPA 8270D	25.7	116	54.4
NAPHTHALENE	USEPA 8270D	36.4	121	57.2
NITROBENZENE	USEPA 8270D	30.9	134	52.4
N-NITROSODIMETHYLAMINE	USEPA 8270D	19.2	127	0
N-NITROSODIPHENYLAMINE	USEPA 8270D	26.8	133	50.0
N-NITROSODI-N-PROPYLAMINE	USEPA 8270D	33.0	134	49.5
PHENANTHRENE	USEPA 8270D	30.8	137	55.7
BENZYLBUTYL PHTHALATE	USEPA 8270D	33.4	128	47.9
BIS(2-ETHYLHEXYL)PHTHALATE	USEPA 8270D	21.8	141	51.9
DI-N-BUTYL PHTHALATE	USEPA 8270D	32.2	133	54.1
DIETHYL PHTHALATE	USEPA 8270D	39.4	136	55.7
DIMETHYL PHTHALATE	USEPA 8270D	35.8	137	57.7
DI-N-OCTYL PHTHALATE	USEPA 8270D	28.5	128	52.1

Table 7. MS of SVOCs for the 2016 Sampling of the BNSF ROW R2R

MS and Surrogate Percent Recoveries

$$\%R = (C_S - C_{US}) / C_T \times 100\%$$

where:
- %R = percent recovery
- C_S = Measured concentration of Spiked Sample
- C_{US} = Measured concentration of Un-Spiked sample
- C_T = True concentration of Spike added

J = The sample matrix interfered with the ability to make any accurate determination

WG = Work Group

WG916680 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A

WG916690 = CDA-BNSF-ROW-DU3.1A-2-RB

		Percent Recovery		
SVOCs	**USEPA Method**	**QAPP Low %**	**QAPP High %**	**Actual % WG916680**
PYRENE	USEPA 8270D	24.1	130	51.8
1,2,4-TRICHLOROBENZENE	USEPA 8270D	36.5	114	58.1
4-CHLORO-3-METHYLPHENOL	USEPA 8270D	27.0	154	55.6
2-CHLOROPHENOL	USEPA 8270D	33.2	121	45.6
2,4-DICHLOROPHENOL	USEPA 8270D	34.8	134	57.1
2,4-DIMETHYLPHENOL	USEPA 8270D	12.3	149	0
4,6-DINITRO-2-METHYLPHENOL	USEPA 8270D	10.0	144	0
2,4-DINITROPHENOL	USEPA 8270D	10.0	121	0
2-NITROPHENOL	USEPA 8270D	29.5	144	54.0
4-NITROPHENOL	USEPA 8270D	20.0	133	0
PENTACHLOROPHENOL	USEPA 8270D	10.0	139	0
PHENOL	USEPA 8270D	25.1	130	48.4
2,4,6-TRICHLOROPHENOL	USEPA 8270D	33.8	133	60.2

Table 8. MS of RCRA 8 Metals for the 2016 Sampling of the BNSF ROW R2R

MS and Surrogate Percent Recoveries

$$\%R = (C_S - C_{US})/C_T \times 100\%$$

where: %R = percent recovery
C_S = Measured concentration of Spiked Sample
C_{US} = Measured concentration of Un-Spiked sample
C_T = True concentration of Spike added

Percent Recovery

RCRA 8 Metals	USEPA Method	QAPP Low %	QAPP High %	Actual % W643089	Actual % W644002	Actual % W63141	Actual % W644004
ARSENIC	USEPA 6010C	75.0	125	102	103	108	101
BARIUM	USEPA 6010C	75.0	125	82.7	108	106	110
CADMIUM	USEPA 6010C	75.0	125	98.3	101	105	98.6
CHROMIUM	USEPA 6010C	75.0	125	101	105	106	104
LEAD	USEPA 6010C	75.0	125	97.7	90.2	104	94.3
SELENIUM	USEPA 6010C	75.0	125	91.5	95.2	106	94.7
SILVER	USEPA 6010C	75.0	125	89.8	96.6	95.6	103
				Actual % W644051	**Actual % W644051**	**Actual % W644021**	**Actual % W644052**
MERCURY	USEPA 7471B	80.0	120	91.5	91.5	101	90.5

W643089 and W644051 = CDA-BNSF-ROW-DU3.1A-GB and CDA-BNSF-ROW-DU3.1B-GB

W644002 and W644051 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A, CDA-BNSF-ROW-DU2.1B, CDA-BNSF-ROW-DU2.1C, CDA-BNSF-ROW-DU2.1A, CDA-BNSF-ROW-DU1.3B, CDA-BNSF-ROW-DU1.3A, CDA-BNSF-ROW-DU3.1C, CDA-BNSF-ROW-DU3.2C, CDA-BNSF-ROW-DU3.2B, CDA-BNSF-ROW-DU1.3C, CDA-BNSF-ROW-DU1.2-1, CDA-BNSF-ROW-DU3.2A

W643141 and W644021 = CDA-BNSF-ROW-DU2.1B-RB, CDA-BNSF-ROW-DU1.3A-RB, CDA-BNSF-ROW-DU1.2-1-RB, CDA-BNSF-ROW-DU3.1A-GB-RB, CDA-BNSF-ROW-DU3.1A-2-RB

W644004 and W644052 = CDA-BNSF-ROW-DU3.1B, CDA-BNSF-ROW-DU1.2-2, CDA-BNSF-ROW-DU1.2-2DUP, CDA-BNSF-ROW-DU1.2-2-FD, CDA-BNSF-ROW-DU1.2-3, CDA-BNSF-ROW-DU1.1, CDA-BNSF-ROW-DU3.1A-1, CDA-BNSF-ROW-DU3.1A-2, CDA-BNSF-ROW-DU3.1A-3

Table 9. LCSDs and MSDs of PAHs for the 2016 Sampling of the BNSF ROW R2R

$$RPD = \left| \frac{(C_1 - C_2)}{\left(\frac{(C_1 + C_2)}{2}\right)} \right| \times 100\%$$

where: RPD = relative percent difference

C_1 = concentration in the first sample

C_2 = concentration in the second/duplicate sample

Where both C_1 and $C_2 > 5$ times the laboratory Method Detection Limit (MDL).

Where one or both C_1 and C_2 are less than 5 times the MDL, the results will be considered within control limits where C_1 and C_2 are ± MDL.

			RPD							
PAHs	**USEPA Method**	**QAPP LCSD**	**Actual LCSD 916567**	**Actual LCSD 916688**	**Actual LCSD 916919**	**Actual LCSD 917280**	**QAPP MSD**	**Actual MSD 916567**	**Actual MSD 916567**	**Actual MSD 917280**
ANTHRACENE	USEPA 8270D-SIM	±20.0%	11.2%	1.1%	4.2%	4.6%	±20.7%	2.9%	7.4%	2.4%
ACENAPHTHENE	USEPA 8270D-SIM	±20.0%	1.0%	1.0%	4.7%	1.6%	±20.0%	4.3%	7.7%	9.8%
ACENAPHTHYLENE	USEPA 8270D-SIM	±20.0%	0.6%	1.5%	5.3%	2.8%	±20.0%	3.5%	6.4%	15.5%
BENZO(A)ANTHRACENE	USEPA 8270D-SIM	±20.0%	4.9%	1.8%	5.4%	3.1%	±24.7%	0.2%	8.5%	9.2%
BENZO(A)PYRENE	USEPA 8270D-SIM	±20.0%	0.2%	0.5%	1.5%	3.9%	±25.3%	3.5%	8.0%	6.8%
BENZO(B)FLUORANTHENE	USEPA 8270D-SIM	±20.0%	11.3%	2.7%	6.0%	0.3%	±29.5%	0.2%	10.0%	5.8%
BENZO(G,H,I)PERYLENE	USEPA 8270D-SIM	±20.0%	27.8%	1.8%	4.7%	2.1%	±20.0%	4.2%	7.9%	2.8%
BENZO(K)FLUORANTHENE	USEPA 8270D-SIM	±20.0%	8.8%	0.0%	3.2%	6.2%	±26.1%	5.7%	8.9%	0.6%
CHRYSENE	USEPA 8270D-SIM	±20.0%	2.8%	0.3%	5.6%	3.6%	±25.7%	2.5%	9.4%	7.2%
DIBENZ(A,H)ANTHRACENE	USEPA 8270D-SIM	±20.0%	5.8%	1.0%	5.4%	1.8%	±20.0%	4.1%	6.9%	13.0%
FLUORANTHENE	USEPA 8270D-SIM	±20.0%	9.9%	2.1%	4.8%	3.2%	±26.0%	1.5%	9.2%	19.4%
FLUORENE	USEPA 8270D-SIM	±20.0%	0.5%	0.9%	5.1%	2.9%	±20.0%	6.6%	9.2%	11.5%
INDENO(1,2,3-CD)PYRENE	USEPA 8270D-SIM	±20.0%	1.2%	2.3%	5.1%	3.1%	±20.0%	4.3%	8.0%	0.5%
NAPHTHALENE	USEPA 8270D-SIM	±20.0%	3.8%	0.5%	4.7%	3.3%	±20.0%	16.4%	7.7%	4.9%
PHENANTHRENE	USEPA 8270D-SIM	±20.0%	8.2%	1.2%	4.6%	2.0%	±20.0%	3.7%	10.2%	20.1%
PYRENE	USEPA 8270D-SIM	±20.0%	0.1%	1.8%	4.8%	3.6%	±25.1%	3.2%	7.5%	17.6%
1-METHYLNAPHTHALENE	USEPA 8270D-SIM	±20.0%	1.4%	1.4%	4.7%	4.0%	±20.0%	12.3%	9.5%	10.3%
2-METHYLNAPHTHALENE	USEPA 8270D-SIM	±20.0%	4.2%	2.0%	4.5%	3.4%	±20.0%	4.6%	8.7%	7.1%
2-CHLORONAPHTHALENE	USEPA 8270D-SIM	±20.0%	1.4%	0.0%	5.3%	3.0%	±20.0%	2.8%	10.0%	17.4%

WG = Work Group

WG916567 = CDA-BNSF-ROW-DU3.1A-2-RB

WG916688 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A, CDA-BNSF-ROW-DU2.1B, CDA-BNSF-ROW-DU2.1C, CDA-BNSF-ROW-DU2.1A, CDA-BNSF-ROW-DU1.3B, CDA-BNSF-ROW-DU1.3A, CDA-BNSF-ROW-DU3.1C, CDA-BNSF-ROW-DU3.2C, CDA-BNSF-ROW-DU3.2B, CDA-BNSF-ROW-DU1.3C, CDA-BNSF-ROW-DU1.2-1, CDA-BNSF-ROW-DU3.1A-GB, CDA-BNSF-ROW-DU3.2A, CDA-BNSF-ROW-DU3.1B, CDA-BNSF-ROW-DU3.1B-GB, CDA-BNSF-ROW-DU1.2-2, CDA-BNSF-ROW-DU1.2-2-FD

WG916919 = CDA-BNSF-ROW-DU1.2-3, CDA-BNSF-ROW-DU1.1, CDA-BNSF-ROW-DU3.1A-1, CDA-BNSF-ROW-DU3.1A-2

WG917280 = CDA-BNSF-ROW-DU3.1A-3

Table 10. LCSDs and MSDs of SVOCs for the 2016 Sampling of the BNSF ROW R2R

$$RPD = \left| \frac{(C_1 - C_2)}{\left(\frac{(C_1 + C_2)}{2}\right)} \right| \times 100\%$$

where: RPD = relative percent difference
C_1 = concentration in the first sample
C_2 = concentration in the second/duplicate sample

Where both C_1 and $C_2 > 5$ times the laboratory Method Detection Limit (MDL).

Where one or both C_1 and C_2 are less than 5 times the MDL, the results will be considered within control limits where C_1 and C_2 are ± MDL.

J = The sample matrix interfered with the ability to make any accurate determination; the spike value is low.

WG = Work Group

WG916680 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A

WG916690 = CDA-BNSF-ROW-DU3.1A-2-RB

				RPD			
SVOCs	**USEPA Method**	**QAPP LCSD**	**Actual LCSD WG916680**	**Actual LCSD WG916690**	**QAPP MSD**	**Actual MSD WG916680**	
ACENAPHTHENE	USEPA 8270D	±20.0%	7.3%	11.8%	±27.3%	8.3%	
ACENAPHTHYLENE	USEPA 8270D	±20.0%	8.3%	11.7%	±25.9%	5.7%	
ANTHRACENE	USEPA 8270D	±20.0%	3.9%	9.0%	±28.4%	9.0%	
BENZIDINE	USEPA 8270D	±40.0%	0.0%	23.4%	±40.0%	0.0%	
BENZO(A)ANTHRACENE	USEPA 8270D	±20.0%	2.9%	10.2%	±29.0%	7.2%	
BENZO(B)FLUORANTHENE	USEPA 8270D	±20.0%	0.2%	11.0%	±30.3%	4.7%	
BENZO(K)FLUORANTHENE	USEPA 8270D	±20.0%	10.1%	7.5%	±26.7%	3.6%	
BENZO(G,H,I)PERYLENE	USEPA 8270D	±20.0%	3.8%	8.8%	±31.9%	16.2%	
BENZO(A)PYRENE	USEPA 8270D	±20.0%	3.2%	9.6%	±28.4%	0.7%	
BIS(2-CHLORETHOXY)METHANE	USEPA 8270D	±20.0%	6.2%	14.1%	±26.1%	8.9%	
BIS(2-CHLOROETHYL)ETHER	USEPA 8270D	±26.0%	8.5%	12.0%	±33.6%	1.4%	
BIS(2-CHLOROISOPROPYL)ETHER	USEPA 8270D	±20.7%	5.7%	14.2%	±31.7%	5.6%	
4-BROMOPHENYL-PHENYLETHER	USEPA 8270D	±20.0%	5.8%	7.3%	±26.0%	10.9%	
2-CHLORONAPHTHALENE	USEPA 8270D	±20.0%	8.6%	12.3%	±26.5%	7.1%	
4-CHLOROPHENYL-PHENYLETHER	USEPA 8270D	±20.0%	9.2%	11.8%	±25.9%	3.1%	
CHRYSENE	USEPA 8270D	±20.0%	3.5%	10.3%	±28.0%	5.0%	
DIBENZ(A,H)ANTHRACENE	USEPA 8270D	±20.0%	5.8%	9.6%	±29.5%	6.6%	
3,3-DICHLOROBENZIDINE	USEPA 8270D	±22.0%	1.2%	7.0%	±40.0%	0.0%	UJ
2,4-DINITROTOLUENE	USEPA 8270D	±20.0%	8.7%	9.3%	±29.7%	14.5%	
2,6-DINITROTOLUENE	USEPA 8270D	±20.0%	12.0%	9.8%	±29.7%	6.3%	
FLUORANTHENE	USEPA 8270D	±20.0%	3.4%	6.2%	±26.9%	9.8%	
FLUORENE	USEPA 8270D	±20.0%	7.4%	11.1%	±27.1%	10.0%	
HEXACHLOROBENZENE	USEPA 8270D	±20.1%	4.6%	8.1%	±25.4%	6.8%	
HEXACHLORO-1,3-BUTADIENE	USEPA 8270D	±20.0%	3.0%	14.4%	±29.7%	3.1%	
HEXACHLOROCYCLOPENTADIENE	USEPA 8270D	±20.7%	9.9%	14.1%	±37.5%	0.0%	UJ
HEXACHLOROETHANE	USEPA 8270D	±22.7%	8.9%	13.9%	±31.9%	5.5%	
INDENO(1,2,3-CD)PYRENE	USEPA 8270D	±20.0%	4.4%	8.6%	±31.5%	9.9%	
ISOPHORONE	USEPA 8270D	±20.0%	6.2%	14.3%	±27.7%	3.4%	
NAPHTHALENE	USEPA 8270D	±20.0%	3.6%	15.1%	±27.2%	4.7%	
NITROBENZENE	USEPA 8270D	±21.0%	6.4%	14.7%	±27.8%	4.7%	
N-NITROSODIMETHYLAMINE	USEPA 8270D	±23.5%	9.1%	11.6%	±32.0%	0.0%	UJ
N-NITROSODIPHENYLAMINE	USEPA 8270D	±20.0%	3.0%	12.4%	±25.9%	6.3%	
N-NITROSODI-N-PROPYLAMINE	USEPA 8270D	±20.0%	8.4%	11.0%	±28.2%	8.6%	
PHENANTHRENE	USEPA 8270D	±20.0%	5.4%	8.7%	±26.5%	7.3%	
BENZYLBUTYL PHTHALATE	USEPA 8270D	±20.0%	3.5%	9.6%	±28.5%	1.7%	
BIS(2-ETHYLHEXYL)PHTHALATE	USEPA 8270D	±20.5%	1.5%	11.9%	±35.2%	10.6%	
DI-N-BUTYL PHTHALATE	USEPA 8270D	±20.0%	5.0%	7.0%	±25.9%	10.6%	
DIETHYL PHTHALATE	USEPA 8270D	±20.0%	6.0%	6.6%	±25.5%	9.5%	
DIMETHYL PHTHALATE	USEPA 8270D	±20.0%	8.6%	10.4%	±25.4%	12.2%	
DI-N-OCTYL PHTHALATE	USEPA 8270D	±22.0%	3.6%	10.9%	±32.5%	13.6%	
PYRENE	USEPA 8270D	±20.0%	3.0%	11.4%	±29.9%	8.3%	
1,2,4-TRICHLOROBENZENE	USEPA 8270D	±20.0%	6.2%	16.2%	±28.4%	8.9%	
4-CHLORO-3-METHYLPHENOL	USEPA 8270D	±20.0%	5.1%	13.9%	±26.6%	9.9%	
2-CHLOROPHENOL	USEPA 8270D	±20.0%	6.3%	13.7%	±29.3%	0.1%	
2,4-DICHLOROPHENOL	USEPA 8270D	±20.0%	5.4%	14.6%	±27.3%	4.7%	
2,4-DIMETHYLPHENOL	USEPA 8270D	±20.0%	5.2%	14.5%	±32.3%	0.0%	UJ
4,6-DINITRO-2-METHYLPHENOL	USEPA 8270D	±23.7%	1.1%	8.7%	±32.7%	0.0%	UJ
2,4-DINITROPHENOL	USEPA 8270D	±36.5%	13.8%	5.5%	±39.4%	0.0%	UJ
2-NITROPHENOL	USEPA 8270D	±20.9%	5.4%	15.1%	±29.9%	1.1%	
4-NITROPHENOL	USEPA 8270D	±20.0%	6.4%	6.6%	±30.2%	0.0%	UJ
PENTACHLOROPHENOL	USEPA 8270D	±22.9%	0.3%	11.9%	±28.3%	0.0%	UJ
PHENOL	USEPA 8270D	±20.0%	9.0%	12.0%	±29.6%	10.0%	
2,4,6-TRICHLOROPHENOL	USEPA 8270D	±20.0%	9.2%	11.8%	±28.1%	11.2%	

Table 11. LCSDs and MSDs of SVOCs for the 2016 Sampling of the BNSF ROW R2R

$$RPD = \left| \frac{(C_1 - C_2)}{\left(\frac{(C_1 + C_2)}{2}\right)} \right| \times 100\%$$

where: RPD = relative percent difference

C_1 = concentration in the first sample

C_2 = concentration in the second/duplicate sample

Where both C_1 and $C_2 > 5$ times the laboratory Method Detection Limit (MDL).

Where one or both C_1 and C_2 are less than 5 times the MDL, the results will be considered within control limits where C_1 and C_2 are ± MDL.

RCRA 8 Metals	USEPA Method	QAPP MSD	Actual MSD W643089	Actual MSD W644002	Actual MSD W643141	Actual MSD W644004
ARSENIC	USEPA 6010C	±20.0%	2.6%	1.0%	2.2%	4.4%
BARIUM	USEPA 6010C	±20.0%	4.4%	3.0%	1.5%	5.4%
CADMIUM	USEPA 6010C	±20.0%	1.8%	1.0%	1.6%	3.1%
CHROMIUM	USEPA 6010C	±20.0%	0.8%	0.4%	1.5%	3.9%
LEAD	USEPA 6010C	±20.0%	10.1%	1.0%	1.4%	2.7%
SELENIUM	USEPA 6010C	±20.0%	2.3%	1.1%	1.5%	3.8%
SILVER	USEPA 6010C	±20.0%	2.5%	0.3%	1.8%	3.5%
			Actual MSD W644051	**Actual MSD W644051**	**Actual MSD W644021**	**Actual MSD W644052**
MERCURY	USEPA 7471B	±20.0%	2.4%	2.4%	10.5%	4.9%

W643089 and W644051 = CDA-BNSF-ROW-DU3.1A-GB and CDA-BNSF-ROW-DU3.1B-GB

W644002 and W644051 = CDA-BNSF-ROW-DU2.2B, CDA-BNSF-ROW-DU2.2B-FD, CDA-BNSF-ROW-DU2.2C, CDA-BNSF-ROW-DU2.2A, CDA-BNSF-ROW-DU2.1B, CDA-BNSF-ROW-DU2.1C, CDA-BNSF-ROW-DU2.1A, CDA-BNSF-ROW-DU1.3B, CDA-BNSF-ROW-DU1.3A, CDA-BNSF-ROW-DU3.1C, CDA-BNSF-ROW-DU3.2C, CDA-BNSF-ROW-DU3.2B, CDA-BNSF-ROW-DU1.3C, CDA-BNSF-ROW-DU1.2-1, CDA-BNSF-ROW-DU3.2A

W643141 and W644021 = CDA-BNSF-ROW-DU2.1B-RB, CDA-BNSF-ROW-DU1.3A-RB, CDA-BNSF-ROW-DU1.2-1-RB, CDA-BNSF-ROW-DU3.1A-GB-RB, CDA-BNSF-ROW-DU3.1A-2-RB

W644004 and W644052 = CDA-BNSF-ROW-DU3.1B, CDA-BNSF-ROW-DU1.2-2, CDA-BNSF-ROW-DU1.2-2DUP, CDA-BNSF-ROW-DU1.2-2-FD, CDA-BNSF-ROW-DU1.2-3, CDA-BNSF-ROW-DU1.1, CDA-BNSF-ROW-DU3.1A-1, CDA-BNSF-ROW-DU3.1A-2, CDA-BNSF-ROW-DU3.1A-3

Table 12. Rinsate Blanks for the 2016 Sampling of the BNSF ROW R2R

Notes:

< = Concentration was not detected above the laboratory reported detection limit.

mg/L = milligrams per liter

UJ = Result is an estimate based on a low laboratory control sample percent recovery.

Sample ID	Sample Date	Analyte	Concentration (mg/L)	Lab
CDA-BNSF-ROW-DU2.1B-RB	10/3/2016	Anthracene	<0.0000500	ESC
		Acenaphthene	<0.0000500	
		Acenaphthylene	<0.0000500	
		Benzo(a)anthracene	<0.0000500	
		Benzo(a)pyrene	<0.0000500	
		Benzo(b)fluoranthene	<0.0000500	
		Benzo(g,h,i)perylene	<0.0000500	
		Benzo(k)fluoranthene	<0.0000500	
		Chrysene	<0.0000500	
		Dibenz(a,h)anthracene	<0.0000500	
		Fluoranthene	<0.0000500	
		Fluorene	<0.0000500	
		Indeno(1,2,3-cd)pyrene	<0.0000500	
		Naphthalene	<0.000250	
		Phenanthrene	<0.0000500	
		Pyrene	<0.0000500	
		1-Methylnaphthalene	<0.000250	
		2-Methylnaphthalene	<0.000250	
		2-Chloronaphthalene	<0.000250	
CDA-BNSF-ROW-DU1.3A-RB	10/4/2016	Anthracene	<0.0000500	ESC
		Acenaphthene	<0.0000500	
		Acenaphthylene	<0.0000500	
		Benzo(a)anthracene	<0.0000500	
		Benzo(a)pyrene	<0.0000500	
		Benzo(b)fluoranthene	<0.0000500	
		Benzo(g,h,i)perylene	<0.0000500	
		Benzo(k)fluoranthene	<0.0000500	
		Chrysene	<0.0000500	
		Dibenz(a,h)anthracene	<0.0000500	
		Fluoranthene	<0.0000500	
		Fluorene	<0.0000500	
		Indeno(1,2,3-cd)pyrene	<0.0000500	
		Naphthalene	<0.000250	
		Phenanthrene	<0.0000500	
		Pyrene	<0.0000500	
		1-Methylnaphthalene	<0.000250	
		2-Methylnaphthalene	<0.000250	
		2-Chloronaphthalene	<0.000250	

Table 12. Rinsate Blanks for the 2016 Sampling of the BNSF ROW R2R

Notes:

< = Concentration was not detected above the laboratory reported detection limit.

mg/L = milligrams per liter

UJ = Result is an estimate based on a low laboratory control sample percent recovery.

Sample ID	Sample Date	Analyte	Concentration (mg/L)	Lab
CDA-BNSF-ROW-DU1.2-R1-RB	10/5/2016	Anthracene	<0.0000500	ESC
		Acenaphthene	<0.0000500	
		Acenaphthylene	<0.0000500	
		Benzo(a)anthracene	<0.0000500	
		Benzo(a)pyrene	<0.0000500	
		Benzo(b)fluoranthene	<0.0000500	
		Benzo(g,h,i)perylene	<0.0000500	
		Benzo(k)fluoranthene	<0.0000500	
		Chrysene	<0.0000500	
		Dibenz(a,h)anthracene	<0.0000500	
		Fluoranthene	<0.0000500	
		Fluorene	<0.0000500	
		Indeno(1,2,3-cd)pyrene	<0.0000500	
		Naphthalene	<0.000250	
		Phenanthrene	<0.0000500	
		Pyrene	<0.0000500	
		1-Methylnaphthalene	<0.000250	
		2-Methylnaphthalene	<0.000250	
		2-Chloronaphthalene	<0.000250	
CDA-BNSF-ROW-DU3.1A-GB-RB	10/6/2016	Anthracene	<0.0000500	ESC
		Acenaphthene	<0.0000500	
		Acenaphthylene	<0.0000500	
		Benzo(a)anthracene	<0.0000500	
		Benzo(a)pyrene	<0.0000500	
		Benzo(b)fluoranthene	<0.0000500	
		Benzo(g,h,i)perylene	<0.0000500	
		Benzo(k)fluoranthene	<0.0000500	
		Chrysene	<0.0000500	
		Dibenz(a,h)anthracene	<0.0000500	
		Fluoranthene	<0.0000500	
		Fluorene	<0.0000500	
		Indeno(1,2,3-cd)pyrene	<0.0000500	
		Naphthalene	<0.000250	
		Phenanthrene	<0.0000500	
		Pyrene	<0.0000500	
		1-Methylnaphthalene	<0.000250	
		2-Methylnaphthalene	<0.000250	
		2-Chloronaphthalene	<0.000250	

Table 12. Rinsate Blanks for the 2016 Sampling of the BNSF ROW R2R

Notes:

< = Concentration was not detected above the laboratory reported detection limit.

mg/L = milligrams per liter

UJ = Result is an estimate based on a low laboratory control sample percent recovery.

Sample ID	Sample Date	Analyte	Concentration (mg/L)		Lab
CDA-BNSF-ROW-DU3.1A-2-RB	10/10/2016	Anthracene	<0.00100		ESC
		Acenaphthene	<0.00100		
		Acenaphthylene	<0.00100		
		Benzadine	<0.0100		
		Benzo(a)anthracene	<0.00100		
		Benzo(b)fluoranthene	<0.00100		
		Benzo(k)fluoranthene	<0.00100		
		Benzo(g,h,i)perylene	<0.00100		
		Benzo(a)pyrene	<0.00100		
		Bis(2-chloroethyoxy)methane	<0.0100		
		Bis(2-chloroethyl)ether	<0.0100		
		Bis(2-chloroisopropyl)ether	<0.0100		
		4-Bromophenyl-phenylether	<0.0100		
		2-Chloronaphthalene	<0.00100		
		4-Chlorophenyl-phenylether	<0.0100		
		Chrysene	<0.00100		
		Dibenz(a,h)anthracene	<0.00100		
		3,3-Dichlorobenzidine	<0.0100		
		2,4-Dinitrotoluene	<0.0100		
		2,6-Dinitrotoluene	<0.0100		
		Fluoranthene	<0.00100		
		Fluorene	<0.00100		
		Hexachlorobenzene	<0.00100		
		Hexachloro-1,3-butadiene	<0.0100		
		Hexachlorocyclopentadiene	<0.0100		
		Hexachloroethane	<0.0100		
		Indeno(1,2,3-cd)pyrene	<0.00100		
		Isophorone	<0.0100		
		Naphthalene	<0.00100		
		Nitrobenzene	<0.0100		
		n-Nitrosodimethylamine	<0.0100		
		n-Nitrosodiphenylamine	<0.0100		
		n-Nitrosodi-n-propylamine	<0.0100		
		Phenanthrene	<0.00100		
		Benzylbutyl phthalate	<0.00300		
		Bis(2-ethylhexyl)phthalate	<0.00300		
		Di-n-butyl phthalate	<0.00300		
		Diethyl phthalate	<0.00300		
		Dimethyl phthalate	<0.00300		
		Di-n-octyl phthalate	<0.00300		
		Pyrene	<0.00100		
		1,2,4-Trichlorobenzene	<0.0100		
		4-Chloro-3-methylphenol	<0.0100		
		2-Chlrophenol	<0.0100		
		2,4-Dichlorophenol	<0.0100		
		2,4-Dimethylphenol	<0.0100		
		4,6-Dinitro-2-methylphenol	<0.0100		
		2,4-Dinitrophenol	<0.0100		
		2-Nitrophenol	<0.0100		
		4-Nitrophenol	<0.0100	UJ	
		Pentachlorophenol	<0.0100		
		Phenol	<0.0100	UJ	
		2,4,6-Trichlorophenol	<0.0100		

Table 12. Rinsate Blanks for the 2016 Sampling of the BNSF ROW R2R

Notes:

< = Concentration was not detected above the laboratory reported detection limit.

mg/L = milligrams per liter

UJ = Result is an estimate based on a low laboratory control sample percent recovery.

Sample ID	Sample Date	Analyte	Concentration (mg/L)	Lab
CDA-BNSF-ROW-DU2.1B-RB	10/3/2016	Arsenic	<0.025	SVL
		Barium	<0.0020	
		Cadmium	<0.0020	
		Chromium	<0.0060	
		Lead	<0.0075	
		Mercury	<0.00020	
		Selenium	<0.040	
		Silver	<0.0050	
CDA-BNSF-ROW-DU1.3A-RB	10/4/2016	Arsenic	<0.025	SVL
		Barium	<0.0020	
		Cadmium	<0.0020	
		Chromium	<0.0060	
		Lead	**0.0512**	
		Mercury	<0.00020	
		Selenium	<0.040	
		Silver	<0.0050	
CDA-BNSF-ROW-DU1.2-1-RB	10/5/2016	Arsenic	<0.025	SVL
		Barium	<0.0020	
		Cadmium	<0.0020	
		Chromium	<0.0060	
		Lead	<0.0075	
		Mercury	<0.00020	
		Selenium	<0.040	
		Silver	<0.0050	
CDA-BNSF-ROW-DU3.1A-GB-RB	10/6/2016	Arsenic	<0.025	SVL
		Barium	<0.0020	
		Cadmium	<0.0020	
		Chromium	<0.0060	
		Lead	<0.0075	
		Mercury	<0.00020	
		Selenium	<0.040	
		Silver	<0.0050	
CDA-BNSF-ROW-DU3.1A-2-RB	10/10/2016	Arsenic	<0.025	SVL
		Barium	<0.0020	
		Cadmium	<0.0020	
		Chromium	<0.0060	
		Lead	<0.0075	
		Mercury	<0.00020	
		Selenium	<0.040	
		Silver	<0.0050	

Table 13. Soil Field Duplicate for the 2016 Sampling of the BNSF ROW R2R

Relative Percent Difference (RPD) = (|X1-X2|/((X1+X2)/2)))*100

X1 = Original Concentration

X2 = Duplicate Concentration

NA = RPD cannot be calculated because one or more of the results are not detected.

mg/kg milligrams per kilogram

< = Concentration was not detected above the laboratory reporting limit.

UJ = Concentration is an estimate based on poor laboratory control sample percent recovery.

Sample ID	Sample Date	Method	Analyte	Original Concentration (mg/kg)	Duplicate Concentration (mg/kg)	RPD	Lab
CDA-BNSF-ROW-DU1.2-2	10/6/2016	8270D-SIM	Anthracene	<0.0120	<0.0120	NA	ESC
			Acenaphthene	<0.0120	<0.0120	NA	
			Acenaphthylene	<0.0120	<0.0120	NA	
			Benzo(a)anthracene	0.0153	0.0178	15.1%	
			Benzo(a)pyrene	0.0217	0.0215	0.9%	
			Benzo(b)fluoranthene	0.0419	0.0484	14.4%	
			Benzo(g,h,i)perylene	0.0213	0.0252	16.8%	
			Benzo(k)fluoranthene	0.0124	0.0128	3.2%	
			Chrysene	0.0333	0.0383	14.0%	
			Dibenz(a,h)anthracene	<0.0120	<0.0120	NA	
			Fluoranthene	0.0348	0.0377	8.0%	
			Fluorene	<0.0120	<0.0120	NA	
			Indeno(1,2,3-cd)pyrene	0.0149	0.0170	13.2%	
			Naphthalene	<0.0400	<0.0400	NA	
			Phenanthrene	<0.0120	<0.0120	NA	
			Pyrene	0.0379	0.0391	3.1%	
			1-Methylnaphthalene	<0.0400	<0.0400	NA	
			2-Methylnaphthalene	<0.0400	<0.0400	NA	
			2-Chloronaphthalene	<0.0400	<0.0400	NA	
CDA-BNSF-ROW-DU1.2-2	10/6/2016	6010C	Arsenic	18.6	18.2	2.2%	SVL
			Barium	187	182	2.7%	
			Cadmium	0.32	0.29	9.8%	
			Chromium	26.9	23.2	14.8%	
			Lead	35.4	36.1	2.0%	
			Selenium	<4.0	<4.0	NA	
			Silver	<0.50	<0.50	NA	
			Mercury	0.713	0.91	24.3%	

Table 13. Soil Field Duplicate for the 2016 Sampling of the BNSF ROW R2R

Relative Percent Difference (RPD) = (|X1-X2|/((X1+X2)/2)))*100

X1 = Original Concentration

X2 = Duplicate Concentration

NA = RPD cannot be calculated because one or more of the results are not detected.

mg/kg milligrams per kilogram

< = Concentration was not detected above the laboratory reporting limit.

UJ = Concentration is an estimate based on poor laboratory control sample percent recovery.

Sample ID	Sample Date	Method	Analyte	Original Concentration (mg/kg)		Duplicate Concentration (mg/kg)		RPD	Lab
CDA-BNSF-ROW-DU2.2B	10/3/2016	8270D	acenaphthene	<0.660		<0.660		NA	ESC
			acenaphthylene	<0.660		<0.660		NA	
			anthracene	<0.660		<0.660		NA	
			benzidine	<6.66		<6.66		NA	
			benzo(a)anthracene	<0.660		<0.660		NA	
			benzo(b)fluoranthene	<0.660		0.682		NA	
			benzo(k)fluoranthene	<0.660		<0.660		NA	
			benzo(g,h,i)perylene	<0.660		<0.660		NA	
			benzo(a)pyrene	<0.660		<0.660		NA	
			bis(2-chlorethoxy)methane	<6.66		<6.66		NA	
			bis(2-chloroethyl)ether	<6.66		<6.66		NA	
			bis(2-chloroisopropyl)ether	<6.66		<6.66		NA	
			4-bromophenyl-phenylether	<6.66		<6.66		NA	
			2-chloronaphthalene	<0.660		<0.660		NA	
			4-chlorophenyl-phenylether	<6.66		<6.66		NA	
			chrysene	<0.660		<0.660		NA	
			dibenz(a,h)anthracene	<0.660		<0.660		NA	
			3,3-dichlorobenzidine	<6.66	UJ	<6.66	UJ	NA	
			2,4-dinitrotoluene	<6.66		<6.66		NA	
			2,6-dinitrotoluene	<6.66		<6.66		NA	
			fluoranthene	<0.660		<0.660		NA	
			fluorene	<0.660		<0.660		NA	
			hexachlorobenzene	<6.66		<6.66		NA	
			hexachloro-1,3-butadiene	<6.66		<6.66		NA	
			hexachlorocyclopentadiene	<6.66	UJ	<6.66	UJ	NA	
			hexachloroethane	<6.66		<6.66		NA	
			indeno(1,2,3-cd)pyrene	<0.660		<0.660		NA	
			isophorone	<6.66		<6.66		NA	
			naphthalene	<0.660		<0.660		NA	
			nitrobenzene	<6.66		<6.66		NA	
			n-nitrosodimethylamine	<6.66	UJ	<6.66	UJ	NA	
			n-nitrosodiphenylamine	<6.66		<6.66		NA	
			n-nitrosodi-n-propylamine	<6.66		<6.66		NA	
			phenanthrene	<0.660		<0.660		NA	
			benzylbutyl phthalate	<6.66		<6.66		NA	
			bis(2-ethylhexyl)phthalate	<6.66		<6.66		NA	
			di-n-butyl phthalate	<6.66		<6.66		NA	
			diethyl phthalate	<6.66		<6.66		NA	
			dimethyl phthalate	<6.66		<6.66		NA	
			di-n-octyl phthalate	<6.66		<6.66		NA	
			pyrene	<0.660		<0.660		NA	
			1,2,4-trichlorobenzene	<6.66		<6.66		NA	
			4-chloro-3-methylphenol	<6.66		<6.66		NA	
			2-chlorophenol	<6.66		<6.66		NA	
			2,4-dichlorophenol	<6.66		<6.66		NA	
			2,4-dimethylphenol	<6.66	UJ	<6.66	UJ	NA	
			4,6-dinitro-2-methylphenol	<6.66	UJ	<6.66	UJ	NA	
			2,4-dinitrophenol	<6.66	UJ	<6.66	UJ	NA	
			2-nitrophenol	<6.66		<6.66		NA	
			4-nitrophenol	<6.66	UJ	<6.66	UJ	NA	
			pentachlorophenol	<6.66	UJ	<6.66	UJ	NA	
			phenol	<6.66		<6.66		NA	
			2,4,6-trichlorophenol	<6.66		<6.66		NA	

Table 13. Soil Field Duplicate for the 2016 Sampling of the BNSF ROW R2R

Relative Percent Difference (RPD) = (|X1-X2|/((X1+X2)/2)))*100

X1 = Original Concentration

X2 = Duplicate Concentration

NA = RPD cannot be calculated because one or more of the results are not detected.

mg/kg milligrams per kilogram

< = Concentration was not detected above the laboratory reporting limit.

UJ = Concentration is an estimate based on poor laboratory control sample percent recovery.

Sample ID	Sample Date	Method	Analyte	Original Concentration (mg/kg)	Duplicate Concentration (mg/kg)	RPD	Lab
CDA-BNSF-ROW-DU2.2B	10/3/2016	8270D-SIM	Anthracene	0.349	0.331	5.3%	ESC
			Acenaphthene	<0.0600	<0.0600	NA	
			Acenaphthylene	0.298	0.286	4.1%	
			Benzo(a)anthracene	0.520	0.420	21.3%	
			Benzo(a)pyrene	0.606	0.562	7.5%	
			Benzo(b)fluoranthene	0.942	0.882	6.6%	
			Benzo(g,h,i)perylene	0.651	0.604	7.5%	
			Benzo(k)fluoranthene	0.288	0.272	5.7%	
			Chrysene	0.679	0.593	13.5%	
			Dibenz(a,h)anthracene	0.126	0.118	6.6%	
			Fluoranthene	0.938	0.766	20.2%	
			Fluorene	<0.0600	<0.0600	NA	
			Indeno(1,2,3-cd)pyrene	0.420	0.386	8.4%	
			Naphthalene	<0.200	<0.200	NA	
			Phenanthrene	0.133	0.145	8.6%	
			Pyrene	1.01	0.852	17.0%	
			1-Methylnaphthalene	<0.200	<0.200	NA	
			2-Methylnaphthalene	<0.200	<0.200	NA	
			2-Chloronaphthalene	<0.200	<0.200	NA	
CDA-BNSF-ROW-DU2.2B	10/3/2016	6010C	Arsenic	14.4	14.5	0.7%	SVL
			Barium	190	186	2.1%	
			Cadmium	0.39	0.4	2.5%	
			Chromium	20.2	20.5	1.5%	
			Lead	36.4	32.2	12.2%	
			Selenium	<4.0	<4.0	NA	
			Silver	<0.50	<0.50	NA	
			Mercury	0.193	0.192	0.5%	
Lab Duplicate - WG916301	10/12/2016	2540 G-2011	Total Solids	80.8	80.5	0.372%	ESC
Lab Duplicate - WG916302	10/12/2016	2540 G-2011	Total Solids	90.3	90.4	0.111%	ESC
Lab Duplicate - WG916302	10/12/2016	2540 G-2011	Total Solids	88.4	87.9	0.567%	ESC
Lab Duplicate - W643091	10/26/2016	Percent Solids	Percent Solids	88.0	88.5	0.567%	SVL
Lab Duplicate - W64403	10/26/2016	Percent Solids	Percent Solids	99.4	99.4	0.00%	SVL
Lab Duplicate - W64405	10/25/2016	Percent Solids	Percent Solids	99.4	100	0.60%	SVL

Table 14. Soil PAH (8270D-SIM) Field Replicate Relative Standard Deviation for the 2016 Sampling of the BNSF ROW R2R

Sample ID	anthracene	acenaphthene	acenaphthylene	benzo(a)anthracene	benzo(a)pyrene	benzo(b)fluoranthene	benzo(g,h,i)perylene	benzo(k)fluoranthene	chrysene	dibenz(a,h)anthracene	fluoranthene	fluorene	indeno(1,2,3-cd)pyrene	naphthalene	phenanthrene	pyrene	1-Methylnaphthalene	2-Methylnaphthalene	2-Chloronaphthalene
CDA-BNSF-ROW-DU1.2-1	0.0211	<0.00600	0.0198	0.0831	0.0809	0.141	0.0758	0.0440	0.123	0.0170	0.158	<0.00600	0.0568	<0.0200	0.0218	0.171	<0.0200	<0.0200	<0.0200
CDA-BNSF-ROW-DU1.2-2	<0.0120	<0.0120	<0.0120	0.0153	0.0217	0.0419	0.0213	0.0124	0.0333	<0.0120	0.0348	<0.0120	0.0149	<0.0400	<0.0120	0.0379	<0.0400	<0.0400	<0.0400
CDA-BNSF-ROW-DU1.2-2-FD	<0.0120	<0.0120	<0.0120	0.0178	0.0215	0.0484	0.0252	0.0128	0.0383	<0.0120	0.0377	<0.0120	0.0170	<0.0400	<0.0120	0.0391	<0.0400	<0.0400	<0.0400
Mean	NA	NA	NA	0.0387	0.0414	0.0771	0.0408	0.0231	0.0649	NA	0.0768	NA	0.0296	NA	NA	0.0827	NA	NA	NA
Standard Deviation	NA	NA	NA	0.0384	0.0342	0.0554	0.0304	0.0181	0.0504	NA	0.0703	NA	0.0236	NA	NA	0.0765	NA	NA	NA
RSD	NA	NA	NA	**99%**	**83%**	**72%**	**75%**	**79%**	**78%**	NA	**92%**	NA	**80%**	NA	NA	**93%**	NA	NA	NA
CDA-BNSF-ROW-DU3.1A-1	0.0125	<0.0120	<0.0120	0.0164	0.0195	0.0417	0.0217	<0.0120	0.0190	<0.0120	0.0439	<0.0120	0.0151	<0.0400	0.0198	0.0367	<0.0400	<0.0400	<0.0400
CDA-BNSF-ROW-DU3.1A-2	<0.0120	<0.0120	<0.0120	0.0129	0.0159	0.0305	0.0188	<0.0120	0.0170	<0.0120	0.0314	<0.0100	<0.0120	<0.0400	0.0172	0.0263	<0.0400	<0.0400	<0.0400
CDA-BNSF-ROW-DU3.1A-3	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300	0.0330	<0.0300	<0.0300	0.0319	<0.0300	0.0378	<0.0300	<0.0300	<0.100	<0.0300	0.0372	<0.100	<0.100	<0.100
Mean	NA	NA	NA	0.0147	0.01770	0.0351	0.0203	NA	0.0226	NA	0.0377	NA	NA	NA	0.0185	0.0334	NA	NA	NA
Standard Deviation	NA	NA	NA	0.0025	0.00255	0.00588	0.0021	NA	0.00809	NA	0.00625	NA	NA	NA	0.0018	0.00615	NA	NA	NA
RSD	NA	NA	NA	17%	14%	17%	10%	NA	**36%**	NA	17%	NA	NA	NA	10%	18%	NA	NA	NA

J = Result is an estimate.

U = Result was not detected above method detection limit.

NA = Not applicable.

RSD = relative standard deviation (standard deviation/mean)

Bold percentages are greater than 30-35% and a 1-sided upper confidence limit for the mean is calculated (ITRC 2012).

When one result is not detected (U), the method detection limit is used in the calculation.

Table 15. Soil RCRA 8 Metals (6010) Field Replicate Relative Standard Deviation for the 2016 Sampling of the BNSF ROW R2R

Sample ID	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
CDA-BNSF-ROW-DU1.2-1	**19.4**	172	0.340	25.6	35.9	<4.0	<0.50	0.117
CDA-BNSF-ROW-DU1.2-2	**18.6**	187	0.320	26.9	36.1	<4.0	<0.50	0.910
CDA-BNSF-ROW-DU1.2-2-FD	**20.7**	172	0.300	24.9	59.0	<4.0	<0.50	0.108
Mean	19.6	177	0.320	25.8	43.7	NA	NA	0.378
Standard Deviation	1.06	8.66	0.0200	1.01	13.3	NA	NA	0.460
RSD	5%	5%	6%	4%	30%	NA	NA	**122%**
CDA-BNSF-ROW-DU3.1A-1	14.4	281	0.580	19.2	48.1	<4.0	<0.50	**0.152**
CDA-BNSF-ROW-DU3.1A-2	13.8	255	0.540	19.6	60.5	<4.0	<0.50	**0.00670**
CDA-BNSF-ROW-DU3.1A-3	14.1	297	0.610	18.7	58.4	<4.0	<0.50	**0.100**
Mean	14.1	278	0.577	19.2	55.7	NA	NA	0.0862
Standard Deviation	0.300	21.2	0.0351	0.451	6.64	NA	NA	0.0736
RSD	2%	8%	6%	2%	12%	NA	NA	**85%**

NA = Not applicable.

RSD = relative standard deviation (standard deviation/mean)

Bold percentages are greater than 30-35% and a 1-sided upper confidence limit for the mean is calculated (ITRC 2012).

When one result is not detected (U), the method detection limit is used in the calculation.

Note on Selecting a UCL Method. The following worksheets are used to calculate 95% UCLs from ISM data using both the Chebyshev and Student's-t methods. Since data suggests that the variability is high or the variability is unknown, use the Chebyshev method. Because the Chebyshev method tends to yield higher UCL values for the same data set, it's statistical performance is desirable - it achieves the desired 95% coverage of the mean under conditions when the variability of concentrations throughout the DU are moderate or high (See Table 4-4 in ITCR 2012). One drawback of this performance is that the Chebyshev will tend to more severely overestimate the true mean than Student's t. Nevertheless, if no discrete data are available to estimate this variability, then Chebyshev is generally preferred over Student's t. Do not mistake the standard deviation (SD) of replicates as a measure of this variability. The SD of replicates is a measure of consistency in estimates of the mean - this is considered a reliable indicator of the laboratory processing steps, but not an indicator of the degree of variability in the distribution of concentrations throughout the DU (ITRC 2012).

ISM Calculator for 1-sided Upper Confidence Limit for the Mean of DU1.2 PAHs and Mercury

	Replicate Results									
Replicate Number	**benzo(a)anthracene**	**benzo(a)pyrene**	**benzo(b)fluoranthene**	**benzo(g,h,i)perylene**	**benzo(k)fluoranthene**	**chrysene**	**fluoranthene**	**indeno(1,2,3-cd)pyrene**	**pyrene**	**mercury**
Rep 1	0.0831	0.0809	0.141	0.0758	0.0440	0.123	0.158	0.0568	0.171	0.117
Rep 2	0.0153	0.0217	0.0419	0.0213	0.0124	0.0333	0.0348	0.0149	0.0379	0.910
Rep 3	0.0178	0.0215	0.0484	0.0252	0.0128	0.0383	0.0377	0.0170	0.0391	0.108
arithmetic mean	0.03873	0.04137	0.07710	0.04077	0.02307	0.06487	0.07683	0.02957	0.08267	0.37833
standard deviation	0.03844	0.03424	0.05543	0.03040	0.01813	0.05041	0.07031	0.02361	0.07650	0.46046
CV = SD / mean	0.993	0.828	0.719	0.746	0.786	0.777	0.915	0.798	0.925	1.217
count (r)	3	3	3	3	3	3	3	3	3	3
alpha (95% = 0.05)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
t(alpha, df=r-1)	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92
Student's t UCL	0.10354	0.09909	0.17055	0.09202	0.05363	0.14985	0.19536	0.06937	0.21164	1.15460
Chebychev UCL	**0.13548**	**0.12753**	**0.21661**	**0.11728**	**0.0687**	**0.1917**	**0.2538**	**0.0890**	**0.2752**	**1.5371**

ISM Calculator for 1-sided Upper Confidence Limit for the Mean of DU3.1A PAHs and Mercury

	Replicate Results	
Replicate Number	**chrysene**	**mercury**
Rep 1	0.0190	0.152
Rep 2	0.0170	0.00670
Rep 3	0.0319	0.100
arithmetic mean	0.02263	0.08623
standard deviation	0.00809	0.07362
CV = SD / mean	0.357	0.854
count (r)	3	3
alpha (95% = 0.05)	0.05	0.05
t(alpha, df=r-1)	2.92	2.92
Student's t UCL	0.0363	0.2103
Chebychev UCL	**0.0430**	**0.2715**

Appendix D

Photographs

Photo 1

Photo 2

Photo 3

Photo 4

TerraGraphics Environmental Engineering, Inc. www.TerrraGraphics.com	PRINT DATE: November 1, 2016	PROJECT MANAGER: Melody Studer	PROJECT NAME: BNSF ROW R2R Coeur d'Alene, ID	APPENDIX D, PHOTO LOG Phase II Environmental Site Assessment Report for the BNSF ROW R2R Site
	PROJECT NUMBER: 15137	CREATED BY: Melody Studer		

Photo 5

Photo 6

Photo 7

Photo 8

TerraGraphics Environmental Engineering, Inc. www.TerrraGraphics.com	PRINT DATE: November 1, 2016	PROJECT MANAGER: Melody Studer	PROJECT NAME: BNSF ROW R2R Coeur d'Alene, ID	APPENDIX D, PHOTO LOG Phase II Environmental Site Assessment Report for the BNSF ROW R2R Site
	PROJECT NUMBER: 15137	CREATED BY: Melody Studer		