

Revitalizing Auto Communities Environmental Response
Trust

Plants 2 and 3 Soil Corrective Measures Summary

**RACER Trust Lansing Industrial Land
MID 980 700 827 and MID 005 356 928
Lansing, Michigan**

Original Submittal: December 21, 2021

Revised Submittal: May 3, 2023

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Prepared By:

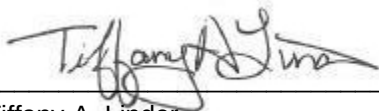
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Acronyms and Abbreviations

95% UCL	95 percent upper confidence limit on the mean concentration
bgs	below ground surface
DCC	Direct Contact Criteria
DRC	Declaration of Restrictive Covenant
EGLE	Michigan Department of Environment, Great Lakes and Energy
MDEQ	Michigan Department of Environmental Quality (currently EGLE)
µg/kg	micrograms per kilogram
NR	Nonresidential
PCB	polychlorinated biphenyl
PSIC	Particulate Soil Inhalation Criteria
RACER	Revitalizing Auto Communities Environmental Response
RDW	Residential Drinking Water
RDWP	Residential Drinking Water Protection
SSVIAC	Site-Specific Volatilization to Indoor Air Criteria
TSCA	Toxic Substance Control Act
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

1 Introduction

Arcadis of Michigan, LLC (Arcadis) has prepared this Plants 2 and 3 Soil Corrective Measures Summary on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust for the Plant 2 and Plant 3 properties located at 2800 West Saginaw Street and 2801 West Saginaw Street in Lansing, Michigan (Site). The original draft report was submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on December 21, 2021. EGLE provided comments via email transmittal on June 3, 2022. Arcadis on behalf of RACER provided a response to EGLE comments on August 11, 2022. Additional information to address the comments provided by EGLE has been included in this revised report.

The site location and layout are presented on **Figure 1**. This report presents a summary of the evaluation completed to evaluate soil corrective measures for Plants 2 and 3 and documents how soils exceeding the EGLE December 2013 Part 201 Generic Nonresidential (NR) Direct Contact Criteria (DCC) and Particulate Soil Inhalation Criteria (PSIC) will be addressed at the Site. Arcadis submitted a *Plants 2 and 3 Soil Corrective Measures Work Plan* to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on September 23, 2020. The work plan summarized area specific evaluations using criteria comparison and statistical analysis to determine if an exposure barrier was necessary for the area, and if so, outlined a work plan for collecting additional delineation data for exposure barrier placement. EGLE approved the work plan in a letter dated, March 18, 2021. Additional details outlining the evaluation process are provided in Section 1.1 below and in the September 2020 work plan.

Soils exceeding other NR Generic Cleanup Criteria will be addressed through engineering controls or restrictions included in an amended and restated Declaration of Restrictive Covenant (Amended DRC). Comparison to NR Criteria is appropriate because the current and Amended DRC includes a restriction limiting the use of the property to nonresidential use. In addition, the perimeter of the Site was previously evaluated against the Part 201 generic residential criteria to determine potential impacts to off-Site residences (Arcadis 2013).

1.1 Background

Upon review of data collected at Plants 2 and 3, exceedances of EGLE December 2013 Part 201 NR DCC and PSIC were identified in Areas 2, 5-1, 5-2, 5-3, and 5-5 at Plant 2 and in Areas 14, 16, 18, 19, 20 and 21 at Plant 3 (**Figure 2** and **Figure 3**, respectively). It should also be noted that polychlorinated biphenyl (PCB) exceedances were identified in Area 5-2 at Plant 2 and will be addressed under separate cover through a Toxic Substances Control Act (TSCA) Plan.

Based on the data comparison to EGLE criteria, a determination was made regarding the need for exposure barriers. For some areas with a limited number of exceedances for one or more constituents, an analysis of the 95 percent upper confidence limit on the mean concentration (95% UCL) was completed to determine if an exposure barrier was needed. The 95% UCL is a statistical number calculated to represent the mean value with a 95 percent confidence. The true arithmetic mean value for the Site is lower than the 95% UCL. The high level of confidence is used to compensate for the uncertainty in representing area conditions with a finite number of samples. The section below provides details on the statistical approach completed for select areas at Plants 2 and 3.

1.1.1 Statistical Evaluation of Exceedances

To conduct this 95% UCL analysis, 2-acre exposure areas were identified around the exceedances and a 95% UCL was calculated using the United States Environmental Protection Agency's (USEPA) ProUCL statistical software (version 5.1.002). If the 95% UCL for a constituent did not exceed the NR soil DCC, an exposure barrier was not proposed. The exposure area size for NR DC exposure was determined based on the EGLE Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria (S3TM; EGLE 2002) that indicates that a 2-acre exposure unit is appropriate for statistical evaluations for direct contact exposure to soil at non-residential properties. The statistical evaluation is included as **Appendix A**.

For PSIC exceedances, a Site-specific NR PSIC value was calculated based on the size of the source area. To determine areas that required a Site-specific PSIC comparison, concentrations of constituents in soil were first compared to the generic PSIC adjusted to account for a 100-acre source area. In areas where samples exceeded the 100-acre PSIC, individual source area size was determined based on results from surrounding borings (i.e., half the distance to the next soil boring below the 100-acre PSIC). For each constituent, the individual source areas were added together, per the S3TM guidance, to identify the total area used for a Site-specific PSIC correction. The concentrations of each constituent were then re-screened against the Site-specific PSIC (typically 5-acre or ½-acre) to determine areas that may require corrective measures. Results of this Site-specific PSIC evaluation are summarized on **Table 1** (Plant 2) and **Table 2** (Plant 3).

Deep exceedances (greater than 2 ft bgs) that were not eliminated by the UCL analysis or PSIC Site-specific evaluation will be noted in the Amended DRC. For areas where exposure barriers are necessary due to shallow soil exceedances of December 2013 Criteria, existing asphalt, or concrete barriers at least 6 inches in thickness will be maintained (or a barrier with similar effectiveness will be installed if the existing asphalt or concrete is disturbed or removed in the future). If the existing surface does not meet the 6-inch thickness requirement, or if the existing surface isn't a paved surface, a minimum 10-inch soil barrier will be installed.

1.1.2 Area-Specific Evaluations

The table below summarizes the NR DCC and/or PSIC exceedances identified for each area at Plants 2 and 3 and if the area would need an exposure barrier based on the evaluation and depth of impacts identified. The 95% UCL statistical analysis completed for some of the areas is provided in **Appendix A**. **Figure 2** and **Figure 3** provide locations of Areas evaluated at Plant 2 and Plant 3, respectively. Refer to **Table 1** and **Table 2** for soil data summary of each area in Plant 2 and Plant 3, respectively.

Area	Constituents > DCC and/or PSIC	Depth of Impacts Above DCC and/or PSIC	Evaluation Result
Plant 2 – Area 2	Manganese > Site-Specific PSIC	9-10 feet bgs	Manganese exceeded Site-Specific PSIC at one location (SB-A2-PD65). Based on the depth being greater than 2 feet bgs, an exposure barrier is not necessary, and a notification will be included in the Amended DRC.
	Arsenic > DCC	1-2 feet bgs	Due to the limited amount of soil samples, it could not be evaluated if an

Plants 2 and 3 Soil Corrective Measures Summary

Area	Constituents > DCC and/or PSIC	Depth of Impacts Above DCC and/or PSIC	Evaluation Result
			exposure barrier was necessary for the arsenic exceedance detected at one location (SB-A2-PA65). Therefore, additional sampling was completed as described in Section 2.0.
Plant 2 – Area 5-1	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene and dibenzo(a,h)anthracene > DCC	4-7 feet bgs	The constituents exceeding DCC were identified at two locations (VAP-A5.1-MT115 and SB-A5.1-MT126). Based on the depth being greater than 2 feet bgs, an exposure barrier is not necessary, and a notification will be included in the Amended DRC.
	Manganese > Adjusted PSIC	2-3 feet bgs	Manganese exceeded the adjusted PSIC (P2-SB-35). However, based on a 5-acre source area evaluation manganese does not exceed the Site-Specific PSIC. Therefore, no action was deemed necessary.
Plant 2 – Area 5-2	Manganese > Site-Specific PSIC	2-3 feet bgs	Manganese exceeded Site-Specific PSIC at one location (SB-A5.2-NG127). Based on the depth being greater than 2 feet bgs, an exposure barrier is not necessary, and a notification will be included in the Amended DRC.
	Lead > DCC	0-1 foot bgs	Lead exceeded DCC in one sample (SB-A5.2-OG144). Because only one exceedance was identified a 95% UCL calculation was completed for surface soil in a 2-acre area around the exceedance. The 95% UCL did not exceed the DCC; therefore, an exposure barrier or notification in the Amended DRC is not necessary for lead.
	Benzo(a)pyrene > DCC	0-1 foot bgs and 3-4 feet bgs	Benzo(a)pyrene exceeded DCC in two locations (SB-A5.2-NE157-3-4 feet bgs and SB-A5.2-OG162-0-1 feet bgs). The exceedance detected from 3-4 feet bgs was eliminated through UCL analysis.

Plants 2 and 3 Soil Corrective Measures Summary

Area	Constituents > DCC and/or PSIC	Depth of Impacts Above DCC and/or PSIC	Evaluation Result
			The UCL analysis for the exceedance from 0-1 was greater than the DCC. Therefore, additional sampling was completed as described in Section 2.0.
	PCBs > DCC	Various	To be addressed under separate cover through a TSCA Plan.
Plant 2 – Area 5-3	Manganese > Site-Specific PSIC	1-2 feet bgs	Manganese exceeded Site-Specific PSIC at one location (SB-A5.3-OX123). Based on the depth, an exposure barrier is not necessary, and a notification will be included in the Amended DRC.
	Benzo(a)pyrene > DCC	1-2 feet bgs	Benzo(a)pyrene exceeded DCC in one location (SB-A5.3-OX123). The UCL analysis for the exceedance was greater than the DCC. Therefore, additional sampling was completed as described in Section 2.0.
Plant 2 – Area 5-5	Benzo(a)pyrene > DCC	1-3 feet bgs	Benzo(a)pyrene exceeded DCC in one sample (P2-MW-04). Because only one exceedance was identified a 95% UCL calculation was calculated for the boundaries of Area 5-5, due to its small size. The 95% UCL did not exceed the DCC; therefore, an exposure barrier or notification in the Amended DRC is not necessary for this area.
Plant 3 – Area 14	Cyanide > DCC and Site-Specific PSIC	Greater than 2 feet bgs except for one location at 2 feet bgs	The locations identified to contain cyanide above DCC and/or Site-Specific PSIC that are deeper than 2 feet bgs will be addressed in a notification in the Amended DRC. The shallow cyanide exceedance of DCC and Site-Specific PSIC will be addressed by an exposure barrier consisting of existing pavement.
	Nickel > Adjusted PSIC and Site Specific PSIC	Greater than 2 feet bgs	The locations identified to contain nickel above adjusted PSIC did not exceed the Site-Specific PSIC. One location exceeded Site-Specific PSIC. Based on

Plants 2 and 3 Soil Corrective Measures Summary

Area	Constituents > DCC and/or PSIC	Depth of Impacts Above DCC and/or PSIC	Evaluation Result
			the depth, an exposure barrier is not necessary, and a notification will be included in the Amended DRC
	Arsenic > DCC	43.5-45 feet bgs	Based on the depth of the exceedance, an exposure barrier is not necessary, and a notification will be included in the Amended DRC for arsenic.
Plant 3 – Area 16	Lead > DCC	4-5 feet bgs and 9-10 feet bgs	Lead exceeded DCC at two locations (SB-A16-HU168 and SB-A16-HU181). Based on the depth being greater than 2 feet bgs, an exposure barrier is not necessary, and a notification will be included in the Amended DRC.*
	Benzo(a)pyrene > DCC	4-5 feet bgs	Benzo(a)pyrene exceeded DCC in one sample (SB-A16-HU165). Concentrations in surface soil (0-1 foot bgs) did not exceed the DCC, and the 95% UCL for the 0-15 feet bgs interval did not exceed the DCC. Therefore, an exposure barrier or notification in the Amended DRC is not necessary for benzo(a)pyrene.
Plant 3 – Area 18	Benzo(a)pyrene > DCC	1-2 feet bgs	Benzo(a)pyrene exceeded DCC in one location (SB-A18-CJ150). The UCL analysis for the exceedance was greater than the DCC. Therefore, additional sampling was completed as described in Section 2.0.
Plant 3 – Area 19	Arsenic > DCC	1-2 feet bgs and 9-10 feet bgs	Arsenic exceeded DCC at several shallow locations. The UCL analysis for the exceedances within the shallow and deeper location were greater than the DCC. Therefore, an exposure barrier is required for this area.
Plant 3 – Area 20	Manganese > Site-Specific PSIC	17-18 feet bgs	Manganese exceeded Site-Specific PSIC at one location (P3-SB-13). Based on the depth being greater than 2 feet bgs, an exposure barrier is not

Area	Constituents > DCC and/or PSIC	Depth of Impacts Above DCC and/or PSIC	Evaluation Result
			necessary, and a notification will be included in the Amended DRC.
Plant 3 – Area 21	Arsenic > DCC	22-23 feet bgs	Arsenic exceeded DCC at one location (P3-SB-27). Based on the depth being greater than 2 feet bgs, an exposure barrier is not necessary, and a notification will be included in the Amended DRC.

* It should be noted that this recommendation differs from previous recommendations that were made in 2015 to require an exposure barrier in this area. However, shallow soils in Area 16 do not exceed the NR DCC or generic PSIC; therefore, the soil that is currently overlying the deeper exceedances adequately addresses them. In addition, a Site-wide soil management requirement for excavated impacted soil will be included as part of the Amended DRC. Therefore, a cover is not required to be maintained in this area.

2 Additional Soil Sampling Activities

Additional soil sampling activities were conducted in Areas 2, 5-2, and 5-3 of Plant 2 and Area 18 of Plant 3, as outlined in the *Plants 2 and 3 Soil Corrective Measures Work Plan*. The work plan was approved by EGLE in a letter dated March 18, 2021. The following sections describe the investigation activities completed for each area and results of the additional investigation work are provided in Section 3.0. Investigation activities were conducted in April, May, and July of 2021. Further investigation activities in Area 5-3 were completed in August, September and December of 2022. Soil boring logs are provided in **Appendix B** and **Figures 4A-4D** depict the soil boring locations completed.

2.1 Plant 2 - Area 2

Area 2 on the west side of Plant 2 was a former waste storage area used to store 55-gallon drums. Additional soil sampling was conducted in Area 2 to determine the need for an exposure barrier due a NR DCC exceedance of arsenic at 1 to 2 ft bgs at soil boring SB-A2-PA65 (**Figure 4A**). Soil samples were collected at and around soil boring SB-A2-PA65 on April 7 - 9, 2021. The additional sampling was completed using a systematic random sampling approach to further delineate this exceedance and to evaluate if the currently proposed exposure barrier could be eliminated by using a 95% UCL calculation. The approach included the following:

- A ¼-acre square exposure area was identified, centered at soil boring SB-A2-PA65, and a 33-ft grid was established. Each grid was sampled at the same location, relative to the placement of soil boring SB-A2-PA65 in the center grid. Sample locations are shown on **Figure 4A**.
- The eight (8) surrounding soil borings (SB-A2-OX62, SB-A2-OX65, SB-A2-OX68, SB-A2-PA62, SB-A2-PA68, SB-A2-PD62, SB-A2-PD65 and SB-A2-PD68) were advanced to a depth of 2 ft bgs using a stainless-steel hand auger. Refer to **Appendix B** for soil boring logs.

- At each boring, soil samples were collected from the 0 to 1 ft bgs and 1 to 2 ft bgs intervals. In addition, a 0 to 1 ft bgs sample was collected at SB-A2-PA65 with a hand auger to determine if the top foot of soil was unimpacted and could be used as adequate cover.

All samples collected from Area 2 were submitted to Merit Laboratories, Inc. (Merit) in Lansing, Michigan for analysis of arsenic. The April 2021 results indicated that further soil sampling was necessary to delineate an exceedance identified at SB-A2-PD65 (**Figure 4A**). On May 20th, two additional soil borings were advanced using a hand auger to depths of 2 or 3 feet bgs to the west (SB-A2-PD64) and south (SB-A2-PE65). A third boring was attempted to the east of SB-A2-PD65 but could not be completed due to concrete thickness. Soil samples were collected from 0 to 1 ft bgs and 1 to 2 ft bgs at both borings. A soil sample was also collected at original SB-A2-PD65 at 2 to 3 ft bgs to provide vertical delineation of the exceedance of arsenic at that location. Samples were submitted to Merit for analysis of arsenic.

2.2 Plant 2 - Area 5-2

Former pits associated with automotive manufacturing and assembly at Plant 2 were backfilled during demolition activities and the fill material included some amount of demolition debris. Additional sampling was conducted in Area 5-2 to determine the extent of impacted fill material that may require an exposure barrier due to a NR DCC exceedance of benzo(a)pyrene at 0 to 1 ft bgs in soil boring SB-A5.2-OG162 (**Figure 4B**). Three (3) additional soil borings were completed to the north, west, and east of location SB-A5.2-OG162 (SB-A5.2-OF162, SB-A5.2-OH160, and SB-A5.2-OG163) (**Figure 4B**). Based on the results, it was determined that additional step out locations would be advanced within the concrete areas surrounding the fill material to compare soil existing beneath the concrete slab with fill material placed within the surface voids of Area 5-2. Four additional soil borings (SB-A5.2-OF162A, SB-A5.2-OG165, SB-A5.2-OH160, and SB-A5.2-OG160) were completed in April 2021 (**Figure 4B**). Each of the seven (7) soil borings were advanced to depths of 2 or 3 feet bgs using a stainless-steel hand auger. At each boring location, samples were collected from the 0 to 1 ft bgs, 1 to 2 ft bgs, and/or 2 to 3 ft bgs intervals based on location and submitted to Merit for laboratory analysis of benzo(a)pyrene.

2.3 Plant 2 - Area 5-3

Like Area 5-2, additional sampling was conducted in Area 5-3 to determine the extent of impacted fill material requiring a possible exposure barrier due to a NR DCC exceedance of benzo(a)pyrene at 1 to 2 ft bgs in soil boring SB-A5.3-OX123 (**Figure 4C**) within a former pit associated with automotive manufacturing and assembly. Three (3) additional soil borings were originally proposed in the approved Work Plan to the north, west, and south of location SB-A5.3-OX123 (SB-A5.3-OW123, SB-A5.3-OY123, and SB-A5.3-OX122) (**Figure 4C**). Consistent with Area 5-2, four (4) additional soil borings (SB-A5.3-OV123, SB-A5.3-OV122, SB-A5.3-OX121, and SB-A5.3-OZ123) were advanced in April 2021 through the surrounding concrete slab (**Figure 4C**). Each of the seven (7) soil borings were advanced to a depth of 3 feet bgs using a stainless-steel hand auger. At each boring location, samples were collected from the 1 to 2 ft bgs and 2 to 3 ft bgs intervals and submitted to Merit for laboratory analysis of benzo(a)pyrene.

As a result of EGLE comments provided in June 2022, additional delineation sampling north of location SB-A5.3-OV123 (April 2021) was conducted in August, September, and December of 2022. During the investigation events soil samples were collected from both within the fill material and from locations outside of the fill material beneath the existing concrete in Area 5-3. A concrete coring machine was utilized to core through the concrete to obtain soil samples from beneath the slab. Also due to the coarse nature of the fill material a Geoprobe was used to collect soil samples. The following locations were advanced during each of the mobilizations in 2022 (**Figure 4C**):

- August – SB-A5.3-OV124, SB-A5.3-OU124, SB-A5.3-OU123, SB-A5.3-OT124, SB-A5.3-OS124, SB-A5.3-OU122, SB-A5.3-OT122, SB-A5.3-OS122, SB-A5.3-OT123, and SB-A5.3-OS123. Soil samples were collected from the 1 to 2 ft (immediately below the concrete where present) and 2 to 3 ft bgs intervals.
- September – SB-A5.3-OP123, SB-A5.3-ON124, SB-A5.3-ON123, SB-A5.3-OI123, SB-A5.3-OI125, SB-A5.3-ON122, SB-A5.3-OI121, and SB-A5.3-OH123. In general, soil samples were collected from the 1 to 2 ft (immediately below the concrete where present) and 2 to 3 ft bgs intervals. However, based on concrete encountered within the fill material at locations SB-A5.3-OP123, SB-A5.3-ON123, and SB-A5.3-OI123 only samples from approximately 0 to 0.5 ft bgs could be collected for analysis (material above concrete encountered). Further, only a 2 to 3 ft bgs sample could be collected from SB-A5.3-OH123 based on poor recovery of shallow soils.
- December – SB-A5.3-OH123, SB-A5.3-OH122, SB-A5.3-OG123, and SB-A5.3-OH124. Soil samples were collected from the 1-1.5 to 2 ft (immediately below the concrete where present) and 2 to 3 ft bgs intervals.
- All soil samples were submitted to Merit for laboratory analysis of benzo(a)pyrene.

2.4 Plant 3 - Area 18

Area 18 is in the north central portion of Plant 3 and is an area of fill material generally associated with the former electroplating waste treatment system. Additional sampling was conducted in Area 18 to further delineate the extent of impacted soils due to a NR DCC exceedance of benzo(a)pyrene from 1 to 2 ft bgs in soil boring SB-A18-CJ150 (**Figure 4D**). All samples were submitted to Merit for laboratory analysis of benzo(a)pyrene.

- Initially, five soil sample locations were completed: a re-sample of the original location (SB0A18-CJ150) and four step-out borings (SB-A18-CI150, SB-A18-CJ151, SB-A18-CK150, and SB-A18-CJ149). The five soil borings were advanced to a depth of 3 ft bgs using a hand auger. At each boring location, soil samples were collected from the 1 to 2 ft bgs and 2 to 3 ft bgs.
- Based on the results at boring SB-A18-CJ149, three additional soil borings were completed to the north (SB-A18-CI149), west (SB-A18-CJ148), and south (SB-A18-CK149) in May 2021.
- Based on the results at SB-A18-CK149, an additional step out was completed to the west (SB-A18-CK148), and a second boring was attempted to the south but could not be completed due to the presence of concrete.

3 Summary of Results and Recommendations

The following sections describe the results and the recommended corrective measures for Plant 2 Area 2, 5-2 and 5-3, as well as Plant 3 Area 18. Refer to **Table 3** for a summary of soil data compared to EGLE Criteria (updated June 2018). Laboratory analytical reports are provided in **Appendix C**. The locations and laboratory results are also provided on **Figures 4A-4D**.

3.1 Plant 2 – Area 2

Additional sampling was completed in Area 2 to determine if the need for an exposure barrier could be eliminated using a statistical approach (i.e., 95% UCL analysis). A summary of the analytical results and boring locations are provided on **Figure 4A**. All soil samples collected during the evaluation were below the EGLE NR DCC of 37 milligram per kilogram (mg/kg) for arsenic, except for the soil samples collected at boring SB-A2-PD65 from 0 to 1 ft bgs (70.8 mg/kg) and 1 to 2 ft bgs (307 mg/kg). Based on the soil sample concentrations detected at soil boring

location SB-A2-PD65, the 95% UCL analysis evaluation would not eliminate the need for an exposure barrier in this area. However, if this location is excluded, the 95% UCL for the remaining locations, including SB-A2-PA65, was 10.1 mg/kg (see dataset and ProUCL output in **Appendix D**), which is below the EGLE NR DCC of 37 mg/kg, indicating that the only location requiring an exposure barrier is SB-A2-PD65.

Due to the relatively small size of the arsenic exceedance area, it is proposed that the soils exceeding the EGLE NR DCC in this area be excavated. It is anticipated the excavation depth will be 3 feet bgs. The concrete area would remain as an exposure barrier to the east of the SB-A2-PD65 exceedance and excavated area. A work plan outlining the excavation activities proposed for Area 2 would be provided to EGLE for review and approval prior to initiation. Refer to **Figure 5** for the proposed excavation area and exposure barrier area to be included in the Amended DRC. A waste characterization sample was also collected during the July 2021 investigation activities for laboratory analysis. This data will be utilized for setting up the profile for future disposal of impacted soils during proposed excavation activities (**Appendix C**).

3.2 Plant 2 - Area 5-2

All of the soil borings completed within the fill material at Area 5-2 exceeded NR DCC for benzo(a)pyrene of 8,000 micrograms per kilogram ($\mu\text{g/kg}$), except for one location (SB-A5.2-OG160). The locations and analytical results for Area 5-2 soil borings are shown on **Figure 4B**. The maximum detected concentration of benzo(a)pyrene was 39,000 $\mu\text{g/kg}$. Soil samples collected from below the concrete slab surrounding the fill area were below laboratory detection limits ($<300 \mu\text{g/kg}$) for benzo(a)pyrene.

Based on this result, the fill material placed within the former press pits contains material with elevated benzo(a)pyrene. The fill material was placed during demolition activities at Plant 2. Visual inspection indicates the fill material is darker in color than fill used in other areas of the Site and includes demolition debris, including a noticeable amount of roofing material mixed in with other construction debris (sand, clay, broken brick, crushed concrete). Typically, roofing material contains polycyclic aromatic hydrocarbons (PAHs), including benzo(a)pyrene due to the asphalt used to make the roofing material. A photo log of the fill material is provided as **Appendix E**.

Originally, an exposure barrier was not recommended due to the following reasons:

- The exceedances appear to be associated with roofing debris which is a common construction material.
- The Site is not currently active and is fenced and locked; therefore, only RACER authorized personnel will be accessing the Site and this area. Trespassers would not likely be present at the Site under current conditions.
- Currently the Site is used to stage vehicles prior to sale, and RACER and other authorized personnel do not access the Site consistent with the exposure assumptions used to develop the generic NR DCC.

However, upon further consideration, RACER proposes, as an additional protective measure, to install an exposure barrier in this area (**Figure 6**). The exposure barrier would consist of geotextile fabric over the existing ground surface to act as a demarcation layer beneath a gravel barrier. Overtop the geotextile fabric, a 6-inch to 1-foot layer of 22A road gravel will be placed as the exposure barrier. The exposure barrier will be placed over the area exceeding NR DCC to the points where existing soil samples do not exceed NR DCC.

3.3 Plant 2 – Area 5-3

Consistent with Area 5-2 soil borings completed within the fill material, each soil boring advanced within the fill material exceeded the EGLE NR DCC for benzo(a)pyrene (8,000 $\mu\text{g/kg}$), except for one location (SB-A5.3-OW123). Soil boring locations and analytical results are provided on **Figure 4C**. The maximum detected

concentration of benzo(a)pyrene was 21,500 µg/kg (SB-A5.3-OY123). Samples collected from soil borings completed outside of the fill material in concrete covered areas were below NR DCC or detected below the laboratory detection limits (<300 µg/kg) for benzo(a)pyrene. Similar roofing materials observed at Area 5-2, as described above, were also observed within the fill material at Area 5-3.

Based on an exceedance of EGLE NR DCC for benzo(a)pyrene at soil boring location SB-A5.3-OV123 within the 1 to 2 ft bgs sample collected in April 2021, additional delineation sampling further north was completed as described in Section 2.0. In general, soil data collected within the fill material exceeded EGLE NR DCC for benzo(a)pyrene; however, the soil from beneath the existing concrete slab was below EGLE NR DCC, with the exception of one location SB-A5.3-OH123 (8,200 µg/kg). Therefore, further investigation was conducted to complete delineation of this exceedance in December 2022.

Similar to Area 5-2, RACER proposes, as an additional protective measure, to install an exposure barrier in this area (**Figure 6**). The exposure barrier would consist of geotextile fabric over the existing ground surface to act as a demarcation layer beneath a gravel barrier. Overtop the geotextile fabric, a 6-inch to 1-foot layer of 22A road gravel will be placed as the exposure barrier. The exposure barrier will be placed over the area exceeding NR DCC to the points where existing soil samples do not exceed NR DCC.

3.4 Plant 3 - Area 18

Delineation activities were completed in Area 18 to further define the extent of a proposed exposure barrier due to NR DCC exceedances of benzo(a)pyrene at soil boring location SB-A18-CJ150. The results of the investigation activities completed in April 2021 indicated the re-sample at boring location SB-A18-CJ150 was above NR DCC for benzo(a)pyrene (21,900 µg/kg at 2 to 3 ft bgs). Additional borings to the west (SB-A18-CJ149) and south (SB-A18-CK149) also exceeded the NR DCC for benzo(a)pyrene from 1 to 2 ft bgs (15,000 µg/kg and 14,500 µg/kg, respectively), but not in the 2 to 3 ft bgs interval. The locations and analytical results for Area 18 are provided on **Figure 4D**. The remaining delineation locations advanced to the north, east, and south of SB-A18-CJ150 were below the NR DCC for benzo(a)pyrene. A soil boring was attempted south of SB-A18-CK149 exceedance, but due to the presence of a thick concrete building foundation/slab the boring was not completed.

As a result of additional delineation activities in Area 18, an exposure barrier, consisting of gravel cover, placed in the area presented on **Figure 7**, is proposed. The cover would extend over the area of exceedances up to the concrete slab encountered to the south.

3.5 Data Review

Based on EGLE comment provided via email in June 2022, a Tier II data quality review was completed by Arcadis' data analytics team on data collected during April 2021 investigation activities in Sample Delivery Group (SDG) #S23017. The review was requested because samples collected were extracted by the laboratory beyond the method hold time and the use of the data was questioned by EGLE. The data review was completed in accordance with the United States Environmental Protection Agency (USEPA) National Functional Guidelines for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), the National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA-540-R-20-006 (November 2020), and professional judgement. Fifteen samples that were analyzed for benzo(a)pyrene were extracted by the laboratory beyond the method required 14-day hold time. The industry standard for grossly exceeding the hold time is two times the method required hold time from sample collection to extraction. The method hold time for sample collection to extraction is 14 days so to grossly exceed the hold time extraction would need to occur after 28 days.

The sample locations in question were extracted less than 28 days from sample collection; therefore, the associated detect and non-detect sample results were determined to be useable but were qualified as estimate (J/UJ) respectively. Detailed review documentation is provided in **Appendix F**.

4 Plant 2 – Historical Tank Farms #225 and #250

There are two restrictive covenants currently in place for Plant 2, which include Former Tank Farm Areas #225 and #250. Former Tank Farm Areas #225 and #250 were used to store fuels and oils utilized and/or generated as wastes in the vehicle manufacturing process. Both tank farm areas contained underground storage tanks (USTs) to house the liquids.

4.1 Tank Farm #225

Tank Farm #225 was located within the vicinity of Building #225 in the southeastern portion of Plant 2 (**Figure 8**). Tank Farm #225 had four USTs that contained waste process oil, quench oil, cutting oil, and lubrication oil. All four USTs were removed in August-September 1989. As part of the removal, confirmation soil borings were completed, and eight monitoring wells were installed and sampled. Approximately 513 cubic yards of soil was removed from the vicinity of the tank farm and was disposed off-Site (BBL 2002). An industrial Tier II Closure Report was submitted to the Michigan Department of Environmental Quality (MDEQ-now EGLE) Storage Tank Division on September 30, 1996 (BBL 2002).

At the Tank Farm #225 area, Residential Criteria were exceeded in four soil samples and one groundwater sample collected from the area. Concentrations in soil samples exceeded the MDEQ Part 201 Residential Drinking Water Protection (RDWP) Criteria for five volatile organic compounds (VOCs), and the MDEQ Part 201 Industrial Soil Volatilization to Indoor Air Inhalation Criteria and Volatile Soil Inhalation Criteria (VSIC) (for ambient air) for 1,1-dichloroethylene at the time of report preparation in 2002. Groundwater concentrations exceeded the MDEQ Part 201 RDW Criteria for twelve VOCs, and the MDEQ Part 201 Industrial Groundwater Volatilization to Indoor Air Inhalation Criteria for 1,1-dichloroethylene at the time of report preparation in 2002. Based on these exceedances, a DRC was recorded with the Ingham County Register of Deeds on August 11, 2003. The DRC includes the following restrictions:

- Restricts potable use of groundwater in the area
- Prohibits relocation of impacted soils in the area to other areas
- Requires the maintenance of an impermeable barrier (to limit both infiltration and volatilization to ambient air) and replacement of the barrier if it is removed
- Requires a vapor intrusion mitigation system and/or an evaluation indicating such a system is not necessary for new construction in the area, and
- Prohibits use of the area for residential purposes

Based on a comparison of the 2003 analytical data to the EGLE December 2020 Criteria, constituents would still exceed RDW Criteria, NR VSIC, and several VOCs also exceed the RACER Lansing Site Specific Volatilization to Indoor Air Criteria (SSVIAC) for soil and groundwater, dated August 15, 2018. The sample exceeding the NR VSIC (B-7) was collected in 1989 at a depth of 7.5 to 15 ft bgs, of which all except for the saturated portion of the soil sample was removed during an excavation in the area also completed in 1989 to 12 feet bgs. Since the remaining portion of the soil sample interval is below the water table the VSIC are not applicable. Groundwater levels within nearby wells range from 11 to 13 feet bgs. Per the MDEQ (now EGLE) May 2013 Vapor Intrusion

Guidance Document (as amended), Table 1-2, Section 2.3.3, and Section 3.2.1., unsaturated soils are evaluated for the potential for volatilization to air not saturated soils. Water saturated soils do not act as a direct source to vapors in unsaturated vadose zone soils, and do not contribute significantly to volatiles in ambient air. Therefore, analytical results from water saturated soils should not be evaluated against VSIC. Although there are exceedances of SSVIAC in this area, no structures for human occupancy exist in the vicinity of Tank Farm #225. If structures are proposed the 2003 DRC requires vapor intrusion mitigation or evaluation for new construction. Also, although there is a RDW Criteria exceedance, groundwater use is restricted and the Site use is restricted to non-residential. The 2003 DRC also indicates that periodic maintenance of the existing pavement and low permeability surfaces to prevent infiltration of precipitation need to be completed and the low permeability surface must be replaced if removed. However, based on restriction of use of groundwater for potable purposes and requirement that buildings cannot be constructed without the installation of a passive venting system and vapor barrier or an assessment that would adequately demonstrate that vapor intrusion would not pose a risk to building occupants, the inspection or maintenance of a barrier is not considered warranted for this area. Additionally, the 2003 DRC will be terminated and replaced with an Amended DRC that will include a notification of the impacts remaining in the subsurface at Tank Farm #225.

4.2 Tank Farm #250

Tank Farm #250 was in the vicinity of Building #250 (Highway Truck Repair Facility) that is still present in the southwestern portion of Plant 2 and is currently unoccupied (**Figure 8**). The tank farm consisted of four USTs historically containing diesel fuel, gasoline, used oil, and heating oil. The USTs were primarily used for vehicle refueling and maintenance purposes. All four USTs were removed between November 1990 and the Fall of 1991. As part of the removal confirmation soil samples were collected and three monitoring wells were installed and sampled. Approximately 980 cubic yards of soil were removed during UST removal and disposed of off-Site (BBL 2002). An industrial Tier II Closure Report was submitted to the MDEQ (now EGLE) Storage Tank Division on September 30, 1996 (BBL 2002).

In 2003, the confirmation samples collected during removal exceeded the MDEQ Part 201 Drinking Water Protection Criteria for xylene (in soil) and RDW Criteria for phenanthrene (in groundwater). The concentrations also exceed the same current EGLE Criteria. A DRC prohibiting the use of groundwater was recorded with the Ingham County Register of Deeds on August 11, 2003. The 2003 DRC also restricts the Site to non-residential use and requires the periodic maintenance of existing pavement and low permeability surfaces to prevent infiltration of precipitation. Similar to the Tank Farm #225 area, it is proposed to terminate and replace the historical DRC for Tank Farm #250 with an Amended DRC that will include a notification of the impacts remaining in the subsurface at Tank Farm #250 and include a Site-wide restriction on use of groundwater for potable purposes but would not require the maintenance of an infiltration barrier, as groundwater use will continue to be restricted in this area and site-wide.

5 Summary of Area Evaluation and Resulting Notifications and/or Exposure Barriers

The following table provides a summary of each Area evaluated at Plant 2 and Plant 3 for potential soil corrective measures due to exceedances of NR DCC and/or Site-Specific PSIC that require corrective measures (i.e., exposure barrier or Amended DRC notification), as discussed in Section 1.1.2., and the proposed exposure barriers and notifications to be included in the Amended DRC for each plant.

Plants 2 and 3 Soil Corrective Measures Summary

Area	Constituents > DCC and/or PSIC	Depth of Impacts Above DCC and/or PSIC	Corrective Measure Proposed
Plant 2 - Area 2	Manganese > Site-Specific PSIC	9-10 feet bgs	Notification in Amended DRC
	Arsenic > DCC	1-2 feet bgs	Excavation of one sub-area and Exposure Barrier consisting of existing concrete pavement over another sub-area
Plant 2 - Area 5-1	Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene and dibenzo(a,h)anthracene > DCC	4-7 feet bgs	Notification in Amended DRC
Plant 2 – Area 5-2	Manganese > Site-Specific PSIC	2-3 feet bgs	Notification in Amended DRC
	Benzo(a)pyrene > DCC	0-1 foot bgs and 3-4 feet bgs	Installation, inspection, and maintenance of an exposure barrier
	PCBs > DCC	Various	To be addressed under separate cover through a TSCA Plan
Plant 2 – Area 5-3	Manganese > Site-Specific PSIC	1-2 feet bgs	Notification in Amended DRC
	Benzo(a)pyrene > DCC	1-2 feet bgs	Installation, inspection, and maintenance of an exposure barrier
Plant 2 - Tank Farms #225 and #250	None above DCC or PSIC	Not applicable	Notification in Amended DRC
Plant 3 – Area 14	Cyanide > DCC and Site-Specific PSIC	0-1 foot bgs	Inspection and maintenance of existing exposure barrier
	Arsenic and Nickel > DCC and/or Site Specific PSIC	Greater than 2 feet bgs	Notification in Amended DRC
Plant 3 – Area 16	Lead > DCC	4-5 feet bgs and 9-10 feet bgs	Notification in Amended DRC

Area	Constituents > DCC and/or PSIC	Depth of Impacts Above DCC and/or PSIC	Corrective Measure Proposed
Plant 3 – Area 18	Benzo(a)pyrene > DCC	1-2 feet bgs	Installation, inspection, and maintenance of an exposure barrier
Plant 3 – Area 19	Arsenic > DCC	0-1 foot bgs and deeper intervals	Inspection and maintenance of existing exposure barrier
Plant 3 – Area 20	Manganese > Site-Specific PSIC	17-18 feet bgs	Notification in Amended DRC
Plant 3 – Area 21	Arsenic > DCC	22-23 feet bgs	Notification in Amended DRC

6 Maintenance of Exposure Barriers

To supplement the existing cover and make sufficient for an exposure barrier, cover material will be placed in Area 18 at Plant 3. An exposure barrier will also be placed over exceedances in Areas 5-2 and 5-3 at Plant 2. The exposure barriers placed in these areas will initially be inspected ninety days after installation. The exposure barrier for Areas 18, 5-2 and 5-3, along with the other exposure barriers proposed (Plant 2 Area 2, Plant 2 Area 14, and Plant 3 Area 19) will be visually inspected on an annual basis. The inspection will evaluate signs of weathering, erosion, settlement and/or excessive vegetation growth that could allow for contact with impacted soil. Inspections will be documented. An example inspection form is provided in **Appendix G**, but the form may be modified as necessary to include relevant information. The exposure barriers will be maintained as necessary to mitigate contact with underlying impacted soil. The frequency of inspections may be modified with EGLE approval.

7 Inclusion in Amended Declaration of Restrictive Covenant

The locations of the proposed exposure barriers will be identified using State Plane Coordinates in an Amended DRC to be prepared for the Site. The Amended DRC will also include the notifications and State Plane Coordinates for the areas where an exposure barrier is not required but the soils exceed NR DCC and/or Site-Specific PSIC at depth. Example soil-related provisions for Amended DRCs are listed below:

- Land use is restricted to only Nonresidential (Commercial or Industrial).
- No drinking water wells may be installed or used on the property
- No groundwater extraction wells may be installed or used on the property, except for wells and devices that are part of an EGLE approved response activity

- No contaminated soils may be relocated on the property except as provided under Michigan Part 201 rules or other applicable laws or regulations
- No treatment, storage, or disposal (TSD) activities or release of hazardous substances may occur at the property in a manner which would require a permit under RCRA unless approved in advance in writing by USEPA or EGLE.
- Owners shall manage contaminated soils (if present) and/or debris (if present) and all other soils encountered in accordance with RCRA and Michigan Part 111 regulations.
- Owners shall prohibit construction and/or occupancy of any new buildings, structures, basements and/or additions to existing structures on the properties unless such construction and/or occupancy incorporates engineering controls designed to eliminate the potential for subsurface vapors or hazardous substances to migrate into the structures at concentrations greater than regulatory criteria, or unless an evaluation is conducted to evaluate the potential for migration, in which instance documentation must be submitted to EGLE for approval.
- Owners shall not construct or install subsurface utilities, structures or other features at the properties unless approved in advance by EGLE and RACER Trust, and such features are designed to eliminate the potential for features to be a preferential pathway for impacted subsurface water or vapor or eliminate the potential for subsurface features to release fluids that could infiltrate through the subsurface and exacerbate impacts to groundwater.
- Owners will not remove, disturb, interfere with, or damage any monitoring wells, soil gas ports, or remediation systems present or to be installed without EGLE approval on the properties.
- Owners will not perform any excavation or other intrusive activities, including but not limited to removal, disturbing, damaging, interfering, or otherwise negatively affecting the integrity, effectiveness, and operation of exposure barriers (concrete, asphalt or soil) that may be installed/present in the future pursuant to EGLE approval, except if 1) a plan for such activity is submitted and approved by EGLE and RACER Trust in writing in advance, 2) the activity is temporary (less than 60 days), 3) is conducted in accordance with all applicable environmental laws, and 4) does not cause or result in a release, exacerbation of a pre-existing environmental condition or any other violation of laws.
- Owners shall not remove existing storm sewer inlet seals nor the storm sewer bulkheads that are or may be installed.

8 Next Steps

Upon EGLE approval of the proposed corrective measures for each of the areas, a work plan for soil excavation at Plant 2 – Area 2 will be submitted within 45 days and where an exposure barrier needs to be installed that will be completed within 90 days. An Amended DRC to include exposure barrier locations and restrictions, and notifications of specific sample location results will be prepared after EGLE's selection of final corrective measures for the Site or based on determination of an appropriate time after further consultation with EGLE.

References

- Arcadis. 2013. Resource Conservation and Recovery Act Facility Investigation (RFI), Phase 2 Activities Summary Report, Plants 2, 3 & 6, Industrial Land, Lansing, Michigan. April.
- Arcadis. 2020. Plants 2 & 3 Soil Corrective Measures Work Plan. RACER Trust Lansing Industrial Land, Lansing, Michigan. March 27, Revised September 23.
- Blasland, Bouck & Lee, Inc. (BBL). 2002. Due Care Plan Lansing Plant #2, General Motors Corporation, Lansing, Michigan. August 21.
- EGLE. 2002. Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria. August. Available online at: https://www.michigan.gov/documents/deq/deq-erd-stats-s3tm_250015_7.pdf.
- EGLE. 2007. RRD Operational Memorandum No. 1, Technical Support Document – Attachment 7. Part 201 Generic Soil Inhalation Criteria for Ambient Air, Part 213 Tier I Soil Inhalation Risk-Based Screening Levels for Indoor Air. July.
- EGLE. 2021. Approval of Plants 2 & 3 Soil Corrective Measures Work Plan. RACER Trust, Lansing Plant 2 & 3, Lansing, Michigan. March 18.

Tables

Location	Area	Date Collected	Depth (feet bgs)	Compound	EGLE December 2013 Criteria			Result (µg/kg)
					DC Criteria (µg/kg)	Adjusted PSIC- 100 acres (µg/kg)	Site-Specific PSIC [a] (µg/kg)	
SB-A2-PA65	Area 2	06/04/12	1 - 2	Arsenic	3.70E+04	3.91E+05	9.10E+05 [b]	5.32E+04
SB-A2-PD65	Area 2	06/04/12	9 - 10	Manganese	9.00E+07	6.45E+05	9.90E+05	1.56E+06
P2-SB-31	Area 2	08/30/11	1 - 2	Manganese	9.00E+07	6.45E+05	9.90E+05	6.96E+05
P2-SB-35	Area 5-1	08/30/11	2 - 3	Manganese	9.00E+07	6.45E+05	9.90E+05	8.08E+05
SB-A5.1-MT126	Area 5-1	06/06/12	5.5 - 6.5	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	6.00E+04
SB-A5.1-MT126	Area 5-1	06/06/12	5.5 - 6.5	Benzo(b)fluoranthene	8.00E+04	ID	ID	1.19E+05
SB-A5.1-MT126	Area 5-1	06/06/12	5.5 - 6.5	Dibenzo(a,h)anthracene	8.00E+03	ID	ID	1.20E+04
VAP-A5.1-MT115	Area 5-1	05/14/12	4 - 5	Benzo(a)anthracene	8.00E+04	ID	ID	1.69E+05
VAP-A5.1-MT115	Area 5-1	05/14/12	4 - 5	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	1.99E+05
VAP-A5.1-MT115	Area 5-1	05/14/12	4 - 5	Benzo(b)fluoranthene	8.00E+04	ID	ID	3.91E+05
VAP-A5.1-MT115	Area 5-1	05/14/12	4 - 5	Dibenzo(a,h)anthracene	8.00E+03	ID	ID	2.20E+04
LMW-14-15D	Area 5-2	11/26/14	18 - 19	Total PCBs	1.60E+04	2.80E+06	6.50E+06 [b]	5.10E+04
SB-A5.2-NW124	Area 5-2	05/01/12	4 - 5	Total PCBs	1.60E+04	2.80E+06	6.50E+06 [b]	2.20E+04
VAP-A5.2-NV119	Area 5-2	05/02/12	6 - 7	Total PCBs	1.60E+04	2.80E+06	6.50E+06 [b]	3.90E+04
SB-A5.2-NG127	Area 5-2	05/02/12	2 - 3	Manganese	9.00E+07	6.45E+05	9.90E+05	4.03E+06
SB-A5.2-OB120	Area 5-2	05/22/12	26 - 27	Manganese	9.00E+07	6.45E+05	9.90E+05	7.96E+05
SB-A5.2-OG144	Area 5-2	05/04/12	0 - 1	Lead	9.00E+05	1.89E+07	2.90E+07	1.16E+06
SB-A5.2-NE157	Area 5-2	05/09/12	3 - 4	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	1.10E+04
SB-A5.2-OG162	Area 5-2	05/07/12	0 - 1	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	2.80E+04
SB-A5.3-OC169	Area 5-3	05/31/12	6 - 7	Manganese	9.00E+07	6.45E+05	9.90E+05	7.59E+05
SB-A5.3-OQ175	Area 5-3	05/30/12	1 - 2	Manganese	9.00E+07	6.45E+05	9.90E+05	6.71E+05
SB-A5.3-OX123	Area 5-3	06/01/12	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	2.15E+04
SB-A5.3-OX123	Area 5-3	06/01/12	1 - 2	Manganese	9.00E+07	6.45E+05	9.90E+05	1.21E+06
SB-A5.3-OX122	Area 5-3	04/08/21	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	1.53E+04
SB-A5.3-OY123	Area 5-3	04/08/21	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	2.15E+04
SB-A5.3-OV123	Area 5-3	04/09/21	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	8.10E+03
SB-A5.3-OU123	Area 5-3	08/10/22	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	2.29E+04
SB-A5.3-OU123	Area 5-3	08/10/22	2 - 3	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	1.28E+04
SB-A5.3-OS123	Area 5-3	08/10/22	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	1.27E+04
SB-A5.3-OS123	Area 5-3	08/10/22	2 - 3	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	8.92E+04
SB-A5.3-OT123	Area 5-3	08/10/22	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	3.32E+04
SB-A5.3-OT123	Area 5-3	08/10/22	2 - 3	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	5.03E+04
SB-A5.3-OH123	Area 5-3	08/10/22	2 - 3	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	8.20E+03
SB-A5.3-OP123	Area 5-3	08/10/22	0 - 0.3	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	1.00E+04
VAP-A5.5-NP194	Area 5-5	05/09/12	56 - 57	Manganese	9.00E+07	6.45E+05	9.90E+05	8.53E+05
P2-MW-04	Area 5-5	07/21/11	1 - 3	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	9.40E+03

Notes

Result exceeds EGLE December 2013 criteria (updated June 25, 2018)

EGLE - Michigan Department of Environment, Great Lakes and Energy

DC = Michigan Part 201 Non-Residential Soil Direct Contact Criteria

PSIC = Michigan Part 201 Particulate Soil Inhalation Criteria

NA = Not Applicable

bgs = below ground surface

ID = insufficient data to develop a criterion

µg/kg = micrograms per kilogram

[a] based on a 5-acre source area, unless otherwise noted

[b] based on a 1/2-acre source area

Table 2
Plant 3 Soil Exceedances Summary
RACER Trust Plants 2 and 3
Lansing, Michigan

Location	Area	Depth (feet bgs)	Compound	EGLE December 2013 Criteria			Result (µg/kg)
				DC Criteria (µg/kg)	Adjusted PSIC- 100 acres (µg/kg)	Site-Specific PSIC [a] (µg/kg)	
13	Area 14	43.5 - 45	Arsenic	3.70E+04	3.91E+05	9.10E+05 [b]	4.20E+04
13	Area 14	11 - 12.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.75E+05
13	Area 14	6 - 7.5	Nickel	1.50E+08	6.88E+06	1.06E+07	7.00E+06
14	Area 14	11 - 12.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	8.20E+05
14	Area 14	13.5 - 15	Cyanide	2.50E+05	1.08E+05	1.65E+05	5.25E+05
14	Area 14	16 - 17.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.40E+05
14	Area 14	1 - 2.5	Nickel	1.50E+08	6.88E+06	1.06E+07	7.30E+06
16	Area 14	11 - 12.5	Nickel	1.50E+08	6.88E+06	1.06E+07	7.50E+06
20	Area 14	16 - 17.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	3.20E+05
21	Area 14	11 - 12.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.55E+05
21	Area 14	16 - 17.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	2.95E+05
30	Area 14	16 - 17.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	2.13E+05
30	Area 14	21 - 22.5	Cyanide	2.50E+05	1.08E+05	1.65E+05	3.20E+05
30	Area 14	23.5 - 25	Cyanide	2.50E+05	1.08E+05	1.65E+05	2.85E+05
63	Area 14	20	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.15E+05
63	Area 14	30	Cyanide	2.50E+05	1.08E+05	1.65E+05	3.25E+05
63	Area 14	40	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.40E+05
64	Area 14	20	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.17E+05
65	Area 14	10	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.70E+05
69	Area 14	10	Cyanide	2.50E+05	1.08E+05	1.65E+05	2.19E+05
70	Area 14	10	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.11E+05
71	Area 14	20	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.89E+05
72	Area 14	20	Cyanide	2.50E+05	1.08E+05	1.65E+05	5.70E+05
G1	Area 14	2	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.37E+06
G2	Area 14	7	Cyanide	2.50E+05	1.08E+05	1.65E+05	3.90E+05
G3	Area 14	5	Cyanide	2.50E+05	1.08E+05	1.65E+05	7.70E+05
G7	Area 14	20	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.40E+05
G12	Area 14	15	Cyanide	2.50E+05	1.08E+05	1.65E+05	2.50E+05
H4	Area 14	16	Cyanide	2.50E+05	1.08E+05	1.65E+05	1.90E+05
H7	Area 14	20	Cyanide	2.50E+05	1.08E+05	1.65E+05	2.01E+06
I10	Area 14	6	Cyanide	2.50E+05	1.08E+05	1.65E+05	2.07E+06
I5	Area 14	20	Cyanide	2.50E+05	1.08E+05	1.65E+05	4.16E+05
G12	Area 14	15	Nickel	1.50E+08	6.88E+06	1.06E+07	1.20E+07
SB-A16-HU165	Area 16	4 - 5	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	3.30E+04
SB-A16-HU168	Area 16	9 - 10	Lead	9.00E+05	1.89E+07	2.90E+07	7.23E+06
SB-A16-HU181	Area 16	4 - 5	Lead	9.00E+05	1.89E+07	2.90E+07	1.25E+06
SB-A16-HD162	Area 16	8 - 9	Manganese	9.00E+07	6.45E+05	9.90E+05	7.34E+05
SB-A18-CJ150	Area 18	1 - 2	Benzo(a)pyrene	8.00E+03	8.17E+05	1.25E+06	4.22E+04
P3-SB-25	Area 19	1 - 2	Arsenic	3.70E+04	3.91E+05	9.10E+05 [b]	8.28E+04
P3-SB-25	Area 19	9 - 10	Arsenic	3.70E+04	3.91E+05	9.10E+05 [b]	7.72E+04
SB-A19-HJ148	Area 19	1 - 2	Arsenic	3.70E+04	3.91E+05	9.10E+05 [b]	4.12E+04
VAP-A19-HJ150	Area 19	1 - 2	Arsenic	3.70E+04	3.91E+05	9.10E+05 [b]	5.20E+04
P3-SB-13	Area 20	17 - 18	Manganese	9.00E+07	6.45E+05	9.90E+05	1.13E+06
P3-SB-27	Area 21	4 - 5 (22 - 23) ¹	Arsenic	3.70E+04	3.91E+05	9.10E+05 [b]	3.75E+04

Notes

Result exceeds EGLE December 2013 criteria (updated June 25, 2018)

¹ - Depth in parentheses reflects current depth below ground surface (original sample location was covered with 18 feet of fill material in 2015)

EGLE = Michigan Department of Environment, Great Lakes and Energy

DC = Michigan Part 201 Non-Residential Soil Direct Contact Criteria

PSIC = Michigan Part 201 Particulate Soil Inhalation Criteria

bgs = below ground surface

NA = Not applicable

ID = insufficient data to develop a criterion

µg/kg = micrograms per kilogram

[a] based on a 5-acre source area, unless otherwise noted

[b] based on a 1/2-acre source area

Table 3
Additional Investigation Soil Summary
RACER Lansing
Lansing, Michigan



Location ID	Depth (ft bgs)	Date Collected	Sample Name	Benzo(a)pyrene ug/kg	Arsenic mg/kg	Total solids %
Michigan Soil (DEQ2013) Nonresidential Direct Contact				8,000	37	- -
Plant 2 Area 2						
SB-A2-OX62	0 - 1	04/07/21	SB-A2-OX62_0-1(040721)	NA	9.02	79
	1 - 2	04/07/21	SB-A2-OX62_1-2(040721)	NA	5.90	82
SB-A2-OX65	0 - 1	04/07/21	SB-A2-OX65_0-1(040721)	NA	3.92	79
	1 - 2	04/07/21	SB-A2-OX65_1-2(040721)	NA	4.30	78
SB-A2-OX68	0.5 - 1	04/07/21	SB-A2-OX68_0.5-1(040721)	NA	6.21	84
	1 - 2	04/07/21	SB-A2-OX68_1-2(040721)	NA	4.86	83
SB-A2-PA62	0 - 1	04/07/21	SB-A2-PA62_0-1(040721)	NA	6.75 [5.21]	82 [82]
	1 - 2	04/07/21	SB-A2-PA62_1-2(040721)	NA	2.94	84
SB-A2-PA65	0 - 1	04/07/21	SB-A2-PA65_0-1(040721)	NA	14.20	85
	0.5 - 1	04/07/21	SB-A2-PA68_0.5-1(040721)	NA	6.80	79
SB-A2-PA68	1 - 2	04/07/21	SB-A2-PA68_1-2(040721)	NA	4.82 [2.81]	84 [86]
SB-A2-PD62	0 - 1	04/07/21	SB-A2-PD62_0-1(040721)	NA	5.91	80
	1 - 2	04/07/21	SB-A2-PD62_1-2(040721)	NA	3.53	82
SB-A2-PD68	0.5 - 1	04/07/21	SB-A2-PD68_0.5-1(040721)	NA	7.59	91
	1 - 2	04/07/21	SB-A2-PD68_1-2(040721)	NA	4.66	87
SB-A2-PD65	0 - 1	04/07/21	SB-A2-PD65_0-1(040721)	NA	70.8	88
	1 - 2	04/07/21	SB-A2-PD65_1-2(040721)	NA	307	88
	2 - 3	05/20/21	SB-A2-PD65_2-3(052021)	NA	2.82 [2.70]	82 [81]
SB-A2-PD64	0 - 1	05/20/21	SB-A2-PD64_0-1(052021)	NA	3.32	86
	1 - 2	05/20/21	SB-A2-PD64_1-2(052021)	NA	2.37	85
SB-A2-PE65	0 - 1	05/20/21	SB-A2-PE65_0-1(052021)	NA	16.00	93
	1 - 2	05/20/21	SB-A2-PE65_1-2(052021)	NA	2.43	89
Plant 2 Area 5-2						
SB-A5.2-OF162	0 - 1	04/08/21	SB-A5.2-OF162_0-1(040821)	18,300 I	NA	80
	1 - 2	04/08/21	SB-A5.2-OF162_1-2(040821)	5,500	NA	84
SB-A5.2-OG161	0 - 1	04/08/21	SB-A5.2-OG161_0-1(040821)	29,700 I [10,600]	NA	77 [83]
	1 - 2	04/08/21	SB-A5.2-OG161_1-2(040821)	6,200 I	NA	88
SB-A5.2-OG163	0 - 1	04/08/21	SB-A5.2-OG163_0-1(040821)	39,000 I	NA	85
	1 - 2	04/08/21	SB-A5.2-OG163_1-2(040821)	11,500 I	NA	80
SB-A5.2-OF162A	1 - 2	04/08/21	SB-A5.2-OF162A_1-2(040921)	<300 G	NA	86
	2 - 3	04/08/21	SB-A5.2-OF162A_2-3(040921)	<300 G	NA	85
SB-A5.2-OG160	0 - 1	04/08/21	SB-A5.2-OG160_0-1(040821)	2,000 IG	NA	76
	1 - 2	04/08/21	SB-A5.2-OG160_1-2(040821)	2,900 G	NA	88
SB-A5.2-OG165	2 - 3	04/08/21	SB-A5.2-OG165_2-3(040821)	<300 G	NA	80
SB-A5.2-OH160	0.5 - 1	04/09/21	SB-A5.2-OH160_0.5-1(040821)	<300 G	NA	87
	2 - 3	04/09/21	SB-A5.2-OH160_2-3(040821)	<300 G	NA	86
Plant 2 Area 5-3						
SB-A5.3-OW123	1 - 2	04/08/21	SB-A5.3-OW123_1-2(040821)	5,300	NA	80
	2 - 3	04/08/21	SB-A5.3-OW123_2-3(040821)	4,700	NA	86
SB-A5.3-OX122	1 - 2	04/08/21	SB-A5.3-OX122_1-2(040821)	15,300 I	NA	85
	2 - 3	04/08/21	SB-A5.3-OX122_2-3(040821)	3,400	NA	86
SB-A5.3-OY123	1 - 2	04/08/21	SB-A5.3-OY123_1-2(040821)	21,500 [10,200]	NA	84 [84]
	2 - 3	04/08/21	SB-A5.3-OY123_2-3(040821)	2,600	NA	81
SB-A5.3-OV122	1 - 2	04/09/21	SB-A5.3-OV122_1-2(040921)	300 G	NA	88
	2 - 3	04/09/21	SB-A5.3-OV122_2-3(040921)	<300 G	NA	87
SB-A5.3-OV123	1 - 2	04/09/21	SB-A5.3-OV123_1-2(040921)	8,100 G	NA	87
	2 - 3	04/09/21	SB-A5.3-OV123_2-3(040921)	1,200 G	NA	87
SB-A5.3-OX121	1 - 2	04/09/21	SB-A5.3-OX121_1-2(040921)	<300 G	NA	82
	2 - 3	04/09/21	SB-A5.3-OX121_2-3(040921)	<300 G	NA	87
SB-A5.3-OZ123	1 - 2	04/09/21	SB-A5.3-OZ123_1-2(040921)	<300 G	NA	87
	2 - 3	04/09/21	SB-A5.3-OZ123_2-3(040921)	<300 G	NA	87
SB-A5.3-OU122	1 - 2	08/10/22	SB-A5.3-OU122_1-2(081022)	<300	NA	80
	2 - 3	08/10/22	SB-A5.3-OU122_2-3(081022)	<300	NA	86
SB-A5.3-OU123	1 - 2	08/10/22	SB-A5.3-OU123_1-2(081022)	22,900 [9,900]	NA	87 [86]
	2 - 3	08/10/22	SB-A5.3-OU123_2-3(081022)	12,800	NA	85 [87]
SB-A5.3-OU124	1 - 2	08/10/22	SB-A5.3-OU124_1-2(081022)	<300	NA	86
	2 - 3	08/10/22	SB-A5.3-OU124_2-3(081022)	<300	NA	85
SB-A5.3-OV124	1 - 2	08/10/22	SB-A5.3-OV124_1-2(081022)	<300	NA	87
	2 - 3	08/10/22	SB-A5.3-OV124_2-3(081022)	<300 [<300]	NA	85 [87]
SB-A5.3-OS122	1 - 2	08/10/22	SB-A5.3-OS122_1-2(081022)	<300	NA	87
	2 - 3	08/10/22	SB-A5.3-OS122_2-3(081022)	<300	NA	88
SB-A5.3-OT122	1 - 2	08/10/22	SB-A5.3-OT122_1-2(081022)	<300	NA	71
	2 - 3	08/10/22	SB-A5.3-OT122_2-3(081022)	<300	NA	84

Table 3
Additional Investigation Soil Summary
RACER Lansing
Lansing, Michigan



Location ID	Depth (ft bgs)	Date Collected	Sample Name	Benzo(a)pyrene ug/kg	Arsenic mg/kg	Total solids %
Michigan Soil (DEQ2013) Nonresidential Direct Contact				8,000	37	- -
Plant 2 Area 5-3 Continued						
SB-A5.3-OS123	1 - 2	08/10/22	SB-A5.3-OS123_1-2(081022)	12,700	NA	84
	2 - 3	08/10/22	SB-A5.3-OS123_2-3(081022)	89,200 Y	NA	85
SB-A5.3-OT123	1 - 2	08/10/22	SB-A5.3-OT123_1-2(081022)	33,200	NA	84
	2 - 3	08/10/22	SB-A5.3-OT123_2-3(081022)	50,300	NA	86
SB-A5.3-OS124	1 - 2	08/10/22	SB-A5.3-OS124_1-2(081022)	<300	NA	91
	2 - 3	08/10/22	SB-A5.3-OS124_2-3(081022)	<300	NA	90
SB-A5.3-OT124	1 - 2	08/10/22	SB-A5.3-OT124_1-2(081022)	<300	NA	86
	2 - 3	08/10/22	SB-A5.3-OT124_2-3(081022)	<300	NA	86
SB-A5.3-ON122	1 - 2	09/23/22	SB-A5.3-ON122_1-2(092322)	<300	NA	90
	2 - 3	09/23/22	SB-A5.3-ON122_2-3(092322)	<300	NA	91
SB-A5.3-OI121	1 - 2	09/23/22	SB-A5.3-OI121_1-2(092322)	<300	NA	83
	2 - 3	09/23/22	SB-A5.3-OI121_2-3(092322)	<300	NA	82
SB-A5.3-OH123	1 - 2	09/23/22	SB-A5.3-OH123_1-2(092322)	Soil sample not collected poor recovery from soil boring		
	2 - 3	09/23/22	SB-A5.3-OH123_2-3(092322)	8,200	NA	88
SB-A5.3-OI123*	0-0.5	09/23/22	SB-A5.3-OI123_0-0.5(092322)	7,300	NA	82
SB-A5.3-ON123*	0-0.5	09/23/22	SB-A5.3-ON123_0-0.5(092322)	3,500	NA	83
SB-A5.3-OP123*	0-0.3	09/23/22	SB-A5.3-OP123_0-0.3(092322)	10,000	NA	74
SB-A5.3-OI125	1 - 2	09/23/22	SB-A5.3-OI125_1-2(092322)	<300 [<300]	NA	86 [87]
	2 - 3	09/23/22	SB-A5.3-OI125_2-3(092322)	<300	NA	89
SB-A5.3-ON124	1 - 2	09/23/22	SB-A5.3-ON124_1-2(092322)	<300 [<300]	NA	84 [88]
	2 - 3	09/23/22	SB-A5.3-ON124_2-3(092322)	<300	NA	88
SB-A5.3-OH124	1 - 2	12/05/22	SB-A5.3-OH124_1-2(120522)	<300	NA	82
	2 - 3	12/05/22	SB-A5.3-OH124_2-3(120522)	<300	NA	81
SB-A5.3-OH123	1 - 2	12/05/22	SB-A5.3-OH123_1-2(120522)	<300	NA	83
	2 - 3	12/05/22	SB-A5.3-OH123_2-3(120522)	<300 [<300]	NA	86 [85]
SB-A5.3-OH122	1.5-2	12/05/22	SB-A5.3-OH122_1.5-2(120522)	<300	NA	87
	2 - 3	12/05/22	SB-A5.3-OH122_2-3(120522)	3,300	NA	83
SB-A5.3-OG123	1.5 - 2	12/05/22	SB-A5.3-OG123_1.5-2(120522)	<300	NA	82
	2 - 3	12/05/22	SB-A5.3-OG123_2-3(120522)	<300	NA	83
Plant 3 Area 18						
SB-A18-CI150	1 - 2	04/08/21	SB-A18-CI150_1-2(040821)	2,500	NA	89
	2 - 3	04/08/21	SB-A18-CI150_2-3(040821)	4,400	NA	90
SB-A18-CJ149	1 - 2	04/08/21	SB-A18-CJ149_1-2(040821)	15,000	NA	90
	2 - 3	04/08/21	SB-A18-CJ149_2-3(040821)	3,300	NA	89
SB-A18-CJ150	1 - 2	04/08/21	SB-A18-CJ150_1-2(040821)	7,600 [16,300]	NA	89 [89]
	2 - 3	04/08/21	SB-A18-CJ150_2-3(040821)	21,900	NA	90
SB-A18-CJ151	1 - 2	04/08/21	SB-A18-CJ151_1-2(040821)	6,200	NA	90
	2 - 3	04/08/21	SB-A18-CJ151_2-3(040821)	3,000	NA	88
SB-A18-CK150	1.5 - 2	04/08/21	SB-A18-CK150_1.5-2(040821)	<300	NA	91
	2 - 3	04/08/21	SB-A18-CK150_2-3(040821)	<300	NA	88
SB-A18-CJ148	1 - 2	05/20/21	SB-A18-CJ148_1-2(052021)	300	NA	92
	2 - 3	05/20/21	SB-A18-CJ148_2-3(052021)	1,600	NA	93
SB-A18-CI149	1 - 2	05/20/21	SB-A18-CI149_1-2(052021)	1,300	NA	94
	2 - 3	05/20/21	SB-A18-CI149_2-3(052021)	1,200	NA	94
SB-A18-CK149	1 - 2	05/20/21	SB-A18-CK149_1-2(052021)	14,500	NA	92
	2 - 3	05/20/21	SB-A18-CK149_2-3(052021)	2,500	NA	94
SB-A18-CK147	1 - 2	07/28/21	SB-A18-CK147_1-2(072821)	This location was a step out location; analysis not completed		
	2 - 3	07/28/21	SB-A18-CK147_2-3(072821)			
SB-A18-CK148	1 - 2	07/28/21	SB-A18-CK148_1-2(072821)	1,400 [1,600]	NA	88 [89]
	2 - 3	07/28/21	SB-A18-CK148_2-3(072821)	300	NA	88

Notes:

* Concrete encountered in borehole at approximately 0.5 feet bgs

I - Matrix interference with internal standard

G - Estimated result due to extraction run outside of holding time

E - Elevated reporting limit due to high target concentration

EGLE - Michigan Department of Environment, Great Lakes and Energy

Data compared to EGLE December 2013 Part 201 Generic Non-Residential Criteria

ft bgs - feet below ground surface

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

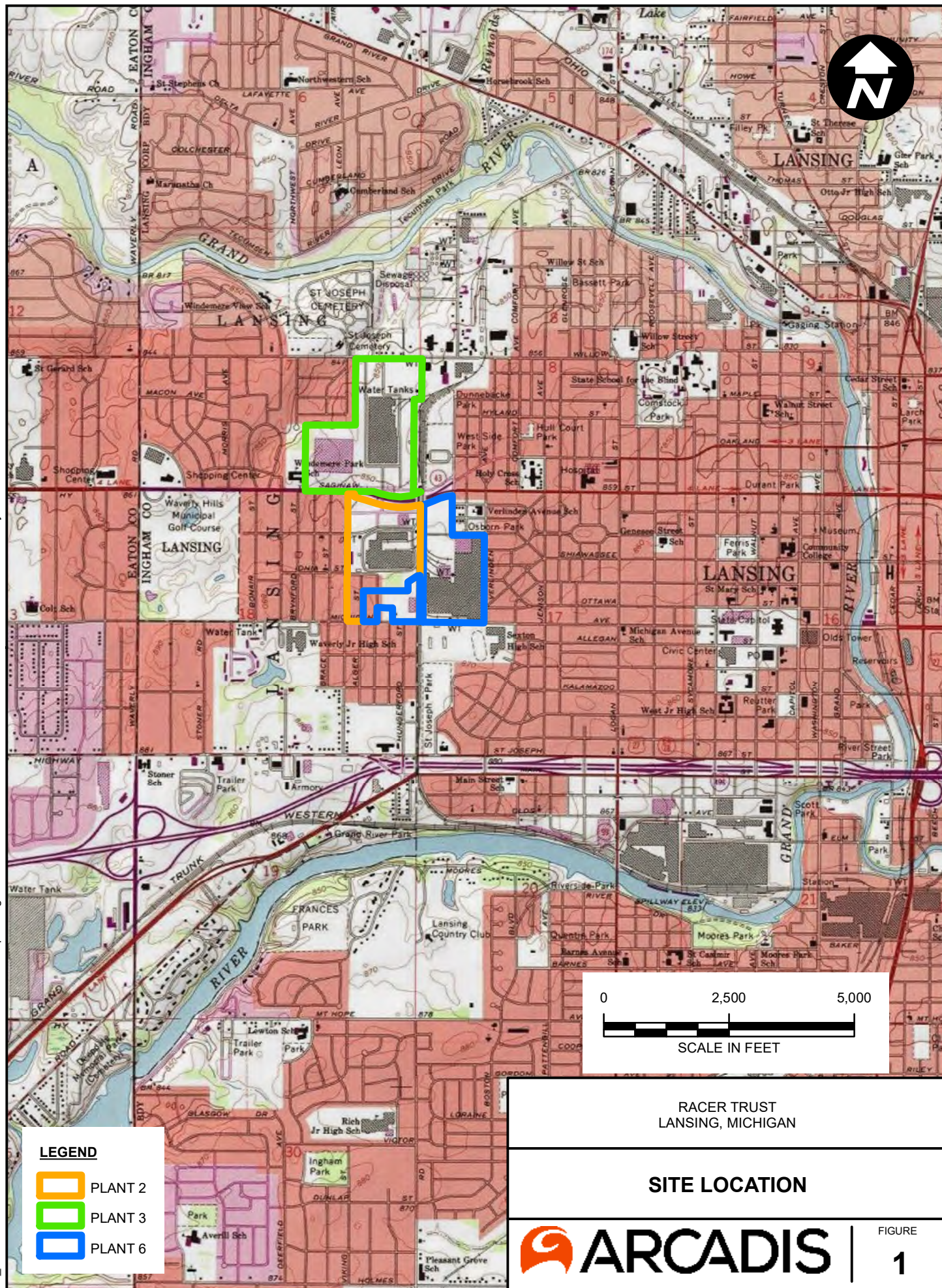
NA - not analyzed for respective constituent

[] - duplicate sample

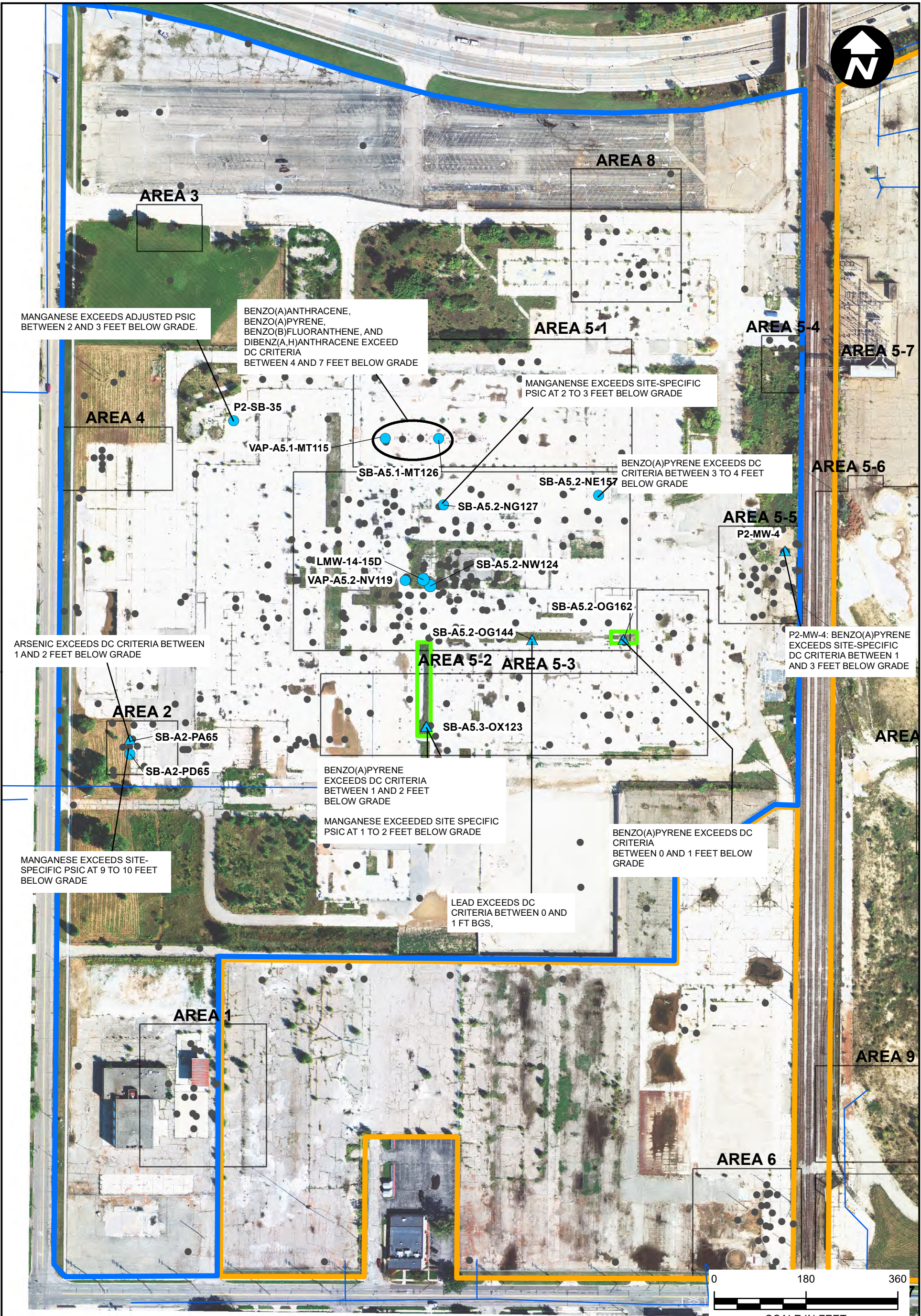
< - constituent not detected above laboratory detection limit

Shaded and bolded values exceed EGLE December 30, 2013 Criteria (updated June 25, 2018)

Figures



CITY: Novi DIV: ENV DB: TRY PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl T: ENV\RACER\Buffalo\MXDs\2021 Corrective Measures Workplan\Figure2_Plant2_S_Plant6_SoilCorrectiveMeasures.mxd PLOTTED: 3/15/2023 12:29:34 PM BY: V.Davis



LEGEND ▲ 2013 EXCEEDANCE AT 0-2 FT BGS ● 2013 EXCEEDANCE > 2 FT BGS ■ PROPOSED EXPOSURE BARRIER ● SOIL SAMPLE LOCATIONS BELOW DC AND PSIC CRITERIA — CURRENT STORM SEWERS (OBG, MAY 2009) ■ PLANT 2 ■ PLANT 6	RACER TRUST PLANT 2 LANSING, MICHIGAN PLANT 2 SOIL CORRECTIVE MEASURES EVALUATION ARCADIS	FIGURE 2

NOTES:
1. ALL SOIL SAMPLES SHOWN COLLECTED PRIOR TO JULY 2012.
2. COORDINATE SYSTEM IS IN NAD_1983_StatePlane_Michigan_South_FIPS_2113_Feet_Intl

DC = NON-RESIDENTIAL DIRECT CONTACT CRITERIA (BASED ON EGLE DECEMBER 2013 CRITERIA)
NR = NON-RESIDENTIAL
EGLE = MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY

CITY: Novi DIV: ENV DB: TRY PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENV\RACER\Buffalo\MXDs\2021 Corrective Measures Workplan\Figure 3 - Plant 3 Areas Evaluated.mxd PLOTTED: 12/17/2021 12:58:47 PM BY: Mjoye



LEGEND

- 2013 EXCEEDANCE AT 0-2 FT BGS
- SOIL SAMPLE LOCATIONS
BELOW DC AND PSIC CRITERIA
- PLANT 3
- 2013 EXCEEDANCE > 2 FT BGS
- CURRENT STORM SEWERS
(OBG, MAY 2009)
- PROPOSED
EXPOSURE BARRIER

NOTES:
1. COORDINATE SYSTEM IS IN NAD_1983_StatePlane_Michigan_South_FIPS_2113_Feet_Intl
DC = NON-RESIDENTIAL DIRECT CONTACT CRITERIA (BASED ON EGLE DECEMBER 2013 CRITERIA)
PSIC = PARTICULATE SOIL INHALATION CRITERIA
EGLE = MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY

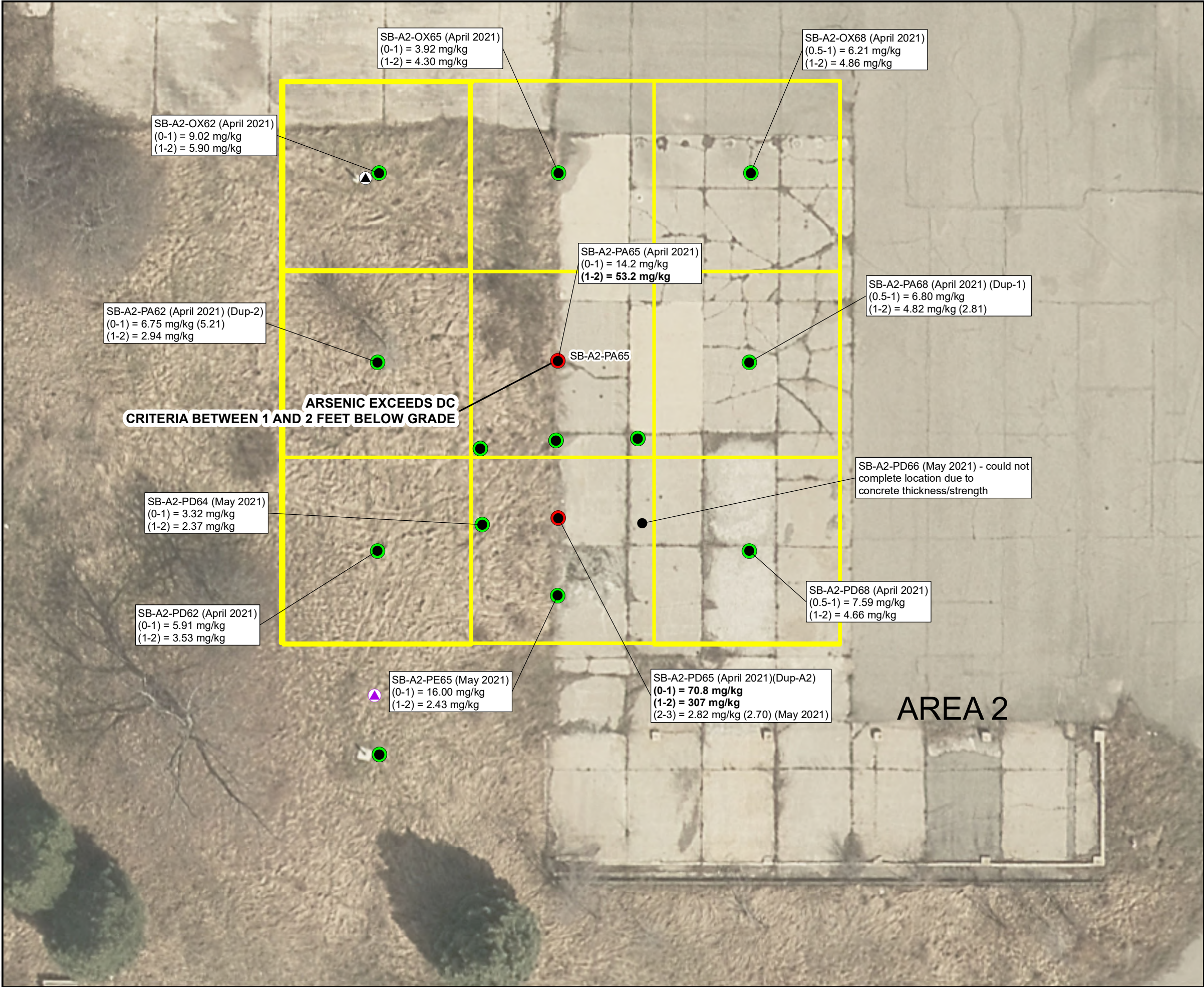
RACER TRUST
PLANT 3
LANSING, MICHIGAN

PLANT 3 SOIL CORRECTIVE
MEASURES EVALUATION

ARCADIS

FIGURE
3

CITY: Novi DIV: ENV DB: TRY PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENV\RACER\Buffalo\MXDs\2021 Corrective Measures Workplan\Figure4A_Area 2_Additional_Sampling.mxd PLOTTED: 12/17/2021 1:09:27 PM BY: MJoye



LEGEND

- ▲ PERCHED ZONE MONITORING WELL
- ▲ WEATHERED BEDROCK MONITORING WELL
- SAMPLING LOCATION
- DOES NOT EXCEED DIRECT CONTACT CRITERIA FOR ARSENIC
- EXCEEDS DIRECT CONTACT CRITERIA FOR ARSENIC

NOTE:
EGLE = Michigan Department of Environment, Great Lakes and Energy

EGLE Direct Contact Criteria for Arsenic is 37 milligrams per kilogram (mg/kg)

Bolded values exceed Direct Contact Criteria for arsenic

COORDINATE SYSTEM IS IN
NAD_1983_StatePlane_Michigan_South_FIPS_2113_Feet_Intl

(2.81) = Duplicate Sample

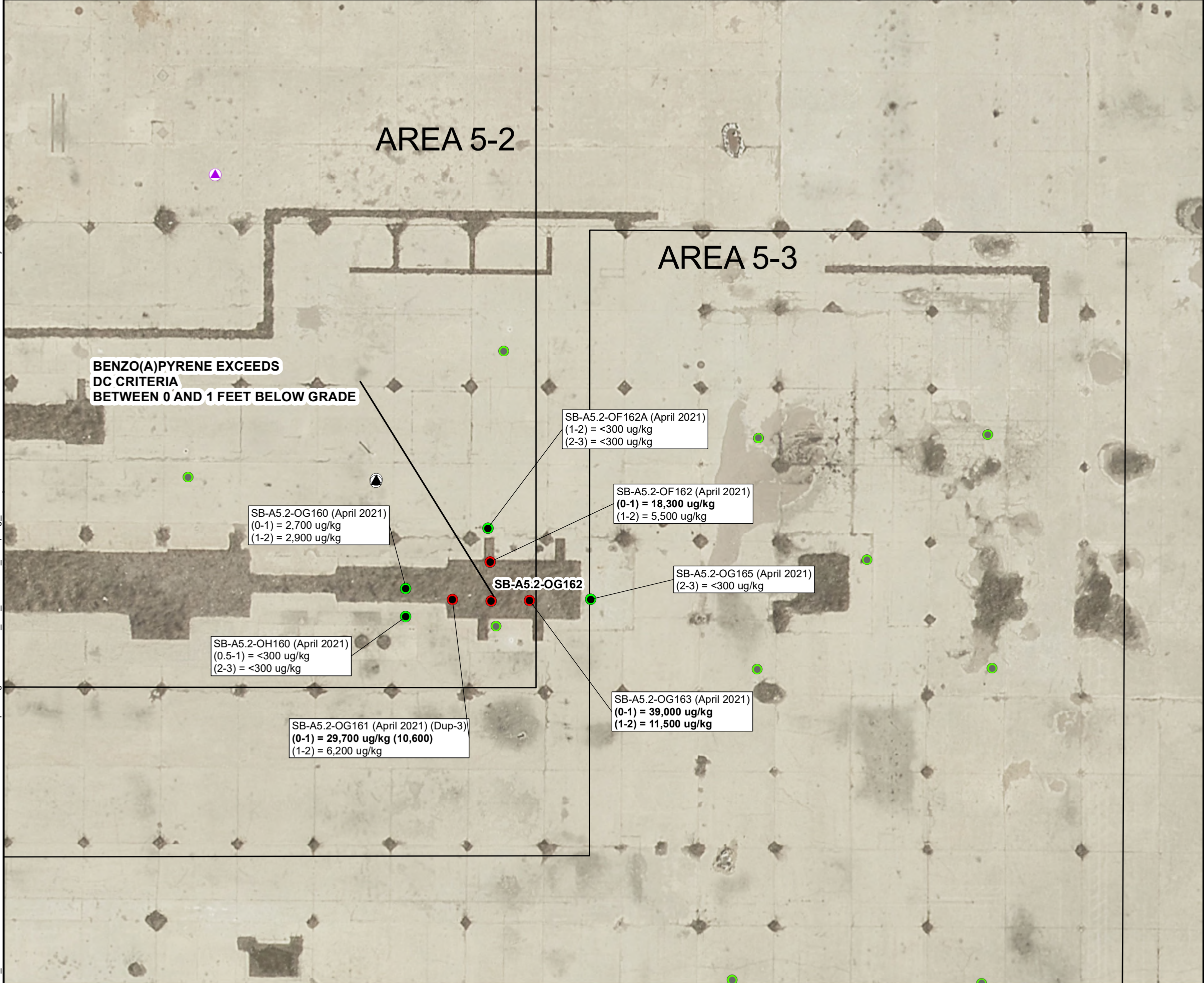


RACER TRUST
PLANT 2
LANSING, MICHIGAN

AREA 2 ADDITIONAL SAMPLING



CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENVI\RACER\Buffalo\MXDs\2021 Corrective Measures Workplan\Figure 4B - Area 5-2_Air Pollution Sampling_OCT2021.mxd PLOTTED: 12/17/2021 11:10:51 AM BY: MJoye



LEGEND

- HISTORICAL SOIL SAMPLE LOCATIONS BELOW DC CRITERIA
- PERCHED ZONE MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- SAMPLING LOCATION
- DOES NOT EXCEED DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE
- EXCEEDS DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE

NOTE:
EGLE = Michigan Department of Environment, Great Lakes and Energy

EGLE Direct Contact Criteria for benzo(a)pyrene is 8000 micrograms per kilogram (ug/kg)

Bolded values exceed Direct Contact Criteria for benzo(a)pyrene

COORDINATE SYSTEM IS IN
NAD_1983_StatePlane_Michigan_South_FIPS_2113_Feet_Intl

(10,600) = Duplicate Sample

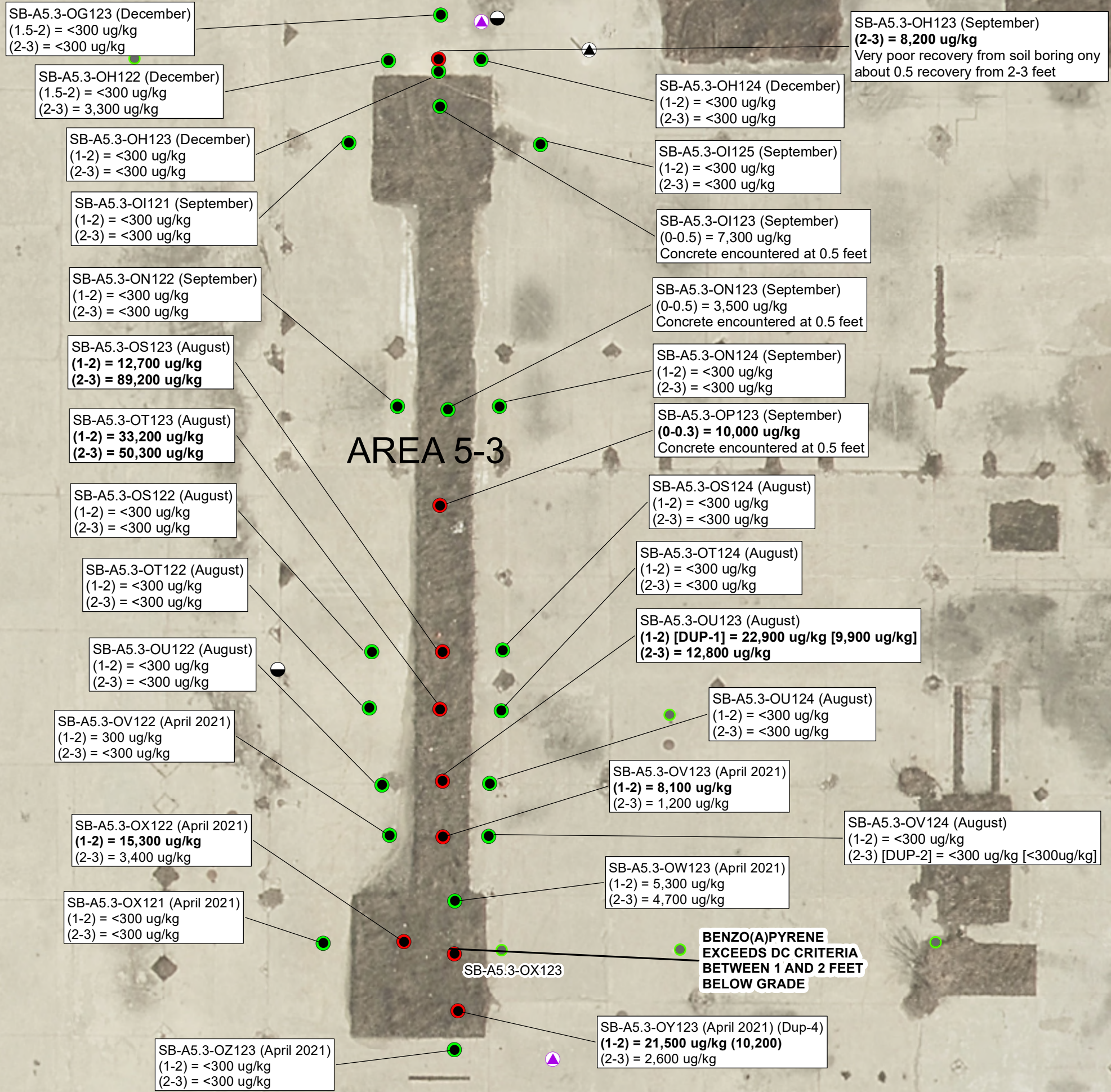


RACER TRUST
PLANT 2
LANSING, MICHIGAN

AREA 5-2 ADDITIONAL SAMPLING



FIGURE
4B



LEGEND

- HPT-VAP BORING LOCATION
- HISTORICAL SOIL SAMPLE LOCATIONS BELOW DC CRITERIA
- SAMPLING LOCATION
- DOES NOT EXCEED DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE
- EXCEEDS DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE

NOTE:

EGLE = Michigan Department of Environment, Great Lakes and Energy

EGLE Direct Contact Criteria for benzo(a)pyrene is 8000 micrograms per kilogram (ug/kg)

Bolded values exceed Direct Contact Criteria for benzo(a)pyrene

COORDINATE SYSTEM IS IN
NAD_1983_StatePlane_Michigan_South_FIPS_2113_Feet_Intl

[10,200] = Duplicate Sample



RACER TRUST
PLANT 2
LANSING, MICHIGAN

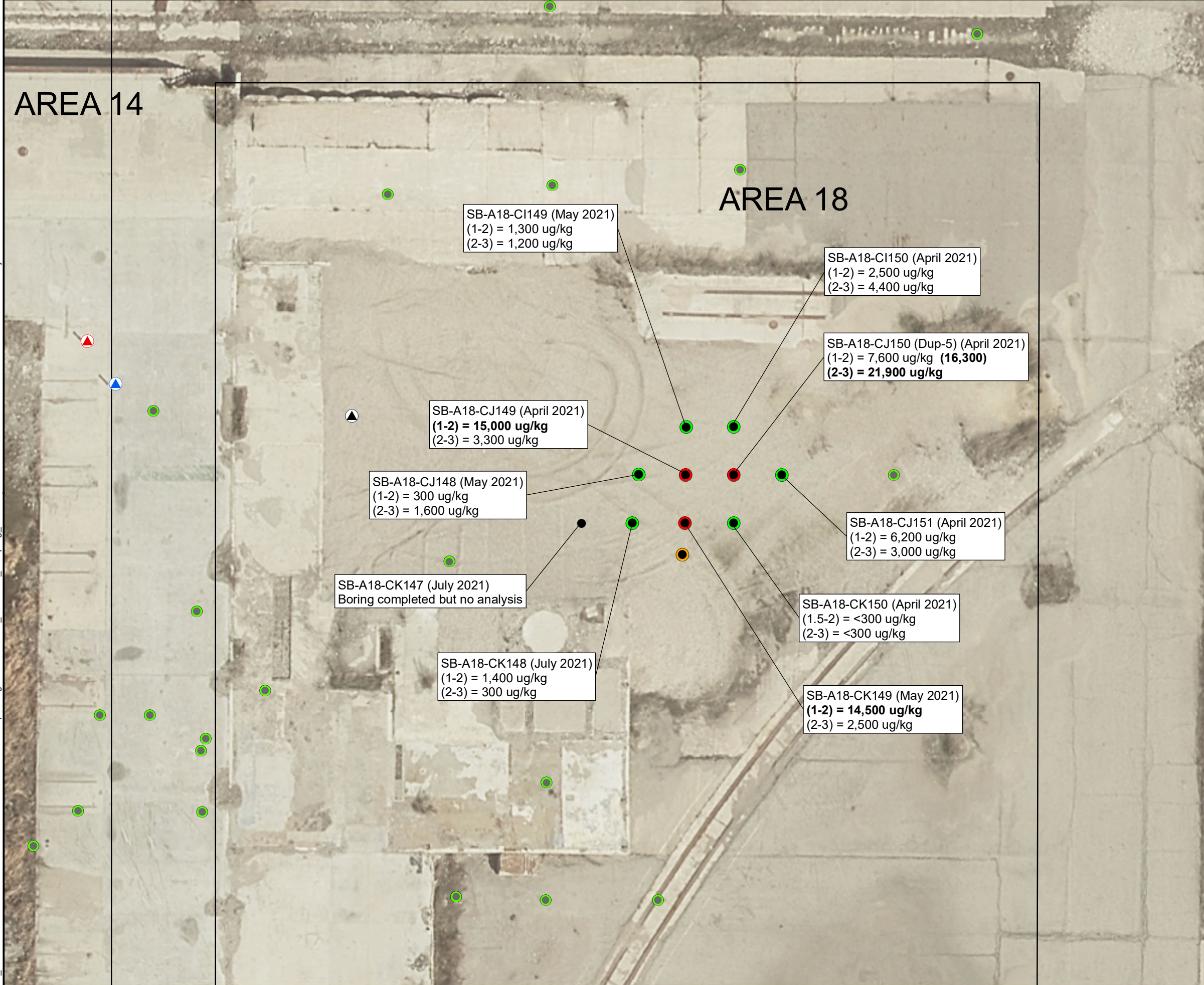
AREA 5-3 ADDITIONAL SAMPLING



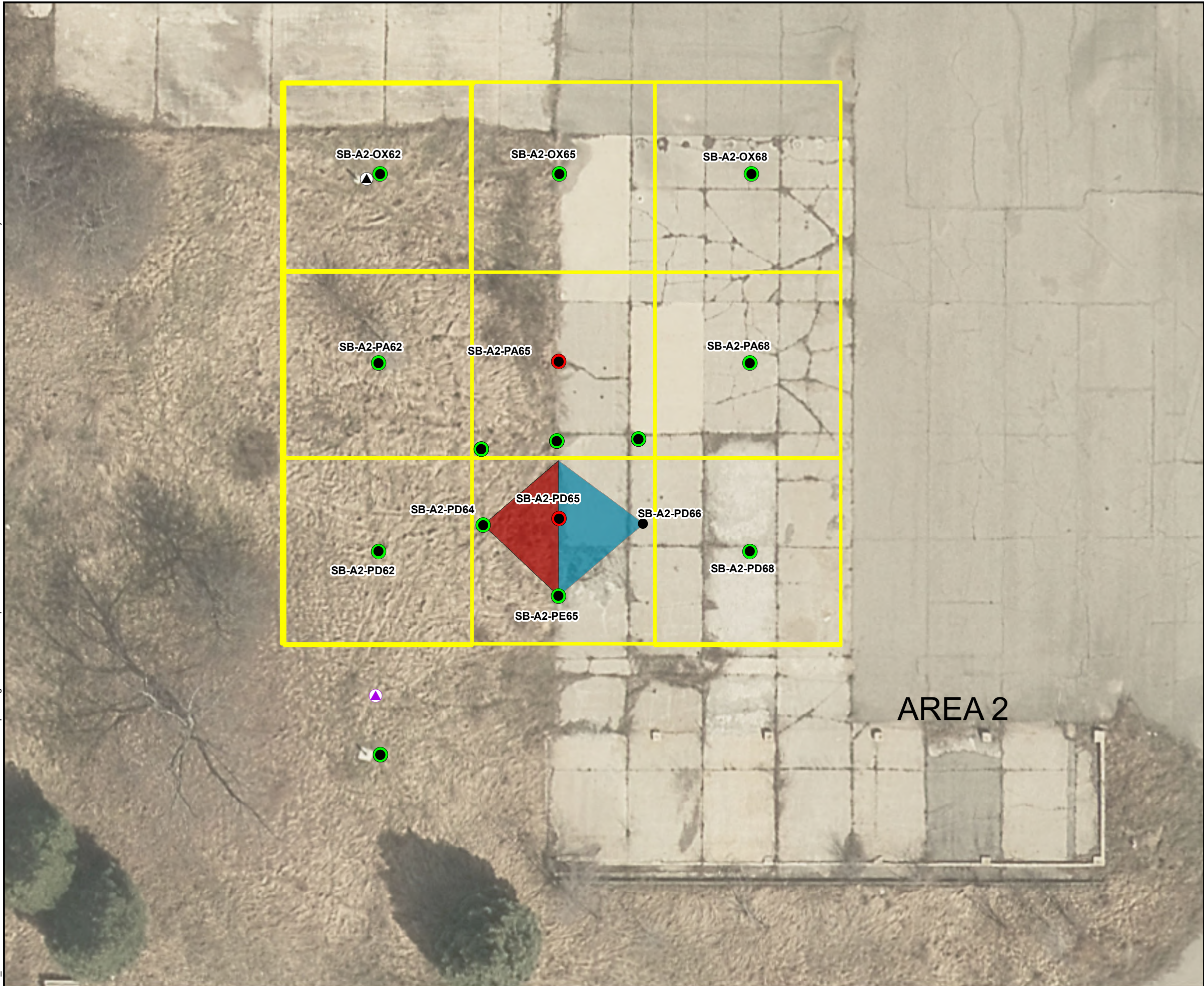
FIGURE

4C

CITY: Novi DIV: ENV DB: TRY PIC: PM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENV\RACER\Buffalo\MXDs\2021 Corrective Measures Workplan\Figure4D - Area18 Additional Sampling_OCT2021.mxd PLOTTED: 12/17/2021 10:38:26 AM BY: MJoye



CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENV\RACER\Buffalo\MXDs\2021 Corrective Measures Workplan\Figure 5 - Area 2 Proposed Excavation Area and DRC Barrier.mxd PLOTTED: 12/17/2021 10:32:46 AM BY: MJoye



LEGEND

- PERCHED ZONE MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- SAMPLING LOCATION
- DOES NOT EXCEED DIRECT CONTACT CRITERIA FOR ARSENIC
- EXCEEDS DIRECT CONTACT CRITERIA FOR ARSENIC
- PROPOSED EXCAVATION AREA
- PROPOSED EXPOSURE BARRIER

COORDINATE SYSTEM IS IN
NAD_1983_StatePlane_Michigan_South_FIPS
_2113_Feet_Intl

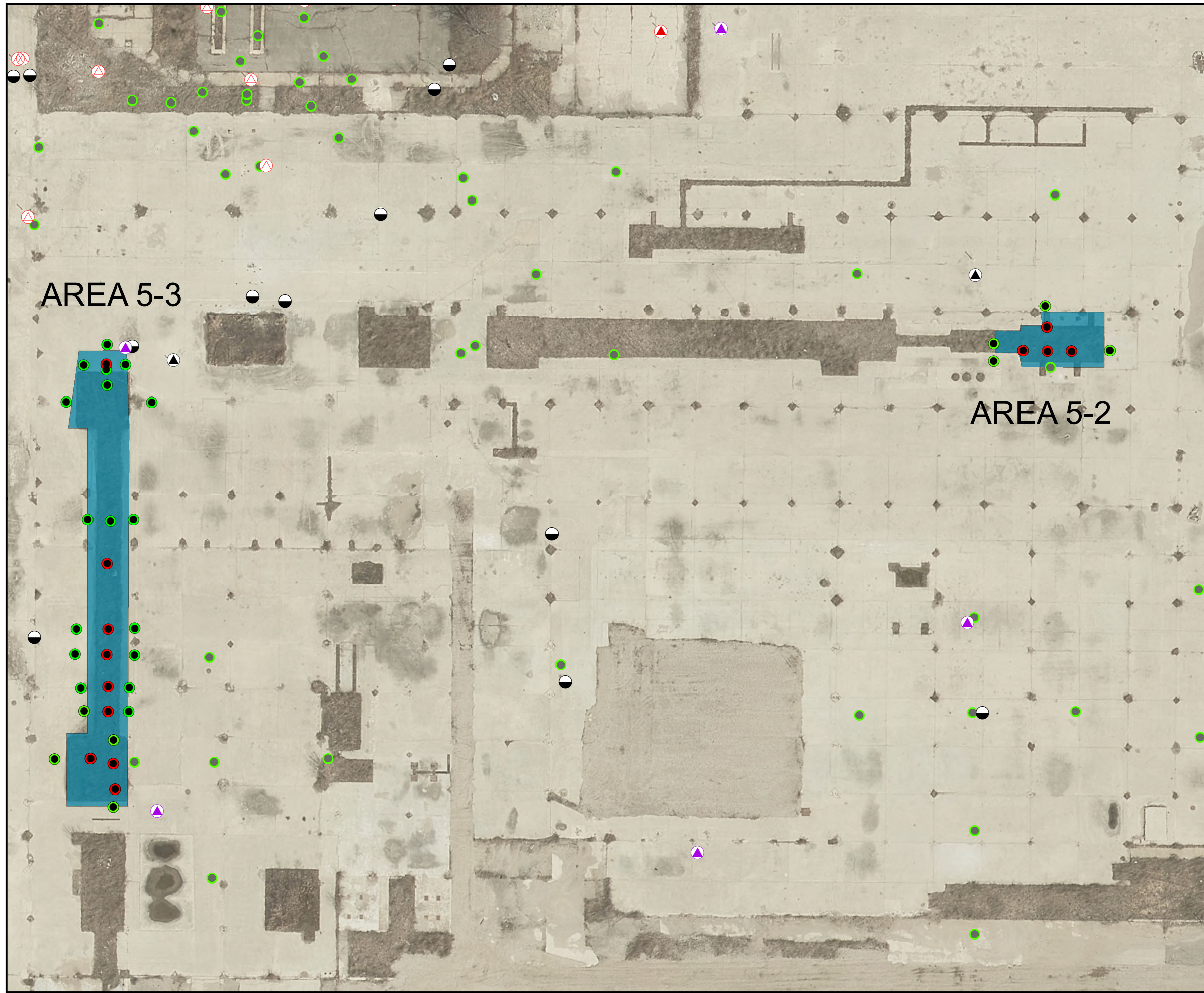
0 20 40
SCALE IN FEET

RACER TRUST
PLANT 2
LANSING, MICHIGAN

AREA 2
PROPOSED CORRECTIVE ACTIONS

FIGURE
5

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENV\RACER\Buffalo\MXDs\2022 Corrective Measures Workplan\Figure 6 - Area_5-2_5-3_Aditional_Sampling_Mar2023.mxd PLOTTED: 3/15/2023 12:03:04 PM BY: VDavis



LEGEND

- SAMPLING LOCATION
- DOES NOT EXCEED DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE
- EXCEEDS DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE
- HPT-VAP BORING LOCATION
- HISTORICAL SOIL SAMPLE LOCATIONS BELOW DC CRITERIA
- △ LNAPL MONITORING WELL
- ▲ PERCHED ZONE MONITORING WELL
- ▲ DEEP OVERBURDEN MONITORING WELL
- ▲ WEATHERED BEDROCK MONITORING WELL
- ▲ BEDROCK MONITORING WELL
- ▲ ABANDONED MONITORING WELL
- PROPOSED EXPOSURE BARRIER PLACEMENT AREA

COORDINATE SYSTEM IS IN
NAD_1983_StatePlane_Michigan_South_FIPS
_2113_Feet_Intl



0 40 80
SCALE IN FEET

RACER TRUST
PLANT 2
LANSING, MICHIGAN

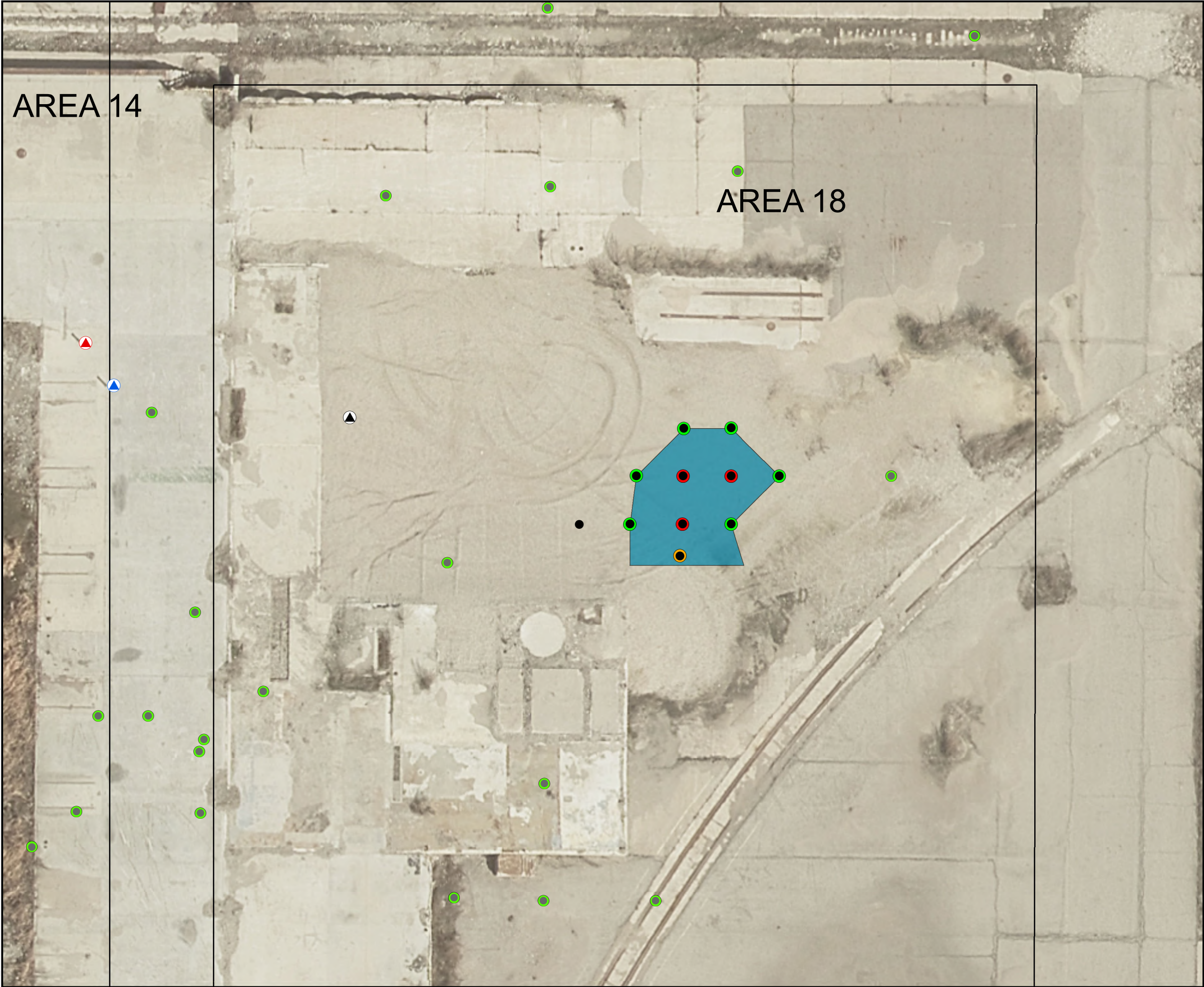
**AREA 5-2 AND AREA 5-3 PROPOSED
EXPOSURE BARRIER PLACEMENT**



FIGURE

6

CITY: Novi DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENVI\RACER\Buffalo\MXDs\2021 Corrective Measures Workplan\Figure 6 - Exposure Barrier 18 Area.mxd PLOTTED: 5/23/2022 9:41:01 AM BY: VDavis



Legend

-  HPT-VAP BORING LOCATION
-  HISTORICAL SOIL SAMPLE LOCATIONS BELOW DC CRITERIA
-  DEEP OVERBURDEN MONITORING WELL
-  BEDROCK MONITORING WELL
-  SAMPLE LOCATION
-  DOES NOT EXCEED DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE
-  EXCEEDS DIRECT CONTACT CRITERIA FOR BENZO(A)PYRENE
-  DELINEATION BORING LOCATION COULD NOT BE COMPLETED DUE TO FORMER CONCRETE BUILDING SLAB IN THIS LOCATION
-  PROPOSED EXPOSURE BARRIER PLACEMENT AREA

COORDINATE SYSTEM IS IN
NAD_1983_StatePlane_Michigan_South_FIPS
_2113_Feet_Intl



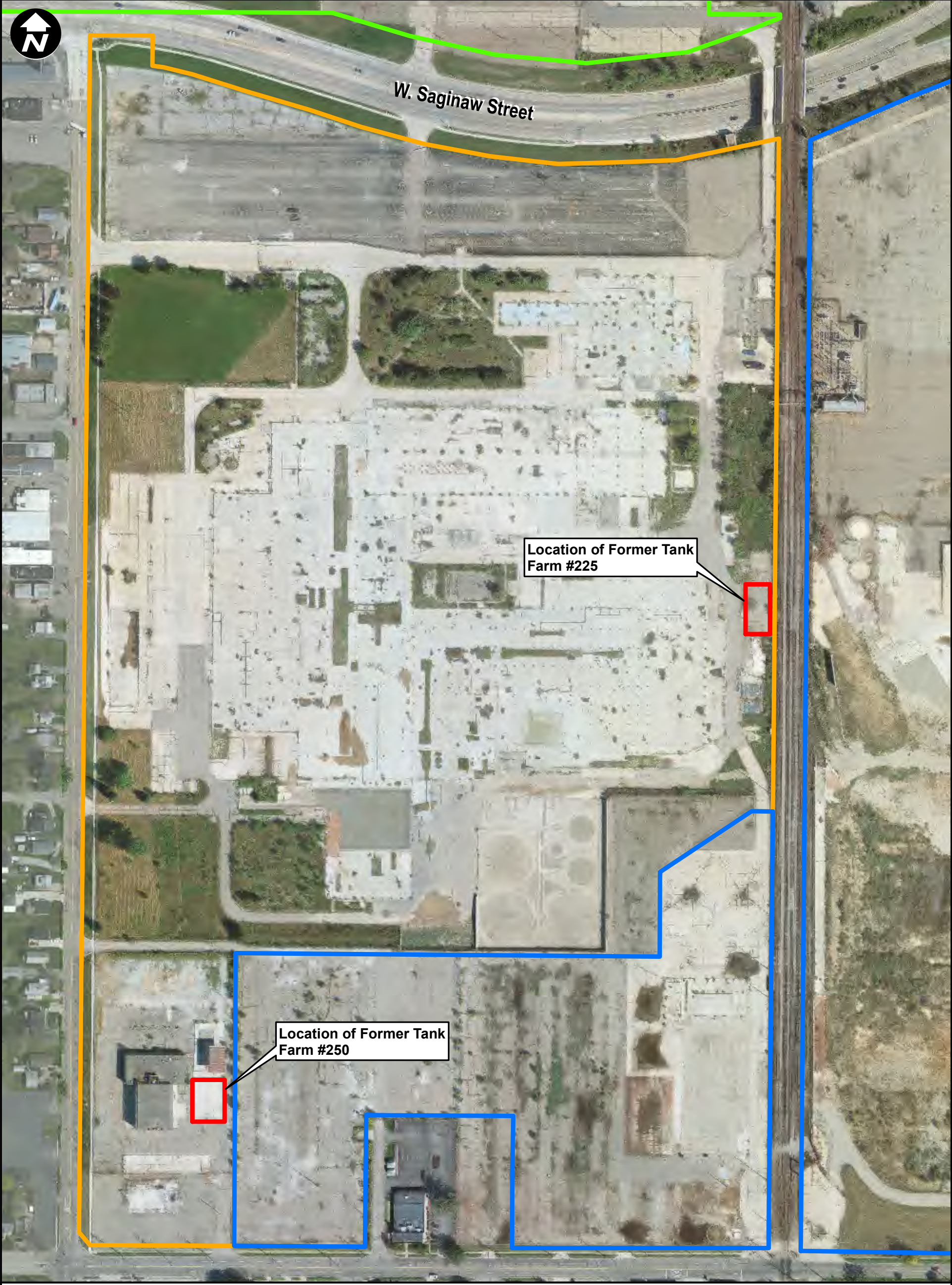
RACER TRUST
PLANT 3
LANSING, MICHIGAN

**AREA 18 PROPOSED EXPOSURE
BARRIER PLACEMENT**



FIGURE

7



W. Saginaw Street

Location of Former Tank Farm #225

Location of Former Tank Farm #250

LEGEND

PLANT BOUNDARIES

-  PLANT 2
-  PLANT 3
-  PLANT 6



NOTES:
-AERIAL IMAGERY FROM ESRI ARCGIS
ONLINE AND AN OCTOBER 2013 SITE
FLYOVER CONDUCTED BY ENG, INC

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

**PLANT 2 TANK FARMS #225
AND #250 LOCATIONS**



CITY: NOVI DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. LORENZ TR: J. SALING PROJECT NUMBER: 30075941 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
FILE: ENV\RACER\Bulldozer\Map\Map\Plant2\Aerial - Tank Farms #225 #250.mxd PLOTTED: 12/16/2021 4:19:00 PM BY: KPiellen

Appendix A

Statistical Evaluation September 2020 Report

APPENDIX A – STATISTICAL EVALUATION

INTRODUCTION

As part of the Plants 2 & 3 Soil Corrective Measures Work plan (Work plan), Arcadis of Michigan, LLC (Arcadis), on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust, completed a statistical evaluation of soil data in the vicinity of exceedances of the Michigan Department of Environment, Great Lakes and Energy (EGLE) December 2013 Part 201 Generic Nonresidential (NR) Direct Contact Criteria (DCC). In general, the statistical evaluation follows the EGLE's Sampling Strategies and Statistics Training Materials for Part 201 Cleanup Criteria (S3TM; EGLE 2002) guidance.

Concentrations of arsenic, lead, and polycyclic aromatic hydrocarbons (PAHs) in several samples in Plants 2 and 3 exceeded the NR DCC and warranted additional evaluation to determine if an exposure barrier was required to limit the potential for direct contact with impacted soil. Exceedances located in the top 15 feet (ft) below ground surface (bgs) were evaluated statistically, as these soils could potentially be brought to the surface during future construction activities, while deeper exceedances will be addressed through the placement of a notification on the Amended Declaration of Restrictive Covenant (Amended DRC) that will be prepared for the Site.

Areas included in this statistical evaluation are:

- Area 5-2, Plant 2 – Lead, Benzo(a)pyrene
- Area 5-3, Plant 2 – Benzo(a)pyrene
- Area 5-5, Plant 2 – Benzo(a)pyrene
- Area 16, Plant 3 – Lead and Benzo(a)pyrene
- Area 19, Plant 3 – Arsenic
- Area 18, Plant 3 – Benzo(a)pyrene

No additional evaluation was completed for the following exceedances of the NR DCC:

- Area 5-1, Plant 2 – PAHs NR DCC exceedances at depth; notification on Amended DRC
- Area 5-2, Plant 2 – PCBs to be addressed by TSCA Plan
- Area 14, Plant 3 – Arsenic, cyanide, and nickel DCC exceedances at depth and a nickel site-specific Particulate Soil Inhalation Criteria exceedance in shallow soil; restriction on Amended DRC to maintain existing cover over a portion of Area 14; notification on Amended DRC for exceedances at depth
- Area 21, Plant 3 – Arsenic DCC exceedances at depth; notification on Amended DRC

The following sections provide an overview of the statistical evaluation process and a discussion of the results.

STATISTICAL APPROACH

The Site soil data were compared to the 2013 Part 201 NR DCC, and exceedances were identified. In general, two soil horizons (0 to 2 ft bgs and 0 to 15 ft bgs) were evaluated based on the potential for exposure to impacted soil at the Site. The 0 to 2 ft bgs soil interval was evaluated to address potential

current exposure to shallow soil as well as a future exposure scenario where limited soil disturbance has occurred (e.g., landscaping activities). The 0 to 15 ft bgs soil interval was evaluated to address future exposures during construction activities and/or where subsurface soil has been brought to the surface and redistributed. It is unlikely that soil deeper than 15 ft bgs would be encountered; therefore, for exceedances greater than 15 ft bgs, a statistical evaluation was not completed, and a notification will be placed on the Amended DRC.

Following the S3TM guidance, 2-acre exposure areas were identified for each of the NR DCC exceedances in the top 15 ft bgs, with the exception of Area 5-5, for which a smaller exposure area was identified. If a minimum of nine samples was available in an exposure area, a statistical evaluation, including the identification of the data distribution, an evaluation of potential outliers, and the calculation of a 95 percent upper confidence limit on the mean (95% UCL) was completed for that exposure area using the United States Environmental Protection Agency's (USEPA's) ProUCL software (version 5.1.002) (USEPA 2016). Although the soil sampling was not originally conducted following a random sampling approach, the available data generally provided good spatial coverage across the identified exposure areas.

If the 95% UCL is less than the NR DCC, no further action will be required for that exposure area, and a notification will not be placed in the Amended DRC. However, if the 95% UCL exceeds the NR DCC for the 0 to 2 ft bgs interval, additional sampling will be recommended to delineate the exceedance and the Amended DRC will include a requirement for maintaining the existing cover or adding cover materials if there is not currently a cover. If the 95% UCL for the 0 to 15 ft bgs interval exceeds the NR DCC and the elevated samples are located deeper than 2 ft bgs, a notification will be placed in the Amended DRC with the location of the exceedance.

AREA-SPECIFIC EVALUATIONS

The following sections provide the statistical evaluation for each specific area with exceedances. The soil data used in the statistical evaluation for each exposure area are provided in **Table A-1**. Sample locations and identified exposure areas are shown on **Figure A-1** through **Figure A-4**. A data summary is provided as **Table A-2**. The ProUCL output file is included as **Table A-3**, and an outlier analysis is included in **Table A-4**.

Plant 2, Area 5-2 – Lead

The concentration of lead (1,160,000 micrograms per kilogram [µg/kg]) in one sample (SB-A5.2-OG144 0-1 ft bgs) exceeded the NR DCC of 900,000 µg/kg (see **Figure A-1**). The 2-acre exposure around this exceedance was identified as Exposure Area 2 (EA-2). Nine soil samples were collected and analyzed for lead in EA-2 from the 0 to 2 ft bgs interval, and the data appeared to follow a lognormal distribution. The maximum concentration in EA-2 was identified as a potential outlier (see **Table A-4**); however, this sample does not meet the definition as a “hot spot” per the S3TM guidance.¹ Therefore, a 95% UCL of

¹ The S3TM Guidance defines a “hot spot” as: “Two or more adjacent sample locations in reasonably close proximity at which concentrations are sufficiently above criteria and surrounding location (i.e., spatially correlated concentrations sufficiently above criteria) to indicate that they:

approximately 701,000 µg/kg was calculated using all nine samples (**Table A-2**). The 95% UCL does not exceed the NR DCC; therefore, no additional evaluation is warranted, and a notification will not be placed on the Amended DRC.

Plant 2, Area 5-2 – Benzo(a)pyrene

The concentration of benzo(a)pyrene in one shallow soil sample (28,000J µg/kg at SB-A5.2-OG162 0-1 ft bgs) and one deeper soil sample (11,000J µg/kg at SB-A5.2-NE157 3-4 ft bgs) exceeded the NR DCC of 8,000 µg/kg (see **Figure A-2**). The 2-acre exposure around these exceedances was identified as Exposure Area 3 (EA-3). A total of 13 soil samples were collected and analyzed for benzo(a)pyrene in EA-3 from the 0 to 2 ft bgs interval and a total of 37 soil samples were collected and analyzed for benzo(a)pyrene in EA-3 from the 0 to 15 ft bgs interval. The soil dataset from the 0 to 2 ft bgs interval followed a lognormal distribution, while the dataset from the 0 to 15 ft bgs interval did not follow a discernable distribution. The maximum concentration in EA-3, 28,000J µg/kg was identified as a potential outlier (see **Table A-4**); however, this sample does not meet the definition as a “hot spot” per the S3TM guidance. Although there are two exceedances within EA-3, they do not represent a hot spot area, as both exceedances are distinct and are well-defined by adjacent soil borings. Therefore, the 95% UCL was calculated for the 0 to 2 ft bgs interval (11,900 µg/kg) based on all 13 samples, and the 0 to 15 ft bgs interval (4,780 µg/kg) based on all 37 samples (**Table A-2**). The 95% UCL for the 0 to 15 ft bgs interval does not exceed the NR DCC; therefore, no additional evaluation is warranted for deeper soils, and a notification will not be placed on the Amended DRC. The 95% UCL for the 0 to 2 ft bgs interval exceeds the NR DCC; therefore, additional sampling is recommended to determine the extent of shallow soil impacts requiring an exposure barrier.

Plant 2, Area 5-3 – Benzo(a)pyrene

The concentration of benzo(a)pyrene (21,500J µg/kg) in one sample (SB-A5.3-OX123 1-2 ft bgs) exceeded the NR DCC of 8,000 µg/kg (see **Figure A-2**). The 2-acre exposure around this exceedance was identified as EA-2. Nine soil samples were collected and analyzed for benzo(a)pyrene in EA-2 from the 0 to 2 ft bgs interval, and the data appeared to follow a gamma and a lognormal distribution. The maximum concentration in EA-2 was identified as a potential outlier (see **Table A-4**); however, this sample does not meet the definition as a “hot spot” per the S3TM guidance. Therefore, a 95% UCL of approximately 24,900 µg/kg was calculated using all nine samples (**Table A-2**). The 95% UCL is greater than the maximum detected concentration and exceeds the NR DCC; therefore, additional sampling is recommended to determine the extent of shallow soil impacts requiring an exposure barrier.

Plant 2, Area 5-5 – Benzo(a)pyrene

The concentration of benzo(a)pyrene (9,400 µg/kg) in one sample (P2-MW-04 1-3 ft bgs) exceeded the NR DCC of 900,000 µg/kg (see **Figure A-2**). Due to the small size of Area 5-5 and the number of samples, Exposure Area 4 (EA-4) was identified as the extent of Area 5-5, which is approximately 0.72 acres. Twelve soil samples were collected and analyzed for benzo(a)pyrene in EA-4 from the 0 to 3 ft bgs

-
- *represent a different statistical population and*
 - *pose a potential risk that should not be masked by a statistical analysis.”*

interval (to be consistent with the 1 to 3 ft bgs depth of the exceedance), and the data appeared to follow a gamma and a lognormal distribution. The maximum concentration in EA-4 was identified as a potential outlier (see **Table A-4**); however, this sample does not meet the definition as a “hot spot” per the S3TM guidance. Therefore, a 95% UCL of approximately 6,810 µg/kg was calculated using all available samples (**Table A-2**). The 95% UCL does not exceed the NR DCC; therefore, no additional evaluation is warranted, and a notification will not be placed in the Amended DRC.

Plant 3, Area 16 – Lead

The concentration of lead in two deep soil samples (4,100,000 [7,230,000] µg/kg at SB-A16-HU168 9-10 ft bgs and 1,250,000 µg/kg at SB-A16-HU181 4-5 ft bgs) exceeded the NR DCC of 900,000 µg/kg (see **Figure A-3**). It should be noted that the soil samples collected from 0 to 2 ft bgs did not exceed the NR DCC. The 2-acre exposure around these deeper exceedances was identified as Exposure Area 5 (EA-5). A total of 34 soil samples were collected and analyzed for lead in EA-5 from the 0 to 15 ft bgs interval. The soil dataset from the 0 to 15 ft bgs interval did not follow a discernable distribution. The maximum concentration in EA-5, 4,100,000 [7,230,000] µg/kg, was identified as a potential outlier (see **Table A-4**). The 95% UCL calculated for the 0 to 15 ft bgs interval (964,000 µg/kg) based on all 34 samples exceeds the NR DCC. Because the shallow soil samples within the top 2 ft bgs do not exceed the NR DCC, a notification will be placed on the Amended DRC; however, a cover is not required for these exceedances.

Plant 3, Area 16 – Benzo(a)pyrene

The concentration of benzo(a)pyrene in one deep soil sample (33,000J µg/kg at SB-A16-HU165 4-5 ft bgs) exceeded the NR DCC of 8,000 µg/kg (see **Figure A-4**). It should be noted that the soil samples collected from 0 to 2 ft bgs did not exceed the NR DCC. The 2-acre exposure around this deeper exceedance was identified as Exposure Area 5 (EA-5). A total of 31 soil samples were collected and analyzed for benzo(a)pyrene in EA-5 from the 0 to 15 ft bgs interval. The soil dataset from the 0 to 15 ft bgs interval did not follow a discernable distribution. The maximum concentration in EA-5, 33,000J µg/kg was identified as a potential outlier (see **Table A-4**); however, this sample does not meet the definition as a “hot spot” per the S3TM guidance. The 95% UCL calculated for the 0 to 15 ft bgs interval (5,960 µg/kg) based on all 31 samples does not exceed the NR DCC; therefore, no additional evaluation is warranted, and a notification will not be placed in the Amended DRC.

Plant 3, Area 18 – Benzo(a)pyrene

The concentration of benzo(a)pyrene in one shallow soil sample (29,000 J µg/kg at SB-A18-CJ150 1-2 ft bgs) exceeded the NR DCC of 8,000 µg/kg (see **Figure A-4**). The 2-acre exposure around this exceedance was identified as Exposure Area 7 (EA-7). A total of 20 soil samples were collected and analyzed for benzo(a)pyrene in EA-7 from the 0 to 2 ft bgs interval. And followed a lognormal distribution. The maximum concentration in EA-7, 33,000J µg/kg was identified as an outlier (see **Table A-4**); however, this sample does not meet the definition as a “hot spot” per the S3TM guidance. The 95% UCL calculated for the 0 to 2 ft bgs interval (8,160 µg/kg) based on all 20 samples exceeds the NR DCC; therefore, additional sampling is recommended to determine the extent of shallow soil impacts requiring an exposure barrier.

Plant 3, Area 19 – Arsenic

The concentration of arsenic in two shallow soil samples (82,800 µg/kg at P3-SB-25 1-2 ft bgs and 48,100 [52,000] at VAP-A19-HJ150 1-2 ft bgs) and one deeper soil sample (77,200 µg/kg at P3-SB-25 9-10 ft bgs) exceeded the NR DCC of 37,000 µg/kg (see **Figure A-3**). The 2-acre exposure around these exceedances was identified as Exposure Area 6 (EA-6). A total of 10 soil samples were collected and analyzed for arsenic in EA-6 from the 0 to 2 ft bgs interval and a total of 33 soil samples were collected and analyzed for arsenic in EA-6 from the 0 to 15 ft bgs interval. The soil dataset from the 0 to 2 ft bgs interval followed a lognormal distribution, while the dataset from the 0 to 15 ft bgs interval did not follow a discernable distribution. The maximum concentration in EA-6, 82,800 µg/kg was not identified as a potential outlier for the 0 to 2 ft bgs but was for the 0 to 15 ft bgs interval (see **Table A-4**). The 95% UCL was calculated for the 0 to 2 ft bgs interval (58,700 µg/kg) based on all 10 samples, and the 0 to 15 ft bgs interval (24,900 µg/kg) based on all 33 samples (**Table A-2**). The 95% UCL for the 0 to 15 ft bgs interval does not exceed the NR DCC; therefore, no additional evaluation is warranted for deeper soils, and a notification for this exceedance will not be placed in the Amended DRC. The 95% UCL for the 0 to 2 ft bgs interval exceeds the NR DCC. Because this area is already mostly covered with asphalt, the existing cover will be maintained and a requirement for an exposure barrier will be placed in the Amended DRC.

Table A-1
Soil Data Used in the Statistical Evaluation
Appendix A, Statistical Evaluation
RACER Trust Plants 2 and 3
Lansing, Michigan

Group	Constituent	Sample Location	Depth (ft bgs)	Sample Date	Exposure Area	Original Data (µg/kg) (1)	Result (µg/kg) (2)	Detection Flag (3)
Lead_EA-2_0-2	Lead	SB-A5.2-OA138	1 - 2	5/10/2012	EA-2	44,800 J	44800	1
Lead_EA-2_0-2	Lead	SB-A5.2-OB120	1.5 - 2.5	5/22/2012	EA-2	2,630	2630	1
Lead_EA-2_0-2	Lead	SB-A5.2-OG138	0 - 1	5/7/2012	EA-2	55,700	55700	1
Lead_EA-2_0-2	Lead	SB-A5.2-OG138	1 - 2	5/10/2012	EA-2	1,690 J	1690	1
Lead_EA-2_0-2	Lead	SB-A5.2-OG144	0 - 1	5/4/2012	EA-2	1,160,000	1160000	1
Lead_EA-2_0-2	Lead	SB-A5.3-OT127	1 - 2	6/1/2012	EA-2	2,010	2010	1
Lead_EA-2_0-2	Lead	SB-A5.3-OX123	1 - 2	6/1/2012	EA-2	31,300	31300	1
Lead_EA-2_0-2	Lead	SB-A5.3-OX132	1 - 2	6/1/2012	EA-2	19,300	19300	1
Lead_EA-2_0-2	Lead	SB-A5.3-PC127	1 - 2	6/1/2012	EA-2	27,900	27900	1
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.2-OA138	1 - 2	5/10/2012	EA-2	100	100	1
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.2-OB120	1.5 - 2.5	5/22/2012	EA-2	<40	40	0
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.2-OG138	0 - 1	5/7/2012	EA-2	960	960	1
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.2-OG138	1 - 2	5/10/2012	EA-2	<40	40	0
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.2-OG144	0 - 1	5/4/2012	EA-2	6,900 J	6900	1
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.3-OT127	1 - 2	6/1/2012	EA-2	<300	300	0
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.3-OX123	1 - 2	6/1/2012	EA-2	21,500 J	21500	1
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.3-OX132	1 - 2	6/1/2012	EA-2	600	600	1
Benzo(a)pyrene_EA-2_0-2	Benzo(a)pyrene	SB-A5.3-PC127	1 - 2	6/1/2012	EA-2	210	210	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-NE150	0 - 1	5/8/2012	EA-3	1,160	1160	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-NE157	1 - 2	5/9/2012	EA-3	1,200 [800]	1000	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-NJ162	1 - 2	5/7/2012	EA-3	<40 J	40	0
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-NO150	1 - 2	5/8/2012	EA-3	50	50	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-NO156	1 - 2	5/9/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-NO157	0 - 1	5/8/2012	EA-3	180	180	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-OA162	1 - 2	5/7/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-OG162	0 - 1	5/7/2012	EA-3	28,000 J	28000	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.2-OH162	1 - 2	5/10/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.3-OC169	1 - 2	5/31/2012	EA-3	220 J	220	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.3-OC175	1 - 2	5/31/2012	EA-3	200	200	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.3-OI169	1 - 2	5/31/2012	EA-3	110	110	1
Benzo(a)pyrene_EA-3_0-2	Benzo(a)pyrene	SB-A5.3-OI175	1 - 2	5/31/2012	EA-3	80	80	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NE150	0 - 1	5/8/2012	EA-3	1,160	1160	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NE157	1 - 2	5/9/2012	EA-3	1,200 [800]	1000	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NJ162	1 - 2	5/7/2012	EA-3	<40 J	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NO150	1 - 2	5/8/2012	EA-3	50	50	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NO156	1 - 2	5/9/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NO157	0 - 1	5/8/2012	EA-3	180	180	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OA162	1 - 2	5/7/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OG162	0 - 1	5/7/2012	EA-3	28,000 J	28000	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OH162	1 - 2	5/10/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OC169	1 - 2	5/31/2012	EA-3	220 J	220	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OC175	1 - 2	5/31/2012	EA-3	200	200	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OI169	1 - 2	5/31/2012	EA-3	110	110	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OI175	1 - 2	5/31/2012	EA-3	80	80	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	P2-SB-06	5 - 6	9/1/2011	EA-3	<200 J	200	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	P2-SB-11	2 - 3	9/7/2011	EA-3	1,100	1100	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	P2-SB-12	2 - 3	9/7/2011	EA-3	100	100	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	P2-SB-15	4 - 5	9/7/2011	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	P2-SB-15	9 - 10	9/7/2011	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NE150	5 - 6	5/8/2012	EA-3	<40 [40]	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NE150	11 - 12	5/8/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NE157	3 - 4	5/9/2012	EA-3	11,000 J	11000	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NE157	9 - 10	5/9/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NJ162	7 - 8	5/7/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NJ162	12 - 13	5/7/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NO150	7 - 8	5/8/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NO150	12 - 13	5/8/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-NO156	6 - 7	5/9/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OA162	6 - 7	5/7/2012	EA-3	<400 J	400	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OA162	12 - 13	5/7/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OD154	2 - 3	5/7/2012	EA-3	100 [60]	80	1
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OD154	9 - 10	5/7/2012	EA-3	<80	80	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OH162	7 - 8	5/10/2012	EA-3	<300	300	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.2-OH162	13 - 14	5/10/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OC169	6 - 7	5/31/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OC175	5 - 6	5/31/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OI169	6 - 7	5/31/2012	EA-3	<40	40	0

Table A-1
Soil Data Used in the Statistical Evaluation
Appendix A, Statistical Evaluation
RACER Trust Plants 2 and 3
Lansing, Michigan

Group	Constituent	Sample Location	Depth (ft bgs)	Sample Date	Exposure Area	Original Data (µg/kg) (1)	Result (µg/kg) (2)	Detection Flag (3)
Benzo(a)pyrene_EA-3_0-15	Benzo(a)pyrene	SB-A5.3-OI175	5 - 6	5/31/2012	EA-3	<40	40	0
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	P2-B-2	1 - 2	9/8/2011	EA-4	<200	200	0
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	P2-B-7	2 - 3	9/8/2011	EA-4	<40	40	0
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	P2-MW-04	1 - 3	7/21/2011	EA-4	9,400	9400	1
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NL193	1 - 2	5/29/2012	EA-4	50	50	1
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NM187	1 - 2	5/24/2012	EA-4	1,800	1800	1
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NO196	1 - 2	5/25/2012	EA-4	160	160	1
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NQ185	1 - 2	5/24/2012	EA-4	<70 J	70	0
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NT196	0 - 1	5/25/2012	EA-4	180	180	1
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NU185	2 - 3	5/24/2012	EA-4	130 J	130	1
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NW194	0 - 1	5/29/2012	EA-4	900 J	900	1
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NW195	1 - 2	5/25/2012	EA-4	<40	40	0
Benzo(a)pyrene_EA-4_0-3	Benzo(a)pyrene	SB-A5.5-NX188	1 - 2	5/24/2012	EA-4	<40	40	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	P3-SB-24	3 - 4	8/18/2011	EA-5	70	70	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	P3-SB-24	9 - 10	8/18/2011	EA-5	<40	40	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	P3-SB-31	2 - 3	8/18/2011	EA-5	50	50	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	P3-SB-31	9 - 10	8/18/2011	EA-5	<40 J [<40]	40	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-GX162	1 - 2	6/5/2012	EA-5	<300	300	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-GX162	7 - 8	6/5/2012	EA-5	<40	40	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HA159	0 - 1	6/5/2012	EA-5	470	470	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HA159	9 - 10	6/5/2012	EA-5	<40	40	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HA165	1 - 2	6/6/2012	EA-5	<70	70	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HA165	7 - 8	6/6/2012	EA-5	50 J [<40]	50	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HA165	14 - 15	6/6/2012	EA-5	<40	40	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HD162	1 - 2	6/6/2012	EA-5	210	210	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HD162	8 - 9	6/6/2012	EA-5	<40 J [600 J]	600	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HP165	3 - 4	9/20/2012	EA-5	600	600	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HP165	9 - 10	9/20/2012	EA-5	<100	100	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HQ168	1 - 2	11/9/2012	EA-5	700 J J [<100 J]	700	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HQ168	10 - 11	11/9/2012	EA-5	<100	100	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HR162	1 - 2	6/6/2012	EA-5	400	400	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HR162	9 - 10	6/6/2012	EA-5	<80	80	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HU160	1 - 2	6/6/2012	EA-5	200	200	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HU165	1 - 2	6/6/2012	EA-5	600 J	600	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HU165	4 - 5	6/6/2012	EA-5	33,000 J	33000	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HU168	4.5 - 5.5	9/20/2012	EA-5	600	600	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HU168	9 - 10	9/20/2012	EA-5	<100 J [<100]	100	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HU171	1 - 2	11/9/2012	EA-5	<100	100	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HU171	12 - 13	11/9/2012	EA-5	<100 J [<100]	100	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HX162	1 - 2	6/6/2012	EA-5	320	320	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HX162	8 - 9	6/6/2012	EA-5	500 J	500	1
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HX165	1 - 2	9/20/2012	EA-5	<100	100	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HY168	1 - 2	11/9/2012	EA-5	<100	100	0
Benzo(a)pyrene_EA-5_0-15	Benzo(a)pyrene	SB-A16-HY168	11 - 12	11/9/2012	EA-5	<100 J [<200]	100	0
Lead_EA-5_0-15	Lead	P3-SB-24	3 - 4	8/18/2011	EA-5	6,650	6650	1
Lead_EA-5_0-15	Lead	P3-SB-24	9 - 10	8/18/2011	EA-5	9,270	9270	1
Lead_EA-5_0-15	Lead	P3-SB-31	2 - 3	8/18/2011	EA-5	9,040	9040	1
Lead_EA-5_0-15	Lead	P3-SB-31	9 - 10	8/18/2011	EA-5	2,730 [2,540]	2635	1
Lead_EA-5_0-15	Lead	SB-A16-GX162	1 - 2	6/5/2012	EA-5	17,000	17000	1
Lead_EA-5_0-15	Lead	SB-A16-GX162	7 - 8	6/5/2012	EA-5	4,700	4700	1
Lead_EA-5_0-15	Lead	SB-A16-HA159	0 - 1	6/5/2012	EA-5	20,400	20400	1
Lead_EA-5_0-15	Lead	SB-A16-HA159	9 - 10	6/5/2012	EA-5	2,740	2740	1
Lead_EA-5_0-15	Lead	SB-A16-HA165	1 - 2	6/6/2012	EA-5	8,210	8210	1
Lead_EA-5_0-15	Lead	SB-A16-HA165	7 - 8	6/6/2012	EA-5	8,380 [9,590]	8985	1
Lead_EA-5_0-15	Lead	SB-A16-HA165	14 - 15	6/6/2012	EA-5	2,000	2000	1
Lead_EA-5_0-15	Lead	SB-A16-HD162	1 - 2	6/6/2012	EA-5	13,300	13300	1
Lead_EA-5_0-15	Lead	SB-A16-HD162	8 - 9	6/6/2012	EA-5	7,100 [20,300]	13700	1
Lead_EA-5_0-15	Lead	SB-A16-HP165	3 - 4	9/20/2012	EA-5	12,800	12800	1
Lead_EA-5_0-15	Lead	SB-A16-HP165	9 - 10	9/20/2012	EA-5	29,800	29800	1
Lead_EA-5_0-15	Lead	SB-A16-HQ168	1 - 2	11/9/2012	EA-5	3,480 [4,800]	4140	1
Lead_EA-5_0-15	Lead	SB-A16-HQ168	10 - 11	11/9/2012	EA-5	8,050	8050	1
Lead_EA-5_0-15	Lead	SB-A16-HR162	1 - 2	6/6/2012	EA-5	11,400	11400	1
Lead_EA-5_0-15	Lead	SB-A16-HR162	9 - 10	6/6/2012	EA-5	7,900	7900	1
Lead_EA-5_0-15	Lead	SB-A16-HU160	1 - 2	6/6/2012	EA-5	17,200	17200	1
Lead_EA-5_0-15	Lead	SB-A16-HU165	1 - 2	6/6/2012	EA-5	18,300	18300	1
Lead_EA-5_0-15	Lead	SB-A16-HU165	4 - 5	6/6/2012	EA-5	10,600	10600	1
Lead_EA-5_0-15	Lead	SB-A16-HU168	4.5 - 5.5	9/20/2012	EA-5	5,290	5290	1

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Soil Data Used in the Statistical Evaluation
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RACER Trust Plants 2 and 3
Lansing, Michigan

Group	Constituent	Sample Location	Depth (ft bgs)	Sample Date	Exposure Area	Original Data (µg/kg) (1)	Result (µg/kg) (2)	Detection Flag (3)
Lead_EA-5_0-15	Lead	SB-A16-HU168	9 - 10	9/20/2012	EA-5	4,100,000 [7,230,000]	5665000	1
Lead_EA-5_0-15	Lead	SB-A16-HU171	1 - 2	11/9/2012	EA-5	5,390	5390	1
Lead_EA-5_0-15	Lead	SB-A16-HU171	12 - 13	11/9/2012	EA-5	7,940 [8,090]	8015	1
Lead_EA-5_0-15	Lead	SB-A16-HU181	0 - 1	7/10/2013	EA-5	427,000	427000	1
Lead_EA-5_0-15	Lead	SB-A16-HU181	4 - 5	7/10/2013	EA-5	1,250,000	1250000	1
Lead_EA-5_0-15	Lead	SB-A16-HU181	10 - 11	7/10/2013	EA-5	10,100	10100	1
Lead_EA-5_0-15	Lead	SB-A16-HX162	1 - 2	6/6/2012	EA-5	27,000	27000	1
Lead_EA-5_0-15	Lead	SB-A16-HX162	8 - 9	6/6/2012	EA-5	35,700	35700	1
Lead_EA-5_0-15	Lead	SB-A16-HX165	1 - 2	9/20/2012	EA-5	18,900	18900	1
Lead_EA-5_0-15	Lead	SB-A16-HY168	1 - 2	11/9/2012	EA-5	11,200	11200	1
Lead_EA-5_0-15	Lead	SB-A16-HY168	11 - 12	11/9/2012	EA-5	9,900 [10,300]	10100	1
Arsenic_EA-6_0-2	Arsenic	P3-SB-25	1 - 2	8/18/2011	EA-6	82800	82800	1
Arsenic_EA-6_0-2	Arsenic	SB-A15-HC113	1 - 2	5/16/2012	EA-6	1490	1490	1
Arsenic_EA-6_0-2	Arsenic	SB-A15-HC114	1 - 2	5/16/2012	EA-6	1000	1000	1
Arsenic_EA-6_0-2	Arsenic	SB-A15-HC115	1 - 2	5/16/2012	EA-6	1430	1430	1
Arsenic_EA-6_0-2	Arsenic	SB-A15-HE114	1 - 2	5/15/2012	EA-6	2930	2930	1
Arsenic_EA-6_0-2	Arsenic	SB-A19-HG150	1 - 2	6/6/2012	EA-6	1480	1480	1
Arsenic_EA-6_0-2	Arsenic	SB-A19-HJ148	1 - 2	6/6/2012	EA-6	41200	41200	1
Arsenic_EA-6_0-2	Arsenic	SB-A19-HJ153	1 - 2	6/6/2012	EA-6	580 [620]	600	1
Arsenic_EA-6_0-2	Arsenic	SB-A19-HM150	1 - 2	6/6/2012	EA-6	3580	3580	1
Arsenic_EA-6_0-2	Arsenic	VAP-A19-HJ150	1 - 2	6/6/2012	EA-6	48,100 [52,000]	50050	1
Arsenic_EA-6_0-15	Arsenic	P3-SB-25	1 - 2	8/18/2011	EA-6	82800	82800	1
Arsenic_EA-6_0-15	Arsenic	SB-A15-HC113	1 - 2	5/16/2012	EA-6	1490	1490	1
Arsenic_EA-6_0-15	Arsenic	SB-A15-HC114	1 - 2	5/16/2012	EA-6	1000	1000	1
Arsenic_EA-6_0-15	Arsenic	SB-A15-HC115	1 - 2	5/16/2012	EA-6	1430	1430	1
Arsenic_EA-6_0-15	Arsenic	SB-A15-HE114	1 - 2	5/15/2012	EA-6	2930	2930	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HG150	1 - 2	6/6/2012	EA-6	1480	1480	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ148	1 - 2	6/6/2012	EA-6	41200	41200	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ153	1 - 2	6/6/2012	EA-6	580 [620]	600	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HM150	1 - 2	6/6/2012	EA-6	3580	3580	1
Arsenic_EA-6_0-15	Arsenic	VAP-A19-HJ150	1 - 2	6/6/2012	EA-6	48,100 [52,000]	50050	1
Arsenic_EA-6_0-15	Arsenic	P3-SB-23	4 - 5	8/18/2011	EA-6	580	580	1
Arsenic_EA-6_0-15	Arsenic	P3-SB-25	9 - 10	8/18/2011	EA-6	77200	77200	1
Arsenic_EA-6_0-15	Arsenic	P3-SB-26	6 - 7	8/18/2011	EA-6	700	700	1
Arsenic_EA-6_0-15	Arsenic	P3-SB-26	11 - 12	8/18/2011	EA-6	1910	1910	1
Arsenic_EA-6_0-15	Arsenic	SB-A15-HC114	3 - 4	5/16/2012	EA-6	860	860	1
Arsenic_EA-6_0-15	Arsenic	SB-A15-HC115	12 - 13	5/16/2012	EA-6	1,500 [1,840]	1670	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HG150	6 - 7	6/6/2012	EA-6	990	990	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HG150	12.5 - 13.5	6/6/2012	EA-6	230	230	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HG150	14 - 15	6/6/2012	EA-6	760	760	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ144	4 - 5	9/18/2012	EA-6	1830	1830	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ144	7 - 8	9/18/2012	EA-6	440 [400]	420	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ148	8 - 9	6/6/2012	EA-6	610	610	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ148	13 - 14	6/6/2012	EA-6	<100	100	0
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ148	14 - 15	6/6/2012	EA-6	880	880	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ153	6 - 7	6/6/2012	EA-6	610	610	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ153	11 - 12	6/6/2012	EA-6	1170	1170	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HJ153	12 - 13	6/6/2012	EA-6	1430	1430	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HM150	8.5 - 9.5	6/6/2012	EA-6	850	850	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HM150	13 - 14	6/6/2012	EA-6	470	470	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HM150	18 - 19	6/6/2012	EA-6	1000	1000	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HQ150	2 - 3	9/18/2012	EA-6	980	980	1
Arsenic_EA-6_0-15	Arsenic	SB-A19-HQ150	9.5 - 10.5	9/18/2012	EA-6	1300	1300	1
Arsenic_EA-6_0-15	Arsenic	VAP-A19-HJ150	7 - 8	6/6/2012	EA-6	2180	2180	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	P3-SB-06	1 - 2	8/12/2011	EA-7	<30	30	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DA145	1 - 2	5/14/2012	EA-7	<200	200	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DC142	1 - 2	5/11/2012	EA-7	270	270	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DC143	0 - 1	5/14/2012	EA-7	530	530	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DC147	1 - 2	5/14/2012	EA-7	70	70	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DE141	1 - 2	5/14/2012	EA-7	160	160	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DF142	1 - 2	5/11/2012	EA-7	<40	40	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DF146	1 - 2	5/11/2012	EA-7	<30	30	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A17-DH145	0 - 1	5/11/2012	EA-7	1,400	1400	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CD146	0.5 - 1	5/15/2012	EA-7	<40	40	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CD150	1 - 2	9/12/2012	EA-7	<100	100	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CI138	1 - 2	5/15/2012	EA-7	<40	40	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CJ150	1 - 2	5/15/2012	EA-7	29,000 J	29000	1

Table A-1
Soil Data Used in the Statistical Evaluation
Appendix A, Statistical Evaluation
RACER Trust Plants 2 and 3
Lansing, Michigan

Group	Constituent	Sample Location	Depth (ft bgs)	Sample Date	Exposure Area	Original Data (µg/kg) (1)	Result (µg/kg) (2)	Detection Flag (3)
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CJ178	1 - 2	11/8/2012	EA-7	<100	100	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CQ146	0.5 - 1	5/15/2012	EA-7	2,100 J [270 J]	1185	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CS144	1 - 2	5/14/2012	EA-7	<40	40	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CS148	1 - 2	5/14/2012	EA-7	100	100	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	SB-A18-CU146	1 - 2	5/14/2012	EA-7	100	100	1
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	VAP-A17-DE144	1 - 2	5/18/2012	EA-7	<40	40	0
Benzo(a)pyrene_EA-7_0-2	Benzo(a)pyrene	VAP-A18-CP144	1 - 2	5/17/2012	EA-7	<40	40	0

Notes:

(1) Duplicate results are shown in square brackets.

(2) For duplicate pairs, if both were detected, the average is shown; if both were non-detect, the minimum reporting limit is shown; if one was detected and one was not detected, the detection is shown.

(3) 1 = detection; 0 = non-detect.

< = less than

ft bgs = feet below ground surface

J = estimated result

µg/kg = micrograms per kilogram

Table A-2
Statistical Summary
Appendix A, Statistical Evaluation
RACER Trust Plants 2 and 3
Lansing, Michigan

Exposure Area	Constituent	Depth Interval (ft bgs)	Total Sample Size	% ND	FOD%	Minimum Detected (µg/kg)	Mean Detected (µg/kg)	Maximum Detected (µg/kg)	Data Distribution	Selected UCL Method	Selected UCL Value (µg/kg)	Note	Distribution for UCL Selection
EA-2	Lead	0-2	9	0%	100%	1690	149481	1160000	Lognormal	95% Chebyshev(Mean, Sd) UCL	700,784	(1)	Nonparametric
EA-2	Benzo(a)pyrene	0-2	9	33%	67%	100	5045	21500	Gamma, Lognormal	Gamma Adjusted KM-UCL	24,886	(2)	Gamma
EA-3	Benzo(a)pyrene	0-2	13	31%	69%	50	3444	28000	Lognormal	95% KM (Chebyshev) UCL	11,885	(1)	Nonparametric
EA-3	Benzo(a)pyrene	0-15	37	65%	35%	50	3329	28000	No Discernable Distribution	95% KM (Chebyshev) UCL	4,784		Nonparametric
EA-4	Benzo(a)pyrene	0-3	12	42%	58%	50	1803	9400	Gamma, Lognormal	Gamma Adjusted KM-UCL	6,811	(2)	Gamma
EA-5	Lead	0-15	34	0%	100%	2000	226839	5665000	No Discernable Distribution	95% Chebyshev (Mean, Sd) UCL	964,049		Nonparametric
EA-5	Benzo(a)pyrene	0-15	31	52%	48%	50	2558	33000	No Discernable Distribution	95% KM (Chebyshev) UCL	5,960		Nonparametric
EA-6	Arsenic	0-2	10	0%	100%	600	18656	82800	Lognormal	95% Chebyshev(Mean, Sd) UCL	58,730	(1)	Nonparametric
EA-6	Arsenic	0-15	33	3%	97%	230	8912	82800	No Discernable Distribution	95% KM (Chebyshev) UCL	24,865		Nonparametric
EA-7	Benzo(a)pyrene	0-2	20	55%	45%	70	3646	29000	Lognormal	95% KM (Chebyshev) UCL	8,155		Nonparametric

Notes:

(1) A greater than 95 percent UCL was recommended. Therefore, the 95% UCL following the same method was selected.

(2) More than one 95% UCL was recommended; the minimum recommended 95% UCL was selected.

% = percent

FOD = frequency of detection

ft bgs = feet below ground surface

ND = non-detects

µg/kg = micrograms per kilogram

UCL = upper confidence limit on the mean

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.19/18/2020 8:49:23 AM
From File	Appendix A Tables.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Result (lead_ea-2_0-2)

General Statistics			
Total Number of Observations	9	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	1690	Mean	149481
Maximum	1160000	Median	27900
SD	379433	Std. Error of Mean	126478
Coefficient of Variation	2.538	Skewness	2.985

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test			
Shapiro Wilk Test Statistic	0.436	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.486	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	384672	95% Adjusted-CLT UCL (Chen-1995)	491994
		95% Modified-t UCL (Johnson-1978)	405648

Gamma GOF Test			
A-D Test Statistic	1.018	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.801	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.347	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.3	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	0.334	k star (bias corrected MLE)	0.297
Theta hat (MLE)	447667	Theta star (bias corrected MLE)	503844
nu hat (MLE)	6.01	nu star (bias corrected)	5.34
MLE Mean (bias corrected)	149481	MLE Sd (bias corrected)	274436
		Approximate Chi Square Value (0.05)	1.313
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	0.941

Assuming Gamma Distribution	
95% Approximate Gamma UCL (use when n>=50))	608179
95% Adjusted Gamma UCL (use when n<50)	848445

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.195	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	7.432	Mean of logged Data	9.886
Maximum of Logged Data	13.96	SD of logged Data	2.061

Assuming Lognormal Distribution	
95% H-UCL	11857173
95% Chebyshev (MVUE) UCL	397987
99% Chebyshev (MVUE) UCL	779668
90% Chebyshev (MVUE) UCL	305218
97.5% Chebyshev (MVUE) UCL	526746

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs	
95% CLT UCL	357518
95% Standard Bootstrap UCL	347475
95% Hall's Bootstrap UCL	1837724
95% BCA Bootstrap UCL	530198
90% Chebyshev(Mean, Sd) UCL	528914
97.5% Chebyshev(Mean, Sd) UCL	939333
95% Jackknife UCL	384672
95% Bootstrap-t UCL	3350454
95% Percentile Bootstrap UCL	401716
95% Chebyshev(Mean, Sd) UCL	700784
99% Chebyshev(Mean, Sd) UCL	1407917

Suggested UCL to Use
99% Chebyshev (Mean, Sd) UCL 1407917

Recommended UCL exceeds the maximum observation

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (benzo(a)pyrene_ea-2_0-2)

General Statistics			
Total Number of Observations	9	Number of Distinct Observations	8
Number of Detects	6	Number of Non-Detects	3
Number of Distinct Detects	6	Number of Distinct Non-Detects	2
Minimum Detect	100	Minimum Non-Detect	40
Maximum Detect	21500	Maximum Non-Detect	300
Variance Detects	71696710	Percent Non-Detects	33.33%
Mean Detects	5045	SD Detects	8467
Median Detects	780	CV Detects	1.678
Skewness Detects	2.012	Kurtosis Detects	3.982
Mean of Logged Detects	7.005	SD of Logged Detects	2.054

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.685	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.352	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.325	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	3383	KM Standard Error of Mean	2459
KM SD	6735	95% KM (BCA) UCL	7498
95% KM (t) UCL	7956	95% KM (Percentile Bootstrap) UCL	7383
95% KM (z) UCL	7428	95% KM Bootstrap t UCL	68294
90% KM Chebyshev UCL	10761	95% KM Chebyshev UCL	14102
97.5% KM Chebyshev UCL	18741	99% KM Chebyshev UCL	27852

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.418	Anderson-Darling GOF Test	
5% A-D Critical Value	0.747	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.29	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.352	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.428	k star (bias corrected MLE)	0.325
Theta hat (MLE)	11788	Theta star (bias corrected MLE)	15518
nu hat (MLE)	5.136	nu star (bias corrected)	3.901
Mean (detects)	5045		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
For such situations, GROS method may yield incorrect values of UCLs and BTVs
This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3363
Maximum	21500	Median	210
SD	7154	CV	2.127
k hat (MLE)	0.154	k star (bias corrected MLE)	0.176
Theta hat (MLE)	21893	Theta star (bias corrected MLE)	19057
nu hat (MLE)	2.765	nu star (bias corrected)	3.177
Adjusted Level of Significance (β)	0.0231		
Approximate Chi Square Value (3.18, α)	0.427	Adjusted Chi Square Value (3.18, β)	0.271
95% Gamma Approximate UCL (use when n>=50)	25042	95% Gamma Adjusted UCL (use when n<50)	39408

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	3383	SD (KM)	6735
Variance (KM)	45356405	SE of Mean (KM)	2459
k hat (KM)	0.252	k star (KM)	0.242
nu hat (KM)	4.542	nu star (KM)	4.361
theta hat (KM)	13407	theta star (KM)	13962
80% gamma percentile (KM)	4857	90% gamma percentile (KM)	10175
95% gamma percentile (KM)	16528	99% gamma percentile (KM)	33512

Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (4.36, α)	0.869	Adjusted Chi Square Value (4.36, β)	0.593
95% Gamma Approximate KM-UCL (use when n>=50)	16970	95% Gamma Adjusted KM-UCL (use when n<50)	24886

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic		0.95	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value		0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic		0.194	
			Lilliefors GOF Test
5% Lilliefors Critical Value		0.325	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3369	Mean in Log Scale	5.492
SD in Original Scale	7150	SD in Log Scale	2.853
95% t UCL (assumes normality of ROS data)	7801	95% Percentile Bootstrap UCL	7421
95% BCA Bootstrap UCL	9743	95% Bootstrap t UCL	70166
95% H-UCL (Log ROS)	43628186		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	5.971	KM Geo Mean	392
KM SD (logged)	2.137	95% Critical H Value (KM-Log)	6.066
KM Standard Error of Mean (logged)	0.786	95% H-UCL (KM -Log)	375513
KM SD (logged)	2.137	95% Critical H Value (KM-Log)	6.066
KM Standard Error of Mean (logged)	0.786		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3384	Mean in Log Scale	5.893
SD in Original Scale	7143	SD in Log Scale	2.4
95% t UCL (Assumes normality)	7812	95% H-Stat UCL	1992589
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM Bootstrap t UCL	68294	95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	24886

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (benzo(a)pyrene_ea-3_0-2)

General Statistics			
Total Number of Observations	13	Number of Distinct Observations	10
Number of Detects	9	Number of Non-Detects	4
Number of Distinct Detects	9	Number of Distinct Non-Detects	1
Minimum Detect	50	Minimum Non-Detect	40
Maximum Detect	28000	Maximum Non-Detect	40
Variance Detects	84963703	Percent Non-Detects	30.77%
Mean Detects	3444	SD Detects	9218
Median Detects	200	CV Detects	2.676
Skewness Detects	2.989	Kurtosis Detects	8.948
Mean of Logged Detects	5.898	SD of Logged Detects	1.937
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.425	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.487	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	2397	KM Standard Error of Mean	2177
KM SD	7400	95% KM (BCA) UCL	6615
95% KM (t) UCL	6277	95% KM (Percentile Bootstrap) UCL	6624
95% KM (z) UCL	5977	95% KM Bootstrap t UCL	69155
90% KM Chebyshev UCL	8927	95% KM Chebyshev UCL	11885
97.5% KM Chebyshev UCL	15991	99% KM Chebyshev UCL	24056
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.423	Anderson-Darling GOF Test	
5% A-D Critical Value	0.806	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.346	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.301	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.306	k star (bias corrected MLE)	0.278
Theta hat (MLE)	11257	Theta star (bias corrected MLE)	12387
nu hat (MLE)	5.508	nu star (bias corrected)	5.005
Mean (detects)	3444		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2385
Maximum	28000	Median	110
SD	7706	CV	3.231
k hat (MLE)	0.15	k star (bias corrected MLE)	0.167
Theta hat (MLE)	15861	Theta star (bias corrected MLE)	14285
nu hat (MLE)	3.909	nu star (bias corrected)	4.34
Adjusted Level of Significance (β)	0.0301		
Approximate Chi Square Value (4.34, α)	0.861	Adjusted Chi Square Value (4.34, β)	0.667
95% Gamma Approximate UCL (use when n>=50)	12027	95% Gamma Adjusted UCL (use when n<50)	15524
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	2397	SD (KM)	7400
Variance (KM)	54754283	SE of Mean (KM)	2177
k hat (KM)	0.105	k star (KM)	0.132
nu hat (KM)	2.728	nu star (KM)	3.432
theta hat (KM)	22844	theta star (KM)	18159
80% gamma percentile (KM)	2325	90% gamma percentile (KM)	6950
95% gamma percentile (KM)	13493	99% gamma percentile (KM)	33014
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (3.43, α)	0.511	Adjusted Chi Square Value (3.43, β)	0.381
95% Gamma Approximate KM-UCL (use when n>=50)	16095	95% Gamma Adjusted KM-UCL (use when n<50)	21588
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.85	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.269	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2386	Mean in Log Scale	4.433
SD in Original Scale	7705	SD in Log Scale	2.839
95% t UCL (assumes normality of ROS data)	6195	95% Percentile Bootstrap UCL	6634
95% BCA Bootstrap UCL	8822	95% Bootstrap t UCL	67129
95% H-UCL (Log ROS)	1057278		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	5.218	KM Geo Mean	184.6
KM SD (logged)	1.83	95% Critical H Value (KM-Log)	4.397
KM Standard Error of Mean (logged)	0.538	95% H-UCL (KM -Log)	10043
KM SD (logged)	1.83	95% Critical H Value (KM-Log)	4.397
KM Standard Error of Mean (logged)	0.538		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2391	Mean in Log Scale	5.005
SD in Original Scale	7704	SD in Log Scale	2.108
95% t UCL (Assumes normality)	6199	95% H-Stat UCL	29651
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	15991	99% KM (Chebyshev) UCL	24056

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (benzo(a)pyrene_ea-3_0-15)

General Statistics			
Total Number of Observations	37	Number of Distinct Observations	15
Number of Detects	13	Number of Non-Detects	24
Number of Distinct Detects	12	Number of Distinct Non-Detects	5
Minimum Detect	50	Minimum Non-Detect	40
Maximum Detect	28000	Maximum Non-Detect	400
Variance Detects	63718724	Percent Non-Detects	64.86%
Mean Detects	3329	SD Detects	7982
Median Detects	200	CV Detects	2.398
Skewness Detects	2.937	Kurtosis Detects	8.802
Mean of Logged Detects	6.029	SD of Logged Detects	1.97
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.479	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.453	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.234	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1197	KM Standard Error of Mean	822.9
KM SD	4809	95% KM (BCA) UCL	2719
95% KM (t) UCL	2587	95% KM (Percentile Bootstrap) UCL	2618
95% KM (z) UCL	2551	95% KM Bootstrap t UCL	19542
90% KM Chebyshev UCL	3666	95% KM Chebyshev UCL	4784
97.5% KM Chebyshev UCL	6336	99% KM Chebyshev UCL	9385
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.576	Anderson-Darling GOF Test	
5% A-D Critical Value	0.824	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.311	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.255	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.327	k star (bias corrected MLE)	0.303
Theta hat (MLE)	10190	Theta star (bias corrected MLE)	11002
nu hat (MLE)	8.495	nu star (bias corrected)	7.868
Mean (detects)	3329		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1170
Maximum	28000	Median	0.01
SD	4882	CV	4.174
k hat (MLE)	0.102	k star (bias corrected MLE)	0.112
Theta hat (MLE)	11457	Theta star (bias corrected MLE)	10459
nu hat (MLE)	7.555	nu star (bias corrected)	8.276
Adjusted Level of Significance (β)	0.0431		
Approximate Chi Square Value (8.28, α)	2.896	Adjusted Chi Square Value (8.28, β)	2.759
95% Gamma Approximate UCL (use when n>=50)	3343	95% Gamma Adjusted UCL (use when n<50)	3509
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1197	SD (KM)	4809
Variance (KM)	23127585	SE of Mean (KM)	822.9
k hat (KM)	0.062	k star (KM)	0.075
nu hat (KM)	4.587	nu star (KM)	5.548
theta hat (KM)	19316	theta star (KM)	15969
80% gamma percentile (KM)	499.5	90% gamma percentile (KM)	2719
95% gamma percentile (KM)	6934	99% gamma percentile (KM)	21861
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (5.55, α)	1.414	Adjusted Chi Square Value (5.55, β)	1.326
95% Gamma Approximate KM-UCL (use when n>=50)	4699	95% Gamma Adjusted KM-UCL (use when n<50)	5010
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.242	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.234	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1172	Mean in Log Scale	2.239
SD in Original Scale	4882	SD in Log Scale	3.49
95% t UCL (assumes normality of ROS data)	2527	95% Percentile Bootstrap UCL	2642
95% BCA Bootstrap UCL	3728	95% Bootstrap t UCL	21303
95% H-UCL (Log ROS)	138051		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.532	KM Geo Mean	92.93
KM SD (logged)	1.58	95% Critical H Value (KM-Log)	3.128
KM Standard Error of Mean (logged)	0.272	95% H-UCL (KM -Log)	738.4
KM SD (logged)	1.58	95% Critical H Value (KM-Log)	3.128
KM Standard Error of Mean (logged)	0.272		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1194	Mean in Log Scale	4.24
SD in Original Scale	4876	SD in Log Scale	1.836
95% t UCL (Assumes normality)	2547	95% H-Stat UCL	1089
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL		4784	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (benzo(a)pyrene_ea-4_0-3)

General Statistics			
Total Number of Observations	12	Number of Distinct Observations	10
Number of Detects	7	Number of Non-Detects	5
Number of Distinct Detects	7	Number of Distinct Non-Detects	3
Minimum Detect	50	Minimum Non-Detect	40
Maximum Detect	9400	Maximum Non-Detect	200
Variance Detects	11622557	Percent Non-Detects	41.67%
Mean Detects	1803	SD Detects	3409
Median Detects	180	CV Detects	1.891
Skewness Detects	2.467	Kurtosis Detects	6.219
Mean of Logged Detects	6.071	SD of Logged Detects	1.822
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.594	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.357	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1072	KM Standard Error of Mean	798.6
KM SD	2561	95% KM (BCA) UCL	2537
95% KM (t) UCL	2506	95% KM (Percentile Bootstrap) UCL	2553
95% KM (z) UCL	2386	95% KM Bootstrap t UCL	11029
90% KM Chebyshev UCL	3468	95% KM Chebyshev UCL	4553
97.5% KM Chebyshev UCL	6059	99% KM Chebyshev UCL	9018
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.589	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.297	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.329	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.452	k star (bias corrected MLE)	0.354
Theta hat (MLE)	3986	Theta star (bias corrected MLE)	5097
nu hat (MLE)	6.332	nu star (bias corrected)	4.952
Mean (detects)	1803		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1052
Maximum	9400	Median	90
SD	2684	CV	2.552
k hat (MLE)	0.145	k star (bias corrected MLE)	0.164
Theta hat (MLE)	7264	Theta star (bias corrected MLE)	6407
nu hat (MLE)	3.475	nu star (bias corrected)	3.939
Adjusted Level of Significance (β)	0.029		
Approximate Chi Square Value (3.94, α)	0.698	Adjusted Chi Square Value (3.94, β)	0.521
95% Gamma Approximate UCL (use when n>=50)	5936	95% Gamma Adjusted UCL (use when n<50)	7946
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1072	SD (KM)	2561
Variance (KM)	6558845	SE of Mean (KM)	798.6
k hat (KM)	0.175	k star (KM)	0.187
nu hat (KM)	4.208	nu star (KM)	4.489
theta hat (KM)	6117	theta star (KM)	5733
80% gamma percentile (KM)	1362	90% gamma percentile (KM)	3239
95% gamma percentile (KM)	5620	99% gamma percentile (KM)	12249
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (4.49, α)	0.924	Adjusted Chi Square Value (4.49, β)	0.707
95% Gamma Approximate KM-UCL (use when n>=50)	5210	95% Gamma Adjusted KM-UCL (use when n<50)	6811
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.256	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.304	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1057	Mean in Log Scale	4.395
SD in Original Scale	2681	SD in Log Scale	2.558
95% t UCL (assumes normality of ROS data)	2447	95% Percentile Bootstrap UCL	2478
95% BCA Bootstrap UCL	3535	95% Bootstrap t UCL	10972
95% H-UCL (Log ROS)	254424		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	5.128	KM Geo Mean	168.7
KM SD (logged)	1.719	95% Critical H Value (KM-Log)	4.356
KM Standard Error of Mean (logged)	0.54	95% H-UCL (KM -Log)	7077
KM SD (logged)	1.719	95% Critical H Value (KM-Log)	4.356
KM Standard Error of Mean (logged)	0.54		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1068	Mean in Log Scale	4.97
SD in Original Scale	2677	SD in Log Scale	1.959
95% t UCL (Assumes normality)	2456	95% H-Stat UCL	17446
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Bootstrap t UCL	11029	nma Adjusted KM-UCL (use when k<=1 and 15 < n < 50 but k<=1)	6811

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (lead_ea-5_0-15)

General Statistics			
Total Number of Observations	34	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	2000	Mean	226839
Maximum	5665000	Median	10350
SD	986176	Std. Error of Mean	169128
Coefficient of Variation	4.347	Skewness	5.425
Normal GOF Test			
Shapiro Wilk Test Statistic	0.248	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.933	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.489	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.15	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL 513064		95% Adjusted-CLT UCL (Chen-1995) 673157	
		95% Modified-t UCL (Johnson-1978) 539288	
Gamma GOF Test			
A-D Test Statistic	7.856	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.876	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.434	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.165	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.26	k star (bias corrected MLE)	0.257
Theta hat (MLE)	872907	Theta star (bias corrected MLE)	884209
nu hat (MLE)	17.67	nu star (bias corrected)	17.45
MLE Mean (bias corrected)	226839	MLE Sd (bias corrected)	447853
		Approximate Chi Square Value (0.05)	8.991
Adjusted Level of Significance	0.0422	Adjusted Chi Square Value	8.691
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)) 440129		95% Adjusted Gamma UCL (use when n<50) 455343	
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.74	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.933	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.248	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.15	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.601	Mean of logged Data	9.616
Maximum of Logged Data	15.55	SD of logged Data	1.619
Assuming Lognormal Distribution			
95% H-UCL 140630		90% Chebyshev (MVUE) UCL 107099	
95% Chebyshev (MVUE) UCL 132376		97.5% Chebyshev (MVUE) UCL 167460	
99% Chebyshev (MVUE) UCL 236376			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL 505029		95% Jackknife UCL 513064	
95% Standard Bootstrap UCL 495814		95% Bootstrap-t UCL 3030041	
95% Hall's Bootstrap UCL 3145789		95% Percentile Bootstrap UCL 548765	
95% BCA Bootstrap UCL 854916			
90% Chebyshev(Mean, Sd) UCL 734222		95% Chebyshev(Mean, Sd) UCL 964049	
97.5% Chebyshev(Mean, Sd) UCL 1283041		99% Chebyshev(Mean, Sd) UCL 1909639	
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL 964049			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (benzo(a)pyrene_ea-5_0-15)

General Statistics			
Total Number of Observations	31	Number of Distinct Observations	15
Number of Detects	15	Number of Non-Detects	16
Number of Distinct Detects	11	Number of Distinct Non-Detects	5
Minimum Detect	50	Minimum Non-Detect	40
Maximum Detect	33000	Maximum Non-Detect	300
Variance Detects	70971917	Percent Non-Detects	51.61%
Mean Detects	2558	SD Detects	8424
Median Detects	470	CV Detects	3.293
Skewness Detects	3.868	Kurtosis Detects	14.97
Mean of Logged Detects	5.959	SD of Logged Detects	1.538
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.307	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.521	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1261	KM Standard Error of Mean	1078
KM SD	5799	95% KM (BCA) UCL	3376
95% KM (t) UCL	3091	95% KM (Percentile Bootstrap) UCL	3378
95% KM (z) UCL	3034	95% KM Bootstrap t UCL	33263
90% KM Chebyshev UCL	4495	95% KM Chebyshev UCL	5960
97.5% KM Chebyshev UCL	7994	99% KM Chebyshev UCL	11988
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.859	Anderson-Darling GOF Test	
5% A-D Critical Value	0.824	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.455	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.238	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.355	k star (bias corrected MLE)	0.329
Theta hat (MLE)	7199	Theta star (bias corrected MLE)	7782
nu hat (MLE)	10.66	nu star (bias corrected)	9.861
Mean (detects)	2558		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1238
Maximum	33000	Median	0.01
SD	5900	CV	4.767
k hat (MLE)	0.12	k star (bias corrected MLE)	0.13
Theta hat (MLE)	10323	Theta star (bias corrected MLE)	9535
nu hat (MLE)	7.434	nu star (bias corrected)	8.048
Adjusted Level of Significance (β)	0.0413		
Approximate Chi Square Value (8.05, α)	2.763	Adjusted Chi Square Value (8.05, β)	2.593
95% Gamma Approximate UCL (use when n>=50)	3605	95% Gamma Adjusted UCL (use when n<50)	3841
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1261	SD (KM)	5799
Variance (KM)	33629296	SE of Mean (KM)	1078
k hat (KM)	0.0473	k star (KM)	0.0642
nu hat (KM)	2.931	nu star (KM)	3.981
theta hat (KM)	26671	theta star (KM)	19638
80% gamma percentile (KM)	365.5	90% gamma percentile (KM)	2530
95% gamma percentile (KM)	7161	99% gamma percentile (KM)	24698
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (3.98, α)	0.714	Adjusted Chi Square Value (3.98, β)	0.644
95% Gamma Approximate KM-UCL (use when n>=50)	7029	95% Gamma Adjusted KM-UCL (use when n<50)	7793
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.805	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.22	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1249	Mean in Log Scale	4.209
SD in Original Scale	5898	SD in Log Scale	2.161
95% t UCL (assumes normality of ROS data)	3046	95% Percentile Bootstrap UCL	3354
95% BCA Bootstrap UCL	4488	95% Bootstrap t UCL	32090
95% H-UCL (Log ROS)	3443		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.833	KM Geo Mean	125.6
KM SD (logged)	1.51	95% Critical H Value (KM-Log)	3.09
KM Standard Error of Mean (logged)	0.283	95% H-UCL (KM -Log)	919.5
KM SD (logged)	1.51	95% Critical H Value (KM-Log)	3.09
KM Standard Error of Mean (logged)	0.283		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1261	Mean in Log Scale	4.772
SD in Original Scale	5895	SD in Log Scale	1.619
95% t UCL (Assumes normality)	3058	95% H-Stat UCL	1145
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL		5960	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (arsenic_ea-6_0-2)

General Statistics			
Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	600	Mean	18656
Maximum	82800	Median	2210
SD	29073	Std. Error of Mean	9194
Coefficient of Variation	1.558	Skewness	1.539
Normal GOF Test			
Shapiro Wilk Test Statistic	0.684	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.398	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	35509	95% Adjusted-CLT UCL (Chen-1995)	38560
		95% Modified-t UCL (Johnson-1978)	36255
Gamma GOF Test			
A-D Test Statistic	1.113	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.786	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.337	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.282	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.453	k star (bias corrected MLE)	0.384
Theta hat (MLE)	41147	Theta star (bias corrected MLE)	48577
nu hat (MLE)	9.068	nu star (bias corrected)	7.681
MLE Mean (bias corrected)	18656	MLE Sd (bias corrected)	30104
		Approximate Chi Square Value (0.05)	2.552
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	2.068
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	56158	95% Adjusted Gamma UCL (use when n<50)	69296
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.837	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.25	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.397	Mean of logged Data	8.411
Maximum of Logged Data	11.32	SD of logged Data	1.811
Assuming Lognormal Distribution			
95% H-UCL	457647	90% Chebyshev (MVUE) UCL	47071
95% Chebyshev (MVUE) UCL	60753	97.5% Chebyshev (MVUE) UCL	79744
99% Chebyshev (MVUE) UCL	117046		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	33778	95% Jackknife UCL	35509
95% Standard Bootstrap UCL	32575	95% Bootstrap-t UCL	48648
95% Hall's Bootstrap UCL	33222	95% Percentile Bootstrap UCL	34569
95% BCA Bootstrap UCL	36411		
90% Chebyshev(Mean, Sd) UCL	46237	95% Chebyshev(Mean, Sd) UCL	58730
97.5% Chebyshev(Mean, Sd) UCL	76070	99% Chebyshev(Mean, Sd) UCL	110131
Suggested UCL to Use			
99% Chebyshev (Mean, Sd) UCL 110131			
Recommended UCL exceeds the maximum observation			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (arsenic_ea-6_0-15)

General Statistics			
Total Number of Observations	33	Number of Distinct Observations	30
Number of Detects	32	Number of Non-Detects	1
Number of Distinct Detects	29	Number of Distinct Non-Detects	1
Minimum Detect	230	Minimum Non-Detect	100
Maximum Detect	82800	Maximum Non-Detect	100
Variance Detects	4.688E+8	Percent Non-Detects	3.03%
Mean Detects	8912	SD Detects	21652
Median Detects	1085	CV Detects	2.429
Skewness Detects	2.752	Kurtosis Detects	6.592
Mean of Logged Detects	7.438	SD of Logged Detects	1.486
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.434	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.93	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.472	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.154	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	8645	KM Standard Error of Mean	3721
KM SD	21040	95% KM (BCA) UCL	15569
95% KM (t) UCL	14948	95% KM (Percentile Bootstrap) UCL	15012
95% KM (z) UCL	14766	95% KM Bootstrap t UCL	19514
90% KM Chebyshev UCL	19809	95% KM Chebyshev UCL	24865
97.5% KM Chebyshev UCL	31884	99% KM Chebyshev UCL	45670
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.897	Anderson-Darling GOF Test	
5% A-D Critical Value	0.833	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.378	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.167	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.398	k star (bias corrected MLE)	0.381
Theta hat (MLE)	22419	Theta star (bias corrected MLE)	23386
nu hat (MLE)	25.44	nu star (bias corrected)	24.39
Mean (detects)	8912		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	8642
Maximum	82800	Median	1000
SD	21367	CV	2.472
k hat (MLE)	0.339	k star (bias corrected MLE)	0.329
Theta hat (MLE)	25462	Theta star (bias corrected MLE)	26287
nu hat (MLE)	22.4	nu star (bias corrected)	21.7
Adjusted Level of Significance (β)	0.0419		
Approximate Chi Square Value (21.70, α)	12.11	Adjusted Chi Square Value (21.70, β)	11.74
95% Gamma Approximate UCL (use when n>=50)	15482	95% Gamma Adjusted UCL (use when n<50)	15969
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	8645	SD (KM)	21040
Variance (KM)	4.427E+8	SE of Mean (KM)	3721
k hat (KM)	0.169	k star (KM)	0.174
nu hat (KM)	11.14	nu star (KM)	11.46
theta hat (KM)	51205	theta star (KM)	49774
80% gamma percentile (KM)	10484	90% gamma percentile (KM)	26019
95% gamma percentile (KM)	46118	99% gamma percentile (KM)	102817
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (11.46, α)	4.876	Adjusted Chi Square Value (11.46, β)	4.655
95% Gamma Approximate KM-UCL (use when n>=50)	20326	95% Gamma Adjusted KM-UCL (use when n<50)	21288
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.761	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.93	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.25	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.154	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	8644	Mean in Log Scale	7.337
SD in Original Scale	21367	SD in Log Scale	1.573
95% t UCL (assumes normality of ROS data)	14944	95% Percentile Bootstrap UCL	15059
95% BCA Bootstrap UCL	17651	95% Bootstrap t UCL	23117
95% H-UCL (Log ROS)	12936		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	7.352	KM Geo Mean	1560
KM SD (logged)	1.52	95% Critical H Value (KM-Log)	3.133
KM Standard Error of Mean (logged)	0.269	95% H-UCL (KM -Log)	11483
KM SD (logged)	1.52	95% Critical H Value (KM-Log)	3.133
KM Standard Error of Mean (logged)	0.269		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8644	Mean in Log Scale	7.331
SD in Original Scale	21367	SD in Log Scale	1.586
95% t UCL (Assumes normality)	14944	95% H-Stat UCL	13278
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL 24865			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (benzo(a)pyrene_ea-7_0-2)

General Statistics			
Total Number of Observations	20	Number of Distinct Observations	11
Number of Detects	9	Number of Non-Detects	11
Number of Distinct Detects	8	Number of Distinct Non-Detects	4
Minimum Detect	70	Minimum Non-Detect	30
Maximum Detect	29000	Maximum Non-Detect	200
Variance Detects	90640174	Percent Non-Detects	55%
Mean Detects	3646	SD Detects	9521
Median Detects	270	CV Detects	2.611
Skewness Detects	2.985	Kurtosis Detects	8.931
Mean of Logged Detects	6.111	SD of Logged Detects	1.901
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.432	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.482	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1659	KM Standard Error of Mean	1490
KM SD	6284	95% KM (BCA) UCL	4570
95% KM (t) UCL	4236	95% KM (Percentile Bootstrap) UCL	4522
95% KM (z) UCL	4110	95% KM Bootstrap t UCL	37992
90% KM Chebyshev UCL	6130	95% KM Chebyshev UCL	8155
97.5% KM Chebyshev UCL	10966	99% KM Chebyshev UCL	16488
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.268	Anderson-Darling GOF Test	
5% A-D Critical Value	0.803	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.337	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.301	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.326	k star (bias corrected MLE)	0.291
Theta hat (MLE)	11200	Theta star (bias corrected MLE)	12525
nu hat (MLE)	5.86	nu star (bias corrected)	5.24
Mean (detects)	3646		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1641
Maximum	29000	Median	0.01
SD	6452	CV	3.932
k hat (MLE)	0.111	k star (bias corrected MLE)	0.128
Theta hat (MLE)	14721	Theta star (bias corrected MLE)	12812
nu hat (MLE)	4.458	nu star (bias corrected)	5.123
Adjusted Level of Significance (β)	0.038		
Approximate Chi Square Value (5.12, α)	1.209	Adjusted Chi Square Value (5.12, β)	1.068
95% Gamma Approximate UCL (use when n>=50)	6950	95% Gamma Adjusted UCL (use when n<50)	7870
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1659	SD (KM)	6284
Variance (KM)	39487408	SE of Mean (KM)	1490
k hat (KM)	0.0697	k star (KM)	0.0926
nu hat (KM)	2.787	nu star (KM)	3.703
theta hat (KM)	23804	theta star (KM)	17920
80% gamma percentile (KM)	1023	90% gamma percentile (KM)	4265
95% gamma percentile (KM)	9659	99% gamma percentile (KM)	27380
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (3.70, α)	0.608	Adjusted Chi Square Value (3.70, β)	0.521
95% Gamma Approximate KM-UCL (use when n>=50)	10104	95% Gamma Adjusted KM-UCL (use when n<50)	11790
95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)			
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.867	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.165	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1644	Mean in Log Scale	3.3
SD in Original Scale	6451	SD in Log Scale	3.061
95% t UCL (assumes normality of ROS data)	4138	95% Percentile Bootstrap UCL	4469
95% BCA Bootstrap UCL	6044	95% Bootstrap t UCL	37016
95% H-UCL (Log ROS)	240695		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	4.648	KM Geo Mean	104.4
KM SD (logged)	1.796	95% Critical H Value (KM-Log)	3.94
KM Standard Error of Mean (logged)	0.428	95% H-UCL (KM -Log)	2660
KM SD (logged)	1.796	95% Critical H Value (KM-Log)	3.94
KM Standard Error of Mean (logged)	0.428		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1658	Mean in Log Scale	4.541
SD in Original Scale	6447	SD in Log Scale	1.96
95% t UCL (Assumes normality)	4151	95% H-Stat UCL	4289
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL 8155			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Outlier Tests for Selected Uncensored Variables

User Selected Options

Date/Time of Computation ProUCL 5.19/18/2020 8:52:51 AM
From File Appendix A Tables.xls
Full Precision OFF

Dixon's Outlier Test for Result (lead_ea-2_0-2)

Number of Observations = 9
10% critical value: 0.441
5% critical value: 0.512
1% critical value: 0.635

1. Observation Value 1160000 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.954

For 10% significance level, 1160000 is an outlier.
For 5% significance level, 1160000 is an outlier.
For 1% significance level, 1160000 is an outlier.

2. Observation Value 1690 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.006

For 10% significance level, 1690 is not an outlier.
For 5% significance level, 1690 is not an outlier.
For 1% significance level, 1690 is not an outlier.

Dixon's Outlier Test for Result (benzo(a)pyrene_ea-2_0-2)

Number of Observations = 9
10% critical value: 0.441
5% critical value: 0.512
1% critical value: 0.635

1. Observation Value 21500 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.680

For 10% significance level, 21500 is an outlier.
For 5% significance level, 21500 is an outlier.
For 1% significance level, 21500 is an outlier.

2. Observation Value 40 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.000

For 10% significance level, 40 is not an outlier.
For 5% significance level, 40 is not an outlier.
For 1% significance level, 40 is not an outlier.

Dixon's Outlier Test for Result (benzo(a)pyrene_ea-3_0-2)

Number of Observations = 13

10% critical value: 0.467

5% critical value: 0.521

1% critical value: 0.615

1. Observation Value 28000 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.966

For 10% significance level, 28000 is an outlier.

For 5% significance level, 28000 is an outlier.

For 1% significance level, 28000 is an outlier.

2. Observation Value 40 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.000

For 10% significance level, 40 is not an outlier.

For 5% significance level, 40 is not an outlier.

For 1% significance level, 40 is not an outlier.

Rosner's Outlier Test for Result (benzo(a)pyrene_ea-3_0-15)

Mean 1218

Standard Deviation 4871

Number of data 37

Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	1218	4805	28000	8	5.574	3	3.34

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 28000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 28000

Dixon's Outlier Test for Result (benzo(a)pyrene_ea-4_0-3)

Number of Observations = 12

10% critical value: 0.49

5% critical value: 0.546

1% critical value: 0.642

1. Observation Value 9400 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.908

For 10% significance level, 9400 is an outlier.

For 5% significance level, 9400 is an outlier.

For 1% significance level, 9400 is an outlier.

2. Observation Value 40 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.000

For 10% significance level, 40 is not an outlier.

For 5% significance level, 40 is not an outlier.

For 1% significance level, 40 is not an outlier.

Rosner's Outlier Test for Result (lead_ea-5_0-15)

Mean 226839

Standard Deviation 986176

Number of data 34

Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	226839	971565	5665000	24	5.597	2.97	3.3

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 5665000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 5665000

Rosner's Outlier Test for Result (benzo(a)pyrene_ea-5_0-15)

Mean 1285
 Standard Deviation 5890
 Number of data 31
 Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	1285	5794	33000	22	5.474	2.92	3.25

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 33000

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 33000

Dixon's Outlier Test for Result (arsenic_ea-6_0-2)

Number of Observations = 10

10% critical value: 0.409

5% critical value: 0.477

1% critical value: 0.597

1. Observation Value 82800 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.400

For 10% significance level, 82800 is not an outlier.

For 5% significance level, 82800 is not an outlier.

For 1% significance level, 82800 is not an outlier.

2. Observation Value 600 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.008

For 10% significance level, 600 is not an outlier.

For 5% significance level, 600 is not an outlier.

For 1% significance level, 600 is not an outlier.

Rosner's Outlier Test for Result (arsenic_ea-6_0-15)

Mean 8645
 Standard Deviation 21366
 Number of data 33
 Number of suspected outliers 1

#	Mean	sd	Potential outlier	Obs. Number	Test value	Critical value (5%)	Critical value (1%)
1	8645	21040	82800	1	3.524	2.95	3.29

For 5% Significance Level, there is 1 Potential Outlier

Potential outliers is: 82800

For 1% Significance Level, there is 1 Potential Outlier

Potential outliers is: 82800

Dixon's Outlier Test for Result (benzo(a)pyrene_ea-7_0-2)

Number of Observations = 20

10% critical value: 0.401

5% critical value: 0.45

1% critical value: 0.535

1. Observation Value 29000 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.960

For 10% significance level, 29000 is an outlier.

For 5% significance level, 29000 is an outlier.

For 1% significance level, 29000 is an outlier.

2. Observation Value 30 is a Potential Outlier (Lower Tail)?

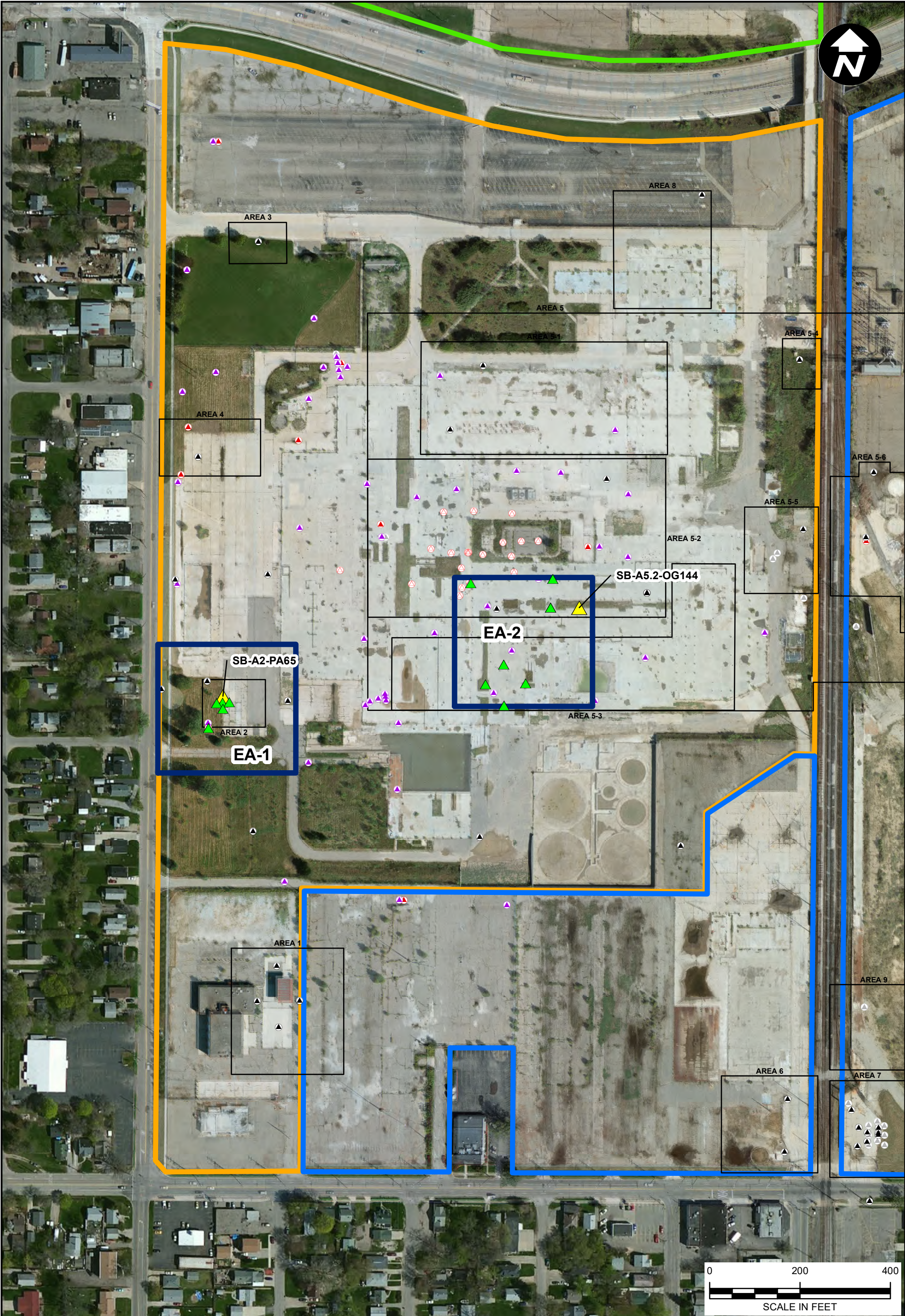
Test Statistic: 0.009

For 10% significance level, 30 is not an outlier.

For 5% significance level, 30 is not an outlier.

For 1% significance level, 30 is not an outlier.

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
M:\GIS\Project Files\RACER\Lansing\Docs\working\2013 Criteria Eval_P2_LeadArsenic_2020.mxd PLOTTED: 9/22/2020 4:24:31 PM BY: MJOYE



LEGEND

- 2013 NOT AN EXCEEDANCE 0-2 FT BGS
- 2013 EXCEEDANCE 0-2 FT BGS
- 2013 NOT AN EXCEEDANCE >2 FT BGS
- 2013 EXCEEDANCE > 2 FT BGS
- 2 ACRE EXPOSURE AREA FOR DIRECT CONTACT

- LNAPL MONITORING WELL
- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- ABANDONED MONITORING WELL

- PLANT 2
- PLANT 3
- PLANT 6

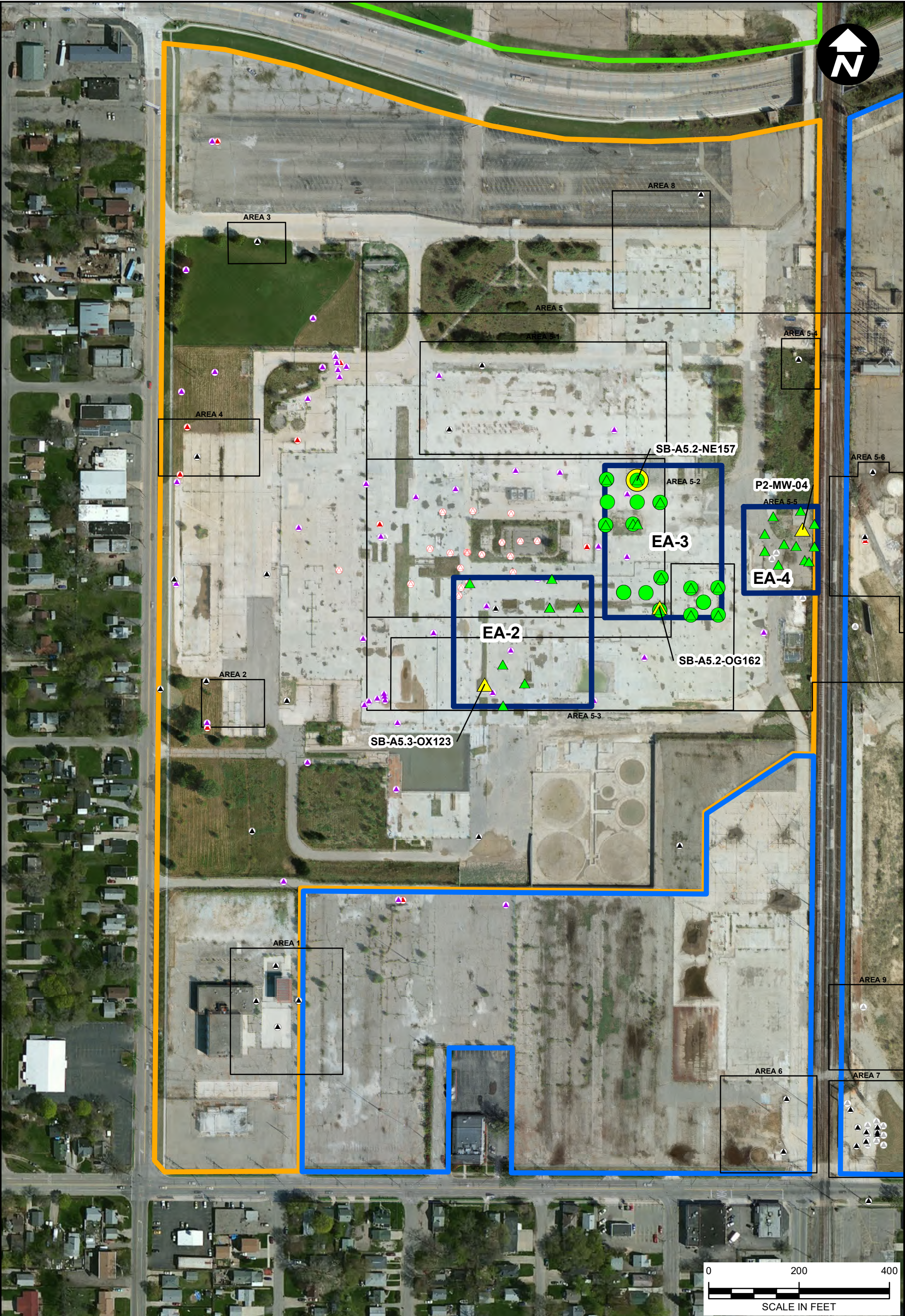
NOTES:
DATA COMPARED TO EGLE 2013
NON-RESIDENTIAL DIRECT CONTACT
(DC) CRITERIA
ft bgs: FEET BELOW GROUND SURFACE

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

PLANT 2 SAMPLES USED IN THE
STATISTICAL EVALUATION FOR DC CRITERIA
LEAD / ARSENIC



CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
M:\GIS\Project Files\RACER\lansing\Docs\working\2013 Criteria Eval_P2_Benzo_2020.mxd PLOTTED: 9/22/2020 4:16:41 PM BY: MJOYE



LEGEND

- 2013 NOT AN EXCEEDANCE 0-2 FT BGS
- 2013 EXCEEDANCE 0-2 FT BGS
- 2013 NOT AN EXCEEDANCE >2 FT BGS
- 2013 EXCEEDANCE > 2 FT BGS
- 2 ACRE EXPOSURE AREA FOR DIRECT CONTACT

- LNAPL MONITORING WELL
- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- ABANDONED MONITORING WELL

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
DATA COMPARED TO EGLE 2013
NON-RESIDENTIAL DIRECT CONTACT
(DC) CRITERIA
ft bgs: FEET BELOW GROUND SURFACE

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

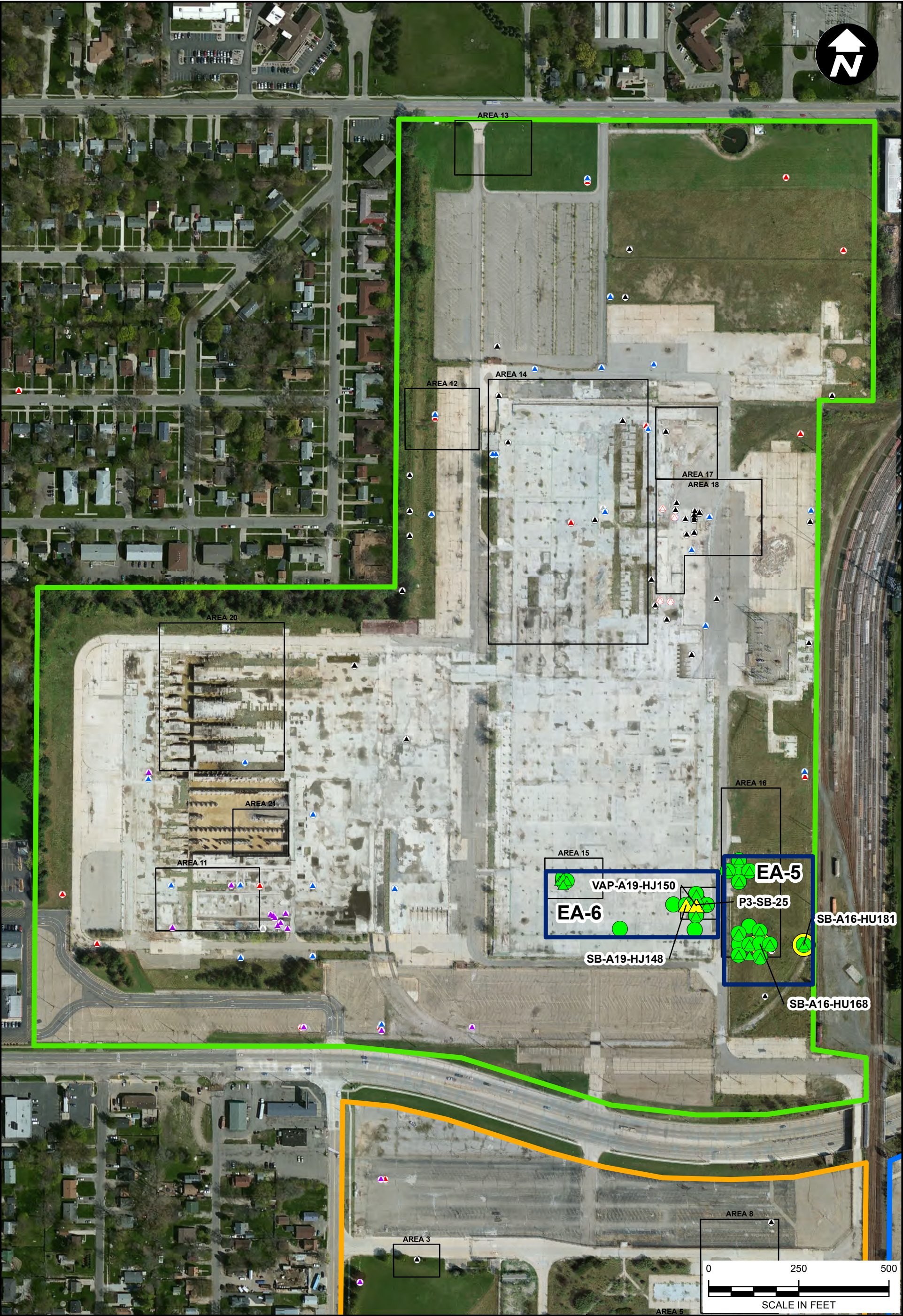
PLANT 2 SAMPLES USED IN THE
STATISTICAL EVALUATION FOR DC CRITERIA
BENZO(A)PYRENE



FIGURE

A-2

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
M:\GIS\Project Files\RACER\lansing\Docs\working\2013 Criteria Eval_P3_lead_2020.mxd PLOTTED: 9/22/2020 5:00:58 PM BY: MJOYE



LEGEND

- 2013 NOT AN EXCEEDANCE 0-2 FT BGS
- 2013 EXCEEDANCE 0-2 FT BGS
- 2013 NOT AN EXCEEDANCE >2 FT BGS
- 2013 EXCEEDANCE > 2 FT BGS
- 2 ACRE EXPOSURE AREA FOR DIRECT CONTACT

- LNAPL MONITORING WELL
- PERCHED ZONE MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- WEATHERED BEDROCK MONITORING WELL
- BEDROCK MONITORING WELL
- ABANDONED MONITORING WELL

- PLANT 2
- PLANT 3
- PLANT 6

NOTES:
DATA COMPARED TO EGLE 2013
NON-RESIDENTIAL DIRECT CONTACT
(DC) CRITERIA
ft bgs: FEET BELOW GROUND SURFACE

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

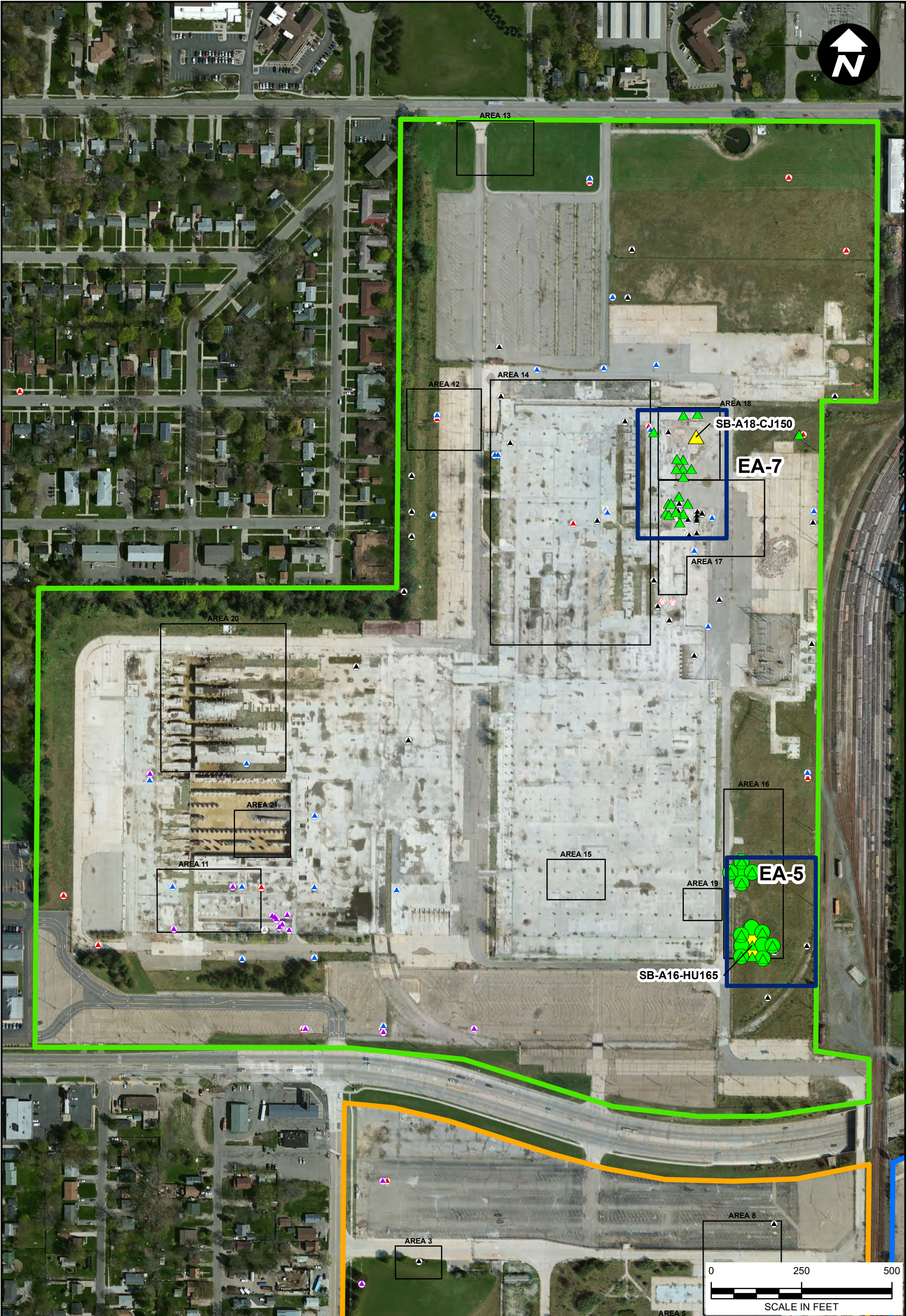
PLANT 3 SAMPLES USED IN THE
STATISTICAL EVALUATION FOR DC CRITERIA
LEAD / ARSENIC



FIGURE

A-3

CITY: KNOXVILLE DIV: ENV DB: A.SMITH PIC: PM: TM: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
M:\GIS\Project Files\RACER\lansing\Docs\working\2013 Criteria Eval_P3_Benzo_2020.mxd PLOTTED: 9/22/2020 4:55:25 PM BY: M.Joye



LEGEND

- 2013 NOT AN EXCEEDANCE 0-2 FT BGS

2013 EXCEEDANCE 0-2 FT BGS

2013 NOT AN EXCEEDANCE >2 FT BGS

2013 EXCEEDANCE > 2 FT BGS

2 ACRE EXPOSURE AREA FOR DIRECT CONTACT
- LNAPL MONITORING WELL

PERCHED ZONE MONITORING WELL

DEEP OVERBURDEN MONITORING WELL

WEATHERED BEDROCK MONITORING WELL

BEDROCK MONITORING WELL

ABANDONED MONITORING WELL
- PLANT 2

PLANT 3

PLANT 6
- NOTES:

DATA COMPARED TO EGLE 2013 NON-RESIDENTIAL DIRECT CONTACT (DC) CRITERIA

ft bgs: FEET BELOW GROUND SURFACE

RACER TRUST
PLANTS 2, 3 & 6
LANSING, MICHIGAN

PLANT 3 SAMPLES USED IN THE
STATISTICAL EVALUATION FOR DC CRITERIA
BENZO(A)PYRENE

ARCADIS

Design & Consultancy
for natural and
built assets

FIGURE

A-4

Appendix B

Soil Boring Logs

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A18-CI150 1-2(040821) @ 1335	0.0		(0.0-3.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A18-CI150 2-3(040821) @ 1340	0.0				
3									
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A18-CJ149 1-2(040821) @ 1325	0.0		(0.0-3.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A18-CJ149 2-3(040821) @ 1330	0.0				
3									
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A18-CJ150 _1-2(040821) @ 1310 and DUP-05(040821) collected	0.0		(0.0-3.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A18-CJ150 _2-3(040821) @ 1315	0.0				
3									
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A18-CJ151 1-2(040821) @ 1350	0.0		(0.0-2.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A18-CJ151 2-3(040821) @ 1355	0.0		(2.0-2.8') CLAY, medium to high plasticity, no dilatancy; little sand, coarse, subangular; little granules, subrounded; little pebbles, small to medium, subrounded; dry; medium stiff; dark grayish brown (10YR 4/2).		
3					0.0		(2.8-3.0') CONCRETE. Note: Fill material.		
							End of boring at 3.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

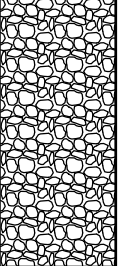
Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A18-CK150 _1.5-2(040821) @ 1420	0.0	(0.0-0.5') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.			
2				SB-A18-CK150 _2-3(040821) @ 1425	0.0	(0.5-1.5') CONCRETE. Note: Subfloor.		(0.0-3.0' bgs) Backfilled with soil cuttings	
3					0.0	(1.5-3.0') SAND, very fine to fine, subrounded; little silt; well sorted; dry to moist; yellowish brown (10YR 5/6). Note: Fill material.			
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-OX62 _0-1(040721) @ 1605	0.0		(0.0-1.0') GRASS/TOPSOIL.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-OX62 _1-2(040721) @ 1610	0.0		(1.0-2.0') CLAY, medium plasticity, no dilatancy; some silt; trace to little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry; stiff; dark yellowish brown (10YR 4/4).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-OX65 _0-1(040721) @ 1500	0.0		(0.0-0.3') GRASS/TOPSOIL.		
2				SB-A2-OX65 _1-2(040721) @ 1505	0.0		(0.3-2.0') CLAY, high plasticity, no dilatancy; little silt; little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; moist; stiff; yellowish brown (10YR 5/4).	(0.0-2.0' bgs) Backfilled with soil cuttings	
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-OX68 _0.5-1(040721) @ 1325	0.0		(0.0-0.5') CONCRETE.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-OX68 _1-2(040721) @ 1330	0.0		(0.5-2.0') SAND, fine to medium, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; trace silt; well sorted; wet; brown (10YR 4/3).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Cloudy

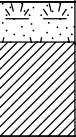
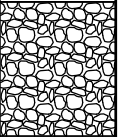
Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-PA62 _0-1(040721) @ 1555 and DUP-02(040721) collected	0.0		(0.0-1.0') GRASS/TOPSOIL.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-PA62 _1-2(040721) @ 1600	0.0		(1.0-2.0') CLAY, medium to low plasticity, no dilatancy; some silt; little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry; stiff; dark yellowish brown (10YR 4/4).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			12	SB-A2-PA65 0-1(040721) @ 1445	0.0		(0.0-0.3') GRASS/TOPSOIL. Note: Trace plastic fragments present. (0.3-1.0') CLAY, medium plasticity, no dilatancy; some silt; little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry to moist; stiff; dark yellowish brown (10YR 4/4).	(0.0-1.0' bgs) Backfilled with soil cuttings	
2							End of boring at 1.0' bgs.		
3									
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-PA68 _0.5-1(040721) @ 1310	0.0		(0.0-0.5') GRASS/TOPSOIL.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-PA68 _1-2(040721) @ 1315 and DUP-01(040721) collected	0.0		(0.5-1.0') SAND, fine to medium, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; trace silt; well sorted; wet; brown (10YR 4/3). (1.0-2.0') CLAY, medium to high plasticity, no dilatancy; little silt; trace sand, very fine; trace granules, subrounded; trace pebbles, small, subrounded; dry to moist; stiff; brown (10YR 4/3).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-PD62 _0-1(040721) @ 1540	0.0		(0.0-1.0') GRASS/TOPSOIL.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-PD62 _1-2(040721) @ 1545	0.0		(1.0-2.0') CLAY, medium to low plasticity, no dilatancy; some silt; little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry to moist; stiff; dark yellowish brown (10YR 4/4).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-PD65 _0-1(040721) @ 1420 and MS/MSD collected	0.0		(0.0-1.0') GRASS/TOPSOIL. Note: Trace plastic fragments present. Fill material.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-PD65 _1-2(040721) @ 1430	0.0		(1.0-2.0') CLAY, medium to low plasticity, no dilatancy; some silt; little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry to moist; stiff; dark yellowish brown (10YR 4/4).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/07/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/07/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 75° F, Sunny

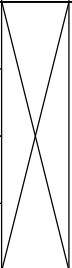
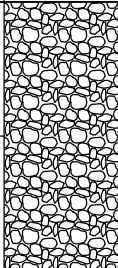
Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-PD68 _0.5-1(040721) @ 1255	0.0		(0.0-0.5') CONCRETE.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-PD68 _1-2(040721) @ 1300	0.0		(0.5-1.0') SAND, fine to medium, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; trace silt; well sorted; dry; brown (10YR 4/3). (1.0-2.0') CLAY, medium to high plasticity, no dilatancy; little silt; trace sand, very fine; trace granules, subrounded; trace pebbles, small, subrounded; dry to moist; stiff; brown (10YR 4/3).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 65° F, Partly Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A5.2-OF162 _0-1(040821) @ 1000	0.0		(0.0-2.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material. Note: Wet at 1.0' bgs.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A5.2-OF162 _1-2(040821) @ 1005	0.0				
3							End of boring at 2.0' bgs, refusal.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/09/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/09/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

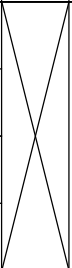
Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') CONCRETE.		
2			36	SB-A5.2-OF162A 1-2(040921) @ 1105	0.0		(1.0-3.0') SAND, very fine to fine, subrounded; little silt; well sorted; moist to wet; yellowish brown (10YR 5/4). Note: Fill material.	(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A5.2-OF162A 2-3(040921) @ 1110	0.0		Note: Wet at 1.5' bgs.		
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

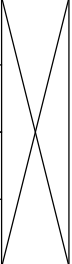
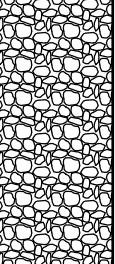
Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A5.2-OG160 _0-1(040821) @ 1505	0.0		(0.0-2.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material. Note: Wet at 1.0' bgs.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A5.2-OG160 _1-2(040821) @ 1510	0.0				
3							End of boring at 2.0' bgs, refusal.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 65° F, Partly Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A5.2-OG161 _0-1(040821) @ 0940 and DUP-03 collected	0.0		(0.0-2.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material. Note: Wet at 1.0' bgs.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A5.2-OG161 _1-2(040821) @ 0945	0.0				
3							End of boring at 2.0' bgs, refusal.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
 Driller: James Ashe Sampling Interval: Continuous
 Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
 Surface Elev.: _____
 North Coor: _____
 East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 65° F, Partly Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A5.2-OG163 _0-1(040821) @ 1015	0.0		(0.0-2.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A5.2-OG163 _1-2(040821) @ 1020 and MS/MSD collected	0.0		Note: Wet at 1.0' bgs.		
3							End of boring at 2.0' bgs, refusal.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy/Rain

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36		0.0		(0.0-1.5') CONCRETE.		
2				SB-A5.2-OG165 2-3(040821) @ 1630	0.0		(1.5-3.0') SAND, very fine to fine, subrounded; trace granules, subrounded; trace silt; well sorted; wet; yellowish brown (10YR 5/4). Note: Fill material.	(0.0-3.0' bgs) Backfilled with soil cuttings	
3					0.0				
4							End of boring at 3.0' bgs, refusal.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A5.2-OH160 _0.5-1(040821) @ 1525	0.0		(0.0-0.5') CONCRETE.		
2			36		0.0		(0.5-3.0') SAND, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; trace silt; well sorted; wet; yellowish brown (10YR 5/4). Note: Fill material.	(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A5.2-OH160 _2-3(040821) @ 1530	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/09/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/09/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') CONCRETE.		
2			36	SB-A5.3-OV122 1-2(040921) @ 1015	0.0		(1.0-3.0') SAND, very fine to fine, subrounded; little silt; trace granules, subrounded; trace pebbles, small, subrounded; well sorted; moist to wet; yellowish brown (10YR 5/4). Note: Fill material. Note: Wet at 1.5' bgs.	(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A5.3-OV122 2-3(040921) @ 1020	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/09/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/09/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OV123 1-2(040921) @ 0925	0.0		(0.0-3.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material. Note: Wet at 1.0' bgs.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A5.3-OV123 2-3(040921) @ 0930	0.0				
3									
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 65° F, Partly Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OW123 1-2(040821) @ 1130	0.0		(0.0-3.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material. Note: Wet at 1.0' bgs.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A5.3-OW123 2-3(040821) @ 1135	0.0				
3				and MS/MSD collected	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/09/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/09/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') CONCRETE.		
2			36	SB-A5.3-OX121 1-2(040921) @ 1030	0.0		(1.0-3.0') SAND, very fine to fine, subrounded; little silt; trace granules, subrounded; trace pebbles, small, subrounded; well sorted; moist to wet; yellowish brown (10YR 5/4). Note: Wet at 1.5' bgs.	(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A5.3-OX121 2-3(040921) @ 1035	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: Hand Auger
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 65° F, Partly Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OX122 1-2(040821) @ 1105	0.0		(0.0-3.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material. Note: Wet at 1.0' bgs.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A5.3-OX122 2-3(040821) @ 1110	0.0				
3									
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
 Driller: James Ashe Sampling Interval: Continuous
 Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
 Surface Elev.: _____
 North Coor: _____
 East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/08/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/08/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 65° F, Partly Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OY123 _1-2(040821) @ 1045 and DUP-04(040821) collected	0.0		(0.0-3.0') SAND, fine to coarse, subrounded; little granules, subrounded; little pebbles, small to medium, subrounded; little silt; poorly sorted; dry to moist; dark brown (10YR 3/3). Note: Bricks, concrete, and large cobble-size debris present. Fill material. Note: Wet at 1.0' bgs.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A5.3-OY123 _2-3(040821) @ 1050	0.0				
3					0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 04/09/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 04/09/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') CONCRETE.		
2			36	SB-A5.3-OZ123 1-2(040921) @ 1045	0.0		(1.0-3.0') SAND, very fine to fine, subrounded; little silt; well sorted; moist to wet; yellowish brown (10YR 5/4). Note: Fill material.	(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A5.3-OZ123 2-3(040921) @ 1050	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Cascade Sampling Method: 5.0' Macro Core
Driller: James Ashe Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 05/20/2021 Logger: S. Turner
Project Number: 30042872 Date Completed: 05/20/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A2-PD64_ 0-1(052021) @ 0945	0.0		(0.0-1.0') GRASS/TOPSOIL.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-PD64_ 1-2(052021) @ 0950	0.0		(1.0-2.0') CLAY, medium plasticity, no dilatancy; some silt; trace to little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry; stiff; dark yellowish brown (10YR 4/4).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Seth Turner Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 05/20/2021 Logger: S. Turner
Project Number: 30042872 Date Completed: 05/20/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Sunny

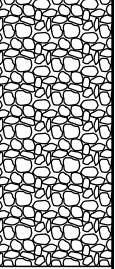
Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') GRASS/TOPSOIL.		
2					0.0		(1.0-3.0') CLAY, medium plasticity, no dilatancy; some silt; trace to little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry; stiff; dark yellowish brown (10YR 4/4).	(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A2-PD65_2-3(052021) @ 1000 and MS/MSD and DUP-A2(052021)	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Seth Turner Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 05/20/2021 Logger: S. Turner
 Project Number: 30042872 Date Completed: 05/20/2021 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 70° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A2-PE65_ 0-1(052021) @ 1010	0.0		(0.0-1.0') GRASS/TOPSOIL.	(0.0-2.0' bgs) Backfilled with soil cuttings	
2				SB-A2-PE65_ 1-2(052021) @ 1015	0.0		(1.0-2.0') CLAY, medium plasticity, no dilatancy; some silt; trace to little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry; stiff; dark yellowish brown (10YR 4/4).		
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
 Driller: Seth Turner Sampling Interval: Continuous
 Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
 Surface Elev.: _____
 North Coor: _____
 East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 05/20/2021 Logger: S. Turner
Project Number: 30042872 Date Completed: 05/20/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-3.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.		
2				SB-A18-CI149_1-2(052021) @ 1100 and DUP-A18(052021)	0.0			(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A18-CI149_2-3(052021) @ 1255	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Seth Turner Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 05/20/2021 Logger: S. Turner
Project Number: 30042872 Date Completed: 05/20/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-3.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A18-CJ148_1-2(052021) @ 1045 and MS/MSD	0.0				
3				SB-A18-CJ148_2-3(052021) @ 1245	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Seth Turner Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 05/20/2021 Logger: S. Turner
Project Number: 30042872 Date Completed: 05/20/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 70° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-3.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete. Small to very large pebble-sized concrete fragments and debris present.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2				SB-A18-CK149_1-2(052021) @ 1035	0.0				
3				SB-A18-CK149_2-3(052021) @ 1305	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Seth Turner Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 07/28/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 07/28/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 80° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A2-PD65	0.0		(0.0-0.5') GRASS/TOPSOIL.		
2				1-2(072821) @ 1045	0.0		(0.5-2.0') CLAY, medium plasticity, no dilatancy; some silt; trace to little sand, fine, subrounded; trace granules, subrounded; trace pebbles, small, subrounded; dry; stiff; dark yellowish brown (10YR 4/4).	(0.0-2.0' bgs) Backfilled with soil cuttings	
3							End of boring at 2.0' bgs.		
4									
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Austin Westhuis Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 07/28/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 07/28/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 80° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A18-CK147_1-2(072821) @ 1215	0.0		(0.0-0.8') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete fragments.	(0.0-3.0' bgs) Backfilled with soil cuttings	
2					0.0		(0.8-3.0') SAND, very fine to fine, subrounded; little silt; well sorted; dry to moist; yellowish brown (10YR 5/6). Note: Fill material.		
3				SB-A18-CK147_2-3(072821) @ 1220	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Austin Westhuis Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 07/28/2021 Logger: A. Westhuis
Project Number: 30042872 Date Completed: 07/28/2021 Editor: C. Cisco
Project Location: Lansing, MI Weather Conditions: 80° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A18-CK148_1-2(072821) @ 1145 and DUP-01 collected	0.0		(0.0-1.0') SAND, medium to very coarse, subrounded; little silt; poorly sorted; dry; light brownish gray (10YR 6/2). Note: Fill material; brick/concrete fragments.		
2			36		0.0		(1.0-3.0') SAND, very fine to fine, subrounded; little silt; well sorted; dry to moist; yellowish brown (10YR 5/6). Note: Fill material.	(0.0-3.0' bgs) Backfilled with soil cuttings	
3				SB-A18-CK148_2-3(072821) @ 1150	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Arcadis Sampling Method: Hand Auger
Driller: Austin Westhuis Sampling Interval: Continuous
Drilling Method: Hand Auger Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			15		0.0		(0.0-1.3') CONCRETE.	(0.0-1.0') Concrete	
2			21	SB-A5.3-OS122 _1-2(081022) at 1012	0.0		(1.3-3.0') SAND, medium; well sorted; moist; dark yellowish brown (10YR 4/4).	(1.0-3.0') Backfilled with bentonite	
3				SB-A5.3-OS122 _2-3(081022) at 1015	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			26	SB-A5.3-OS123 _1-2(081022) at 0930	0.0		(0.0-3.0') SAND, medium to very coarse, angular to subangular; some granules, angular to subangular; little pebbles, small, angular to subangular; poorly sorted; moist; dark grayish brown (10YR 4/2).	(0.0-0.5') Topsoil	
2				SB-A5.3-OS123 _2-3(081022) at 0935	0.0			(0.5-3.0') Backfilled with bentonite	
3					0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
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Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			12		0.0		(0.0-1.1') CONCRETE.	(0.0-1.0') Concrete	
2			24	SB-A5.3-OS124 _1-2(081022) at 1255	0.0		(1.1-3.0') SAND, medium; little pebbles, small to medium, subrounded to rounded; trace granules, angular to subangular; well sorted; moist; dark yellowish brown (10YR 4/4).	(1.0-3.0') Backfilled with bentonite	
3				SB-A5.3-OS124 _2-3(081022) at 1300	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
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Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			15		0.0		(0.0-1.3') CONCRETE.	(0.0-1.0') Concrete	
2			11	SB-A5.3-OT122 _1-2(081022) at 1025	0.0		(1.3-3.0') SAND, medium; well sorted; moist; dark yellowish brown (10YR 4/4).	(1.0-3.0') Backfilled with bentonite	
3				SB-A5.3-OT122 _2-3(081022) at 1030	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
 Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
 Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			24	SB-A5.3-OT123 1-2(081022) at 0940	0.0		(0.0-2.0') SAND, medium to very coarse, angular to subangular; some granules, angular to subangular; little pebbles, small, angular to subangular; poorly sorted; moist; dark grayish brown (10YR 4/2).	(0.0-0.5') Topsoil	
2				SB-A5.3-OT123 2-3(081022) at 0945	0.0		(2.0-2.5') SAND, medium; trace granules, angular to subrounded; trace pebbles, small, angular to subrounded; poorly sorted; moist; pale brown (10YR 6/3).	(0.5-3.0') Backfilled with bentonite	
3					0.0		(2.5-3.0') SAND, medium to very coarse, angular to subangular; some granules, angular to subangular; little pebbles, small, angular to subangular; poorly sorted; moist; dark grayish brown (10YR 4/2).		
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
 Driller: Kody Neal Sampling Interval: Continuous
 Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
 Surface Elev.: _____
 North Coor: _____
 East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			14		0.0		(0.0-1.2') CONCRETE.	(0.0-1.0') Concrete	
2			22	SB-A5.3-OT124 _1-2(081022) at 1225	0.0		(1.2-3.0') SAND, medium; some pebbles, small to medium, subrounded to rounded; well sorted; moist; dark yellowish brown (10YR 4/4).	(1.0-3.0') Backfilled with bentonite	
3				SB-A5.3-OT124 _2-3(081022) at 1230	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			15		0.0		(0.0-1.3') CONCRETE.	(0.0-1.0') Concrete	
2			21	SB-A5.3-OU122 _1-2(081022) at 1050	0.0		(1.3-3.0') SAND, medium; well sorted; moist; dark yellowish brown (10YR 4/4).	(1.0-3.0') Backfilled with bentonite	
3				SB-A5.3-OU122 _2-3(081022) at 1055	0.0				
4							End of boring at 3.0' bgs.		
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10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coord.: _____
East Coord.: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			30	SB-A5.3-OU123 1-2(081022) at 0955 (and DUP-1)	0.0		(0.0-1.5') SAND, very fine to coarse, angular to subrounded; and PEBBLES, small to medium, angular to subrounded; little granules, angular to subangular; poorly sorted; moist; dark grayish brown (10YR 4/2).	(0.0-0.5') Topsoil	
2				SB-A5.3-OU123 2-3(081022) at 1000	0.0		(1.5-3.0') GRANULES, subangular to subrounded; some pebbles, small to medium, angular to subrounded; little sand, medium to coarse, angular to subangular; poorly sorted; moist; dark grayish brown (10YR 4/2).	(0.5-3.0') Backfilled with bentonite	
3									
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			10		0.0		(0.0-0.8') CONCRETE.	(0.0-1.0') Concrete	
2			26	SB-A5.3-OU124 1-2(081022) at 1140	0.0		(0.8-3.0') SAND, medium; little pebbles, small to medium, subrounded to rounded; well sorted; moist; dark yellowish brown (10YR 4/4).	(1.0-3.0') Backfilled with bentonite	
3				SB-A5.3-OU124 2-3(081022) at 1145	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
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9									
10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 08/10/2022 Logger: S. Turner
Project Number: 30112892 Date Completed: 08/10/2022 Editor: K. Hunt
Project Location: Lansing, MI Weather Conditions: 60° F, Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			10		0.0		(0.0-0.8') CONCRETE.	(0.0-1.0') Concrete	
2			26	SB-A5.3-OV124 1-2(081022) at 1105	0.0		(0.8-3.0') SAND, medium; little pebbles, small to medium, subrounded to rounded; well sorted; moist; dark yellowish brown (10YR 4/4).	(1.0-3.0') Backfilled with bentonite	
3				SB-A5.3-OV124 2-3(081022) at 1110 (and DUP-2)	0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Geoprobe Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: bgs = below ground surface. Soil boring abandoned. Converted to Well: ☐ Yes ☒ No
Surface Elev.: _____
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OH123_2-3 (092322) @ 1009	0.0		(0.0-2.5') CONCRETE.	(0.0-1.0') Concrete	
2								(1.0-3.0') Bentonite Chips	
3							(2.5-3.0') SAND, fine to medium; trace granules, subangular to subrounded; trace pebbles, small to very large, subangular to subrounded; well sorted; moist; yellowish brown (10YR 5/4). End of boring at 3.0' bgs.		
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Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			30	SB-A5.3-OI121_1-2 (092322) @ 0940	0.0		(0.0-1.5') CONCRETE.	(0.0-1.0') Concrete	
2				SB-A5.3-OI121_2-3 (092322) @ 0948	0.1		(1.5-2.0') SAND, fine to medium, subangular to subrounded; and SILT; trace clay, low plasticity; trace granules, subangular to subrounded; trace boulders, subangular to subrounded; poorly sorted; moist to wet; grayish brown (10YR 5/2).	(1.0-3.0') Bentonite Chips	
3							(2.0-3.0') SAND, very fine to fine, subangular to subrounded; and SILT, low to medium plasticity; little clay; trace pebbles, small to very large, subangular to subrounded; poorly sorted; moist to wet; dark brown (10YR 3/3). End of boring at 3.0' bgs.		
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Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor.:
East Coor.:

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OI123_0-0.5 (092322) @ 1049			(0.0-0.5') TOPSOIL.	(0.0-1.0') Concrete	
2							(0.5-3.0') CONCRETE.		
3							End of boring at 3.0' bgs.	(1.0-3.0') Bentonite Chips	
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Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OI125_1-2 (092322) @ 1135	0.0		(0.0-1.2') CONCRETE.	(0.0-1.0') Concrete	
2				SB-A5.3-OI125_2-3 (092322) @ 1144			(1.2-1.5') SAND, very fine to medium, subangular to subrounded; and SILT, low to medium plasticity; trace granules, subangular to subrounded; well sorted; moist to wet; yellowish brown (10YR 5/6).	(1.0-3.0') Bentonite Chips	
3							(1.5-3.0') SAND, very fine to medium, subangular to subround; some silt, nonplastic to low plasticity; trace pebbles, small, subangular to subrounded; trace granules, subangular to subrounded; well sorted; moist; yellowish brown (10YR 5/4). End of boring at 3.0' bgs.		
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Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-ON122_1-2 (092322) @ 0911	0.0		(0.0-1.1') CONCRETE.	(0.0-1.0') Concrete	
2				SB-A5.3-ON122_2-3 (092322) @ 0918			(1.1-2.0') SAND, very fine to coarse, subangular to subrounded; little granules, subangular to subrounded; little pebbles, small to large, subangular to subrounded; trace boulders, subangular to subrounded; poorly sorted; moist to wet; yellowish brown (10YR 5/4).	(1.0-3.0') Bentonite Chips	
3							(2.0-3.0') SAND, medium to very coarse, subangular to subrounded; little silt; little pebbles, small to very large, subangular to subrounded; trace granules, subangular to subrounded; poorly sorted; moist; dark yellowish brown (10YR 4/6). End of boring at 3.0' bgs.		
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Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-ON123_0-0.5 (092322) @ 1055			(0.0-0.5') TOPSOIL.	(0.0-1.0') Concrete	
2							(0.5-3.0') CONCRETE.		
3							End of boring at 3.0' bgs.	(1.0-3.0') Bentonite Chips	
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-ON124_1-2 (092322) @ 1206	0.0		(0.0-1.2') CONCRETE.	(0.0-1.0') Concrete	
2				SB-A5.3-ON124_2-3 (092322) @ 1216			(1.2-3.0') SAND, very fine to coarse, subangular to subrounded; little granules, subangular to subrounded; little pebbles, small to large, subangular to subrounded; trace boulders, subangular to subrounded; poorly sorted; moist to wet; yellowish brown (10YR 5/4).	(1.0-3.0') Bentonite Chips	
3							End of boring at 3.0' bgs.		
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 09/23/2022 Logger: L. Ferreira
Project Number: 30112892 Date Completed: 09/23/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: Sunny

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OP123_0-0.3 (092322) @ 1105			(0.0-0.5') TOPSOIL.	(0.0-1.0') Concrete	
2							(0.5-3.0') CONCRETE.		
3							End of boring at 3.0' bgs.	(1.0-3.0') Bentonite Chips	
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Kody Neal Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 12/05/2022 Logger: A. Westhuis
Project Number: 30112892 Date Completed: 12/05/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: 43° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OG123_1.5-2 (120522) @ 1135 SB-A5.3-OG123_2-3 (120522) @ 1140	0.0		(0.0-1.7') CONCRETE.	(0.0-1.0') Concrete	
2					1.8				
3					2.6				
4							(1.7-3.0') SAND, very fine to fine, subrounded; little silt; trace pebbles, small to medium, subrounded; trace granules, subrounded; poorly sorted; moist to wet; medium dense; yellowish brown (10YR 5/6). Note: mild odor, fill material.	(1.0-3.0') Bentonite Chips	
5							End of boring at 3.0' bgs.		
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Rhex Moore Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 12/05/2022 Logger: A. Westhuis
Project Number: 30112892 Date Completed: 12/05/2022 Editor: A. Westhuis
Project Location: Lansing, MI Weather Conditions: 43° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well	
1			36	SB-A5.3-OH122_1.5-2 (120522) @ 1110 SB-A5.3-OH122_2-3 (120522) @ 1115	0.0		(0.0-1.7') CONCRETE.	(0.0-1.0') Concrete		
2					0.0		(1.7-3.0') SAND, very fine to fine, subrounded; little silt; trace pebbles, small to medium, subrounded; trace granules, subrounded; poorly sorted; moist to wet; medium dense; yellowish brown (10YR 5/6). Note: fill material.			(1.0-3.0') Bentonite Chips
3					0.0					
4							End of boring at 3.0' bgs.			
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
Driller: Rhex Moore Sampling Interval: Continuous
Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
Drilling Fluid: None Water Level Finish (ft. btoc.): NA
Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
North Coor: _____
East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 12/05/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 12/05/2022 Editor: A. Westhuis
 Project Location: Lansing, MI Weather Conditions: 43° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well	
1			36	SB-A5.3-OH123_1-2 (120522) @ 1045	0.0		(0.0-1.2') CONCRETE.	(0.0-1.0') Concrete		
2				SB-A5.3-OH123_2-3 (120522) @ 1050 and	0.0		(1.2-3.0') SAND, very fine to fine, subrounded; little silt; trace pebbles, small to medium, subrounded; trace granules, subrounded; poorly sorted; moist to wet; medium dense; yellowish brown (10YR 5/6). Note: fill material.			(1.0-3.0') Bentonite Chips
3					0.0					
End of boring at 3.0' bgs.										
4				DUP-01						
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
 Driller: Rhex Moore Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
DUP-01(120522) collected at North Coor: _____
SB-A5.3-OH123_2-3(120522) East Coor: _____

Soil Boring Log

Sheet: 1 of 1

Project Name: RACER Lansing Date Started: 12/05/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 12/05/2022 Editor: A. Westhuis
 Project Location: Lansing, MI Weather Conditions: 43° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1			36	SB-A5.3-OH124_1-2 (120522) @ 1015 SB-A5.3-OH124_2-3 (120522) @ 1020	0.0		(0.0-1.2') CONCRETE.	(0.0-1.0') Concrete	
2					0.0		(1.2-3.0') SAND, very fine to fine, subrounded; little silt; trace pebbles, small, subrounded; trace granules, subrounded; poorly sorted; moist to wet; medium dense; yellowish brown (10YR 5/6). Note: fill material.	(1.0-3.0') Bentonite Chips	
3					0.0				
4							End of boring at 3.0' bgs.		
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Sampling Method: 5.0' Macro Core
 Driller: Rhex Moore Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ft = feet. Converted to Well: ☐ Yes ☒ No
bgs = below ground surface. Surface Elev.: NA
 North Coor: _____
 East Coor: _____

Appendix C

Laboratory Analytical Reports



Report ID: S23017.01(03)+QC01
Generated on 05/05/2021
Replaces report S23017.01(02) generated on 04/22/2021

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Additional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Voet

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S23017.01-S23017.65
Project: 30075941.01101 / Racer Lansing
Collected Date(s): 04/07/2021 - 04/09/2021
Submitted Date/Time: 04/09/2021 12:10
Sampled by: Austin Westhuis
P.O. #: 30075941.01101

Table of Contents

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Report Narrative (Page 2)
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Method Summary (Page 4)
Sample Summary (Page 5)
QC Report (Pages 72-193)

Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

Benzo(a)pyrene added to samples .51-.65 per client request

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
SM2540B	Standard Method 2540 B 2011
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW3546	SW 846 Method 3546 Revision 0 February 2007
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Sample Summary (65 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S23017.01	SB-A2-PD68_0.5-1(040721)	Soil	04/07/21 12:55
S23017.02	SB-A2-PD68_1-2(040721)	Soil	04/07/21 13:00
S23017.03	SB-A2-PA68_0.5-1(040721)	Soil	04/07/21 13:10
S23017.04	SB-A2-PA68_1-2(040721)	Soil	04/07/21 13:15
S23017.05	SB-A2-OX68_0.5-1(040721)	Soil	04/07/21 13:25
S23017.06	SB-A2-OX68_1-2(040721)	Soil	04/07/21 13:30
S23017.07	SB-A2-PD65_0-1(040721)	Soil	04/07/21 14:20
S23017.08	SB-A2-PD65_0-1(040721) MS	Soil	04/07/21 14:20
S23017.09	SB-A2-PD65_0-1(040721) MSD	Soil	04/07/21 14:20
S23017.10	SB-A2-PD65_1-2(040721)	Soil	04/07/21 14:30
S23017.11	SB-A2-PA65_0-1(040721)	Soil	04/07/21 14:45
S23017.12	SB-A2-OX65_0-1(040721)	Soil	04/07/21 15:00
S23017.13	SB-A2-OX65_1-2(040721)	Soil	04/07/21 15:05
S23017.14	SB-A2-PD62_0-1(040721)	Soil	04/07/21 15:40
S23017.15	SB-A2-PD62_1-2(040721)	Soil	04/07/21 15:45
S23017.16	SB-A2-PA62_0-1(040721)	Soil	04/07/21 15:55
S23017.17	SB-A2-PA62_1-2(040721)	Soil	04/07/21 16:00
S23017.18	SB-A2-OX62_0-1(040721)	Soil	04/07/21 16:05
S23017.19	SB-A2-OX62_1-2(040721)	Soil	04/07/21 16:10
S23017.20	DUP-01(040721)	Soil	04/07/21 00:01
S23017.21	DUP-02(040721)	Soil	04/07/21 00:01
S23017.22	SB-A5.2-OG161_0-1(040821)	Soil	04/08/21 09:40
S23017.23	SB-A5.2-OG161_1-2(040821)	Soil	04/08/21 09:45
S23017.24	SB-A5.2-OF162_0-1(040821)	Soil	04/08/21 10:00
S23017.25	SB-A5.2-OF162_1-2(040821)	Soil	04/08/21 10:05
S23017.26	SB-A5.2-OG163_0-1(040821)	Soil	04/08/21 10:15
S23017.27	SB-A5.2-OG163_1-2(040821)	Soil	04/08/21 10:20
S23017.28	SB-A5.2-OG163_1-2(040821) MS	Soil	04/08/21 10:20
S23017.29	SB-A5.2-OG163_1-2(040821) MSD	Soil	04/08/21 10:20
S23017.30	SB-A5.3-OY123_1-2(040821)	Soil	04/08/21 10:45
S23017.31	SB-A5.3-OY123_2-3(040821)	Soil	04/08/21 10:50
S23017.32	SB-A5.3-OX122_1-2(040821)	Soil	04/08/21 11:05
S23017.33	SB-A5.3-OX122_2-3(040821)	Soil	04/08/21 11:10
S23017.34	SB-A5.3-OW123_1-2(040821)	Soil	04/08/21 11:30
S23017.35	SB-A5.3-OW123_2-3(040821)	Soil	04/08/21 11:35
S23017.36	SB-A5.3-OW123_2-3(040821) MS	Soil	04/08/21 11:35
S23017.37	SB-A5.3-OW123_2-3(040821) MSD	Soil	04/08/21 11:35
S23017.38	SB-A18-CJ150_1-2(040821)	Soil	04/08/21 13:10
S23017.39	SB-A18-CJ150_2-3(040821)	Soil	04/08/21 13:15
S23017.40	SB-A18-CJ149_1-2(040821)	Soil	04/08/21 13:25
S23017.41	SB-A18-CJ149_2-3(040821)	Soil	04/08/21 13:30
S23017.42	SB-A18-CI150_1-2(040821)	Soil	04/08/21 13:35
S23017.43	SB-A18-CI150_2-3(040821)	Soil	04/08/21 13:40
S23017.44	SB-A18-CJ151_1-2(040821)	Soil	04/08/21 13:50
S23017.45	SB-A18-CJ151_2-3(040821)	Soil	04/08/21 13:55
S23017.46	SB-A18-CK150_1.5-2(040821)	Soil	04/08/21 14:20
S23017.47	SB-A18-CK150_2-3(040821)	Soil	04/08/21 14:25
S23017.48	DUP-03(040821)	Soil	04/08/21 00:01
S23017.49	DUP-04(040821)	Soil	04/08/21 00:01
S23017.50	DUP-05(040821)	Soil	04/08/21 00:01
S23017.51	SB-A5.2-OG160_0-1(040821)	Soil	04/08/21 15:05
S23017.52	SB-A5.2-OG160_1-2(040821)	Soil	04/08/21 15:10
S23017.53	SB-A5.2-OH160_0.5-1(040821)	Soil	04/08/21 15:25



Sample Summary (continued)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S23017.54	SB-A5.2-OH160_2-3(040821)	Soil	04/08/21 15:30
S23017.55	SB-A5.2-OG165_2-3(040821)	Soil	04/08/21 16:30
S23017.56	SB-A5.3-OV123_1-2(040921)	Soil	04/09/21 09:25
S23017.57	SB-A5.3-OV123_2-3(040921)	Soil	04/09/21 09:30
S23017.58	SB-A5.3-OV122_1-2(040921)	Soil	04/09/21 10:15
S23017.59	SB-A5.3-OV122_2-3(040921)	Soil	04/09/21 10:20
S23017.60	SB-A5.3-OX121_1-2(040921)	Soil	04/09/21 10:30
S23017.61	SB-A5.3-OX121_2-3(040921)	Soil	04/09/21 10:35
S23017.62	SB-A5.3-OZ123_1-2(040921)	Soil	04/09/21 10:45
S23017.63	SB-A5.3-OZ123_2-3(040921)	Soil	04/09/21 10:50
S23017.64	SB-A5.2-OF162A_1-2(040921)	Soil	04/09/21 11:05
S23017.65	SB-A5.2-OF162A_2-3(040921)	Soil	04/09/21 11:10

**Lab Sample ID: S23017.01**

Sample Tag: SB-A2-PD68_0.5-1(040721)

Collected Date/Time: 04/07/2021 12:55

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	91	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:02, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	7.59	0.20		mg/kg	243	7440-38-2	

**Lab Sample ID: S23017.02**

Sample Tag: SB-A2-PD68_1-2(040721)

Collected Date/Time: 04/07/2021 13:00

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:05, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.66	0.20		mg/kg	260	7440-38-2	

**Lab Sample ID: S23017.03**

Sample Tag: SB-A2-PA68_0.5-1(040721)

Collected Date/Time: 04/07/2021 13:10

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	79	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:06, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	6.80	0.20		mg/kg	273	7440-38-2	

**Lab Sample ID: S23017.04**

Sample Tag: SB-A2-PA68_1-2(040721)

Collected Date/Time: 04/07/2021 13:15

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:08, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.82	0.20		mg/kg	252	7440-38-2	

**Lab Sample ID: S23017.05**

Sample Tag: SB-A2-OX68_0.5-1(040721)

Collected Date/Time: 04/07/2021 13:25

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:12, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	6.21	0.20		mg/kg	181	7440-38-2	

**Lab Sample ID: S23017.06**

Sample Tag: SB-A2-OX68_1-2(040721)

Collected Date/Time: 04/07/2021 13:30

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:13, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.86	0.20		mg/kg	175	7440-38-2	

**Lab Sample ID: S23017.07**

Sample Tag: SB-A2-PD65_0-1(040721)

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:15, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	70.8	0.20		mg/kg	231	7440-38-2	

**Lab Sample ID: S23017.08**

Sample Tag: SB-A2-PD65_0-1(040721) MS

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:23, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	126	0.20		mg/kg	254	7440-38-2	

**Lab Sample ID: S23017.09**

Sample Tag: SB-A2-PD65_0-1(040721) MSD

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:24, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	136	0.20		mg/kg	234	7440-38-2	

**Lab Sample ID: S23017.10**

Sample Tag: SB-A2-PD65_1-2(040721)

Collected Date/Time: 04/07/2021 14:30

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:19, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	307	1.0		mg/kg	1195	7440-38-2	

**Lab Sample ID: S23017.11**

Sample Tag: SB-A2-PA65_0-1(040721)

Collected Date/Time: 04/07/2021 14:45

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:21, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	14.2	0.20		mg/kg	241	7440-38-2	

**Lab Sample ID: S23017.12**

Sample Tag: SB-A2-OX65_0-1(040721)

Collected Date/Time: 04/07/2021 15:00

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	79	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:22, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	3.92	0.20		mg/kg	269	7440-38-2	

**Lab Sample ID: S23017.13**

Sample Tag: SB-A2-OX65_1-2(040721)

Collected Date/Time: 04/07/2021 15:05

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	78	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:32, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.30	0.20		mg/kg	257	7440-38-2	

**Lab Sample ID: S23017.14**

Sample Tag: SB-A2-PD62_0-1(040721)

Collected Date/Time: 04/07/2021 15:40

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:34, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	5.91	0.20		mg/kg	262	7440-38-2	

**Lab Sample ID: S23017.15**

Sample Tag: SB-A2-PD62_1-2(040721)

Collected Date/Time: 04/07/2021 15:45

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:35, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	3.53	0.20		mg/kg	247	7440-38-2	

**Lab Sample ID: S23017.16**

Sample Tag: SB-A2-PA62_0-1(040721)

Collected Date/Time: 04/07/2021 15:55

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:36, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	6.75	0.20		mg/kg	258	7440-38-2	

**Lab Sample ID: S23017.17**

Sample Tag: SB-A2-PA62_1-2(040721)

Collected Date/Time: 04/07/2021 16:00

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:38, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.94	0.20		mg/kg	247	7440-38-2	

**Lab Sample ID: S23017.18**

Sample Tag: SB-A2-OX62_0-1(040721)

Collected Date/Time: 04/07/2021 16:05

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	79	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:39, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	9.02	0.20		mg/kg	266	7440-38-2	

**Lab Sample ID: S23017.19**

Sample Tag: SB-A2-OX62_1-2(040721)

Collected Date/Time: 04/07/2021 16:10

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:41, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	5.90	0.20		mg/kg	244	7440-38-2	

**Lab Sample ID: S23017.20**

Sample Tag: DUP-01(040721)

Collected Date/Time: 04/07/2021 00:01

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:43, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.81	0.20		mg/kg	231	7440-38-2	



Lab Sample ID: S23017.21

Sample Tag: DUP-02(040721)

Collected Date/Time: 04/07/2021 00:01

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics

Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals

Method: SW6020A, Run Date: 04/14/21 11:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	5.21	0.20		mg/kg	247	7440-38-2	

**Lab Sample ID: S23017.22**

Sample Tag: SB-A5.2-OG161_0-1(040821)

Collected Date/Time: 04/08/2021 09:40

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	77	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 21:56, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	29,700	300		ug/kg	10	50-32-8	I

Method: SW8270D, Run Date: 04/16/21 17:18, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	25,100	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.23**

Sample Tag: SB-A5.2-OG161_1-2(040821)

Collected Date/Time: 04/08/2021 09:45

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 21:01, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	6,200	300		ug/kg	10	50-32-8	I

Method: SW8270D, Run Date: 04/16/21 15:27, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	5,700	300		ug/kg	10		

I-Matrix interference with internal standard

**Lab Sample ID: S23017.24**

Sample Tag: SB-A5.2-OF162_0-1(040821)

Collected Date/Time: 04/08/2021 10:00

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 21:38, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	18,300	300		ug/kg	10	50-32-8	I

Method: SW8270D, Run Date: 04/16/21 17:40, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	15,800	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.25**

Sample Tag: SB-A5.2-OF162_1-2(040821)

Collected Date/Time: 04/08/2021 10:05

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 19:11, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	5,500	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.26**

Sample Tag: SB-A5.2-OG163_0-1(040821)

Collected Date/Time: 04/08/2021 10:15

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 22:14, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	39,000	300		ug/kg	10	50-32-8	I

Method: SW8270D, Run Date: 04/16/21 18:02, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	34,500	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.27**

Sample Tag: SB-A5.2-OG163_1-2(040821)

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/09/21 16:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 20:06, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	11,500	300		ug/kg	10	50-32-8	I

Method: SW8270D, Run Date: 04/16/21 15:49, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	11,000	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.28**

Sample Tag: SB-A5.2-OG163_1-2(040821) MS

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/09/21 16:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 20:25, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	14,200	300		ug/kg	10	50-32-8	I1

Method: SW8270D, Run Date: 04/16/21 16:11, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	12,700	300		ug/kg	10		I1

I-Matrix interference with internal standard 1-Sample spiked at 2.5 mg/kg

**Lab Sample ID: S23017.29**

Sample Tag: SB-A5.2-OG163_1-2(040821) MSD

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/09/21 16:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 20:43, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	20,400	300		ug/kg	10	50-32-8	I1

Method: SW8270D, Run Date: 04/16/21 16:34, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	18,200	300		ug/kg	10		I1

I-Matrix interference with internal standard 1-Sample spiked at 2.5 mg/kg

**Lab Sample ID: S23017.30**

Sample Tag: SB-A5.3-OY123_1-2(040821)

Collected Date/Time: 04/08/2021 10:45

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 19:30, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	21,500	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.31**

Sample Tag: SB-A5.3-OY123_2-3(040821)

Collected Date/Time: 04/08/2021 10:50

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	81	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 16:45, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,600	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.32**

Sample Tag: SB-A5.3-OX122_1-2(040821)

Collected Date/Time: 04/08/2021 11:05

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 21:20, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	15,300	300		ug/kg	10	50-32-8	I

Method: SW8270D, Run Date: 04/16/21 16:56, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	13,300	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.33**

Sample Tag: SB-A5.3-OX122_2-3(040821)

Collected Date/Time: 04/08/2021 11:10

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 19:48, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,400	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.34**

Sample Tag: SB-A5.3-OW123_1-2(040821)

Collected Date/Time: 04/08/2021 11:30

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 17:03, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	5,300	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.35**

Sample Tag: SB-A5.3-OW123_2-3(040821)

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 14:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 17:22, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	4,700	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.36**

Sample Tag: SB-A5.3-OW123_2-3(040821) MS

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 14:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 17:40, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	8,800	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg

**Lab Sample ID: S23017.37**

Sample Tag: SB-A5.3-OW123_2-3(040821) MSD

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 14:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 17:58, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	9,200	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg

**Lab Sample ID: S23017.38**

Sample Tag: SB-A18-CJ150_1-2(040821)

Collected Date/Time: 04/08/2021 13:10

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 18:16, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	7,600	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.39**

Sample Tag: SB-A18-CJ150_2-3(040821)

Collected Date/Time: 04/08/2021 13:15

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 18:35, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	21,900	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.40**

Sample Tag: SB-A18-CJ149_1-2(040821)

Collected Date/Time: 04/08/2021 13:25

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 18:53, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	15,000	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.41**

Sample Tag: SB-A18-CJ149_2-3(040821)

Collected Date/Time: 04/08/2021 13:30

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 02:52, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,300	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.42**

Sample Tag: SB-A18-CI150_1-2(040821)

Collected Date/Time: 04/08/2021 13:35

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 03:14, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,500	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.43**

Sample Tag: SB-A18-CI150_2-3(040821)

Collected Date/Time: 04/08/2021 13:40

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 03:36, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	4,400	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.44**

Sample Tag: SB-A18-CJ151_1-2(040821)

Collected Date/Time: 04/08/2021 13:50

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 03:58, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	6,200	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.45**

Sample Tag: SB-A18-CJ151_2-3(040821)

Collected Date/Time: 04/08/2021 13:55

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 04:20, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,000	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.46**

Sample Tag: SB-A18-CK150_1.5-2(040821)

Collected Date/Time: 04/08/2021 14:20

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	91	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 00:40, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.47**

Sample Tag: SB-A18-CK150_2-3(040821)

Collected Date/Time: 04/08/2021 14:25

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 01:02, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Lab Sample ID: S23017.48

Sample Tag: DUP-03(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics

Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 04/17/21 05:26, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	10,600	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.49**

Sample Tag: DUP-04(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 04:42, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	10,200	300		ug/kg	10	50-32-8	



Lab Sample ID: S23017.50

Sample Tag: DUP-05(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics

Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 04/17/21 05:04, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	16,300	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.51**

Sample Tag: SB-A5.2-OG160_0-1(040821)

Collected Date/Time: 04/08/2021 15:05

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	76	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/04/21 03:27, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,000	300		ug/kg	10	50-32-8	IG

Method: SW8270D, Run Date: 05/05/21 01:55, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	2,700	300		ug/kg	10		IG

F-Analysis run outside of holding time

I-Matrix interference with internal standard G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.52**

Sample Tag: SB-A5.2-OG160_1-2(040821)

Collected Date/Time: 04/08/2021 15:10

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/04/21 03:10, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,900	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.53**

Sample Tag: SB-A5.2-OH160_0.5-1(040821)

Collected Date/Time: 04/08/2021 15:25

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 20:50, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.54**

Sample Tag: SB-A5.2-OH160_2-3(040821)

Collected Date/Time: 04/08/2021 15:30

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:08, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.55**

Sample Tag: SB-A5.2-OG165_2-3(040821)

Collected Date/Time: 04/08/2021 16:30

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:25, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.56**

Sample Tag: SB-A5.3-OV123_1-2(040921)

Collected Date/Time: 04/09/2021 09:25

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/04/21 02:36, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	8,100	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.57**

Sample Tag: SB-A5.3-OV123_2-3(040921)

Collected Date/Time: 04/09/2021 09:30

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/04/21 02:53, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	1,200	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.58**

Sample Tag: SB-A5.3-OV122_1-2(040921)

Collected Date/Time: 04/09/2021 10:15

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:42, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	300	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.59**

Sample Tag: SB-A5.3-OV122_2-3(040921)

Collected Date/Time: 04/09/2021 10:20

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:59, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.60**

Sample Tag: SB-A5.3-OX121_1-2(040921)

Collected Date/Time: 04/09/2021 10:30

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 22:17, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.61**

Sample Tag: SB-A5.3-OX121_2-3(040921)

Collected Date/Time: 04/09/2021 10:35

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 22:34, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.62**

Sample Tag: SB-A5.3-OZ123_1-2(040921)

Collected Date/Time: 04/09/2021 10:45

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 22:51, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.63**

Sample Tag: SB-A5.3-OZ123_2-3(040921)

Collected Date/Time: 04/09/2021 10:50

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 23:08, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.64**

Sample Tag: SB-A5.2-OF162A_1-2(040921)

Collected Date/Time: 04/09/2021 11:05

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 23:26, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.65**

Sample Tag: SB-A5.2-OF162A_2-3(040921)

Collected Date/Time: 04/09/2021 11:10

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 23:43, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time



Quality Control Report

Report ID: S23017.01(03)+QC01
Generated on 04/19/2021

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S23017.01-S23017.50
Project: 30075941.01101 / Racer Lansing
Submitted Date/Time: 04/09/2021 12:10
Sampled by: Austin Westhuis
P.O. #: 30075941.01101

QC Report Sections

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Analysis Summary (Pages 73-122)
Prep Batch Summary (Pages 123-125)
Surrogates per Lab Sample (Pages 126-152)
Surrogates per QC Sample (Pages 153-155)
Internal Standards per Lab Sample (Pages 156-182)
Internal Standards per QC Sample (Pages 183-186)
Batch QC Results (Pages 187-193)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S23017.01

Sample Tag: SB-A2-PD68_0.5-1(040721)

Collected Date/Time: 04/07/2021 12:55

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:02	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.02

Sample Tag: SB-A2-PD68_1-2(040721)

Collected Date/Time: 04/07/2021 13:00

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:05	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.03

Sample Tag: SB-A2-PA68_0.5-1(040721)

Collected Date/Time: 04/07/2021 13:10

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:06	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.04

Sample Tag: SB-A2-PA68_1-2(040721)

Collected Date/Time: 04/07/2021 13:15

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:08	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.05

Sample Tag: SB-A2-OX68_0.5-1(040721)

Collected Date/Time: 04/07/2021 13:25

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:12	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.06

Sample Tag: SB-A2-OX68_1-2(040721)

Collected Date/Time: 04/07/2021 13:30

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:13	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.07

Sample Tag: SB-A2-PD65_0-1(040721)

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:15	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.08

Sample Tag: SB-A2-PD65_0-1(040721) MS

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:23	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.09

Sample Tag: SB-A2-PD65_0-1(040721) MSD

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:24	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.10

Sample Tag: SB-A2-PD65_1-2(040721)

Collected Date/Time: 04/07/2021 14:30

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:19	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.11

Sample Tag: SB-A2-PA65_0-1(040721)

Collected Date/Time: 04/07/2021 14:45

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:21	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.12

Sample Tag: SB-A2-OX65_0-1(040721)

Collected Date/Time: 04/07/2021 15:00

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:22	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.13

Sample Tag: SB-A2-OX65_1-2(040721)

Collected Date/Time: 04/07/2021 15:05

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:32	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.14

Sample Tag: SB-A2-PD62_0-1(040721)

Collected Date/Time: 04/07/2021 15:40

Matrix: Soil

COC Reference: 142592

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:34	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.15

Sample Tag: SB-A2-PD62_1-2(040721)

Collected Date/Time: 04/07/2021 15:45

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:35	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.16

Sample Tag: SB-A2-PA62_0-1(040721)

Collected Date/Time: 04/07/2021 15:55

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:36	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.17

Sample Tag: SB-A2-PA62_1-2(040721)

Collected Date/Time: 04/07/2021 16:00

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:38	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.18

Sample Tag: SB-A2-OX62_0-1(040721)

Collected Date/Time: 04/07/2021 16:05

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:39	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.19

Sample Tag: SB-A2-OX62_1-2(040721)

Collected Date/Time: 04/07/2021 16:10

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:41	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.20

Sample Tag: DUP-01(040721)

Collected Date/Time: 04/07/2021 00:01

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412F	TS210412F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:43	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.21

Sample Tag: DUP-02(040721)

Collected Date/Time: 04/07/2021 00:01

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	04/14/21 11:44	MT4-21-0414A	MTD-041421-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.22

Sample Tag: SB-A5.2-OG161_0-1(040821)

Collected Date/Time: 04/08/2021 09:40

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 21:56	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 17:18	Z210416	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.23

Sample Tag: SB-A5.2-OF161_1-2(040821)

Collected Date/Time: 04/08/2021 09:45

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 21:01	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 15:27	Z210416	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.24

Sample Tag: SB-A5.2-OF162_0-1(040821)

Collected Date/Time: 04/08/2021 10:00

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 21:38	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 17:40	Z210416	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.25

Sample Tag: SB-A5.2-OF162_1-2(040821)

Collected Date/Time: 04/08/2021 10:05

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 19:11	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.26

Sample Tag: SB-A5.2-OG163_0-1(040821)

Collected Date/Time: 04/08/2021 10:15

Matrix: Soil

COC Reference: 142593

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 22:14	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 18:02	Z210416	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.27

Sample Tag: SB-A5.2-OG163_1-2(040821)

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 20:06	H210415	SP210409S2	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 15:49	Z210416	SP210409S2	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.28

Sample Tag: SB-A5.2-OG163_1-2(040821) MS

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
Organics - Semi-Volatiles						
Benzo(a)pyrene	SW8270D	04/15/21 20:25	H210415	SP210409S2	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 16:11	Z210416	SP210409S2	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.29

Sample Tag: SB-A5.2-OG163_1-2(040821) MSD

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 20:43	H210415	SP210409S2	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 16:34	Z210416	SP210409S2	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.30

Sample Tag: SB-A5.3-OY123_1-2(040821)

Collected Date/Time: 04/08/2021 10:45

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 19:30	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.31

Sample Tag: SB-A5.3-OY123_2-3(040821)

Collected Date/Time: 04/08/2021 10:50

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 16:45	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.32

Sample Tag: SB-A5.3-OX122_1-2(040821)

Collected Date/Time: 04/08/2021 11:05

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 21:20	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD
Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 16:56	Z210416	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.33

Sample Tag: SB-A5.3-OX122_2-3(040821)

Collected Date/Time: 04/08/2021 11:10

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 19:48	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.34

Sample Tag: SB-A5.3-OW123_1-2(040821)

Collected Date/Time: 04/08/2021 11:30

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 17:03	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.35

Sample Tag: SB-A5.3-OW123_2-3(040821)

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 17:22	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.36

Sample Tag: SB-A5.3-OW123_2-3(040821) MS

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 17:40	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.37

Sample Tag: SB-A5.3-OW123_2-3(040821) MSD

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 17:58	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.38

Sample Tag: SB-A18-CJ150_1-2(040821)

Collected Date/Time: 04/08/2021 13:10

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 18:16	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.39

Sample Tag: SB-A18-CJ150_2-3(040821)

Collected Date/Time: 04/08/2021 13:15

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 18:35	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.40

Sample Tag: SB-A18-CJ149_1-2(040821)

Collected Date/Time: 04/08/2021 13:25

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 20:57	TS210412G	TS210412G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/15/21 18:53	H210415	SP210413S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S23017.41

Sample Tag: SB-A18-CJ149_2-3(040821)

Collected Date/Time: 04/08/2021 13:30

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
Organics - Semi-Volatiles						
Benzo(a)pyrene	SW8270D	04/17/21 02:52	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.42

Sample Tag: SB-A18-CI150_1-2(040821)

Collected Date/Time: 04/08/2021 13:35

Matrix: Soil

COC Reference: 142595

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 03:14	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.43

Sample Tag: SB-A18-CI150_2-3(040821)

Collected Date/Time: 04/08/2021 13:40

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 03:36	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.44

Sample Tag: SB-A18-CI151_1-2(040821)

Collected Date/Time: 04/08/2021 13:50

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 03:58	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.45

Sample Tag: SB-A18-CI151_2-3(040821)

Collected Date/Time: 04/08/2021 13:55

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 04:20	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.46

Sample Tag: SB-A18-CK150_1.5-2(040821)

Collected Date/Time: 04/08/2021 14:20

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 00:40	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.47

Sample Tag: SB-A18-CK150_2-3(040821)

Collected Date/Time: 04/08/2021 14:25

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 01:02	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.48

Sample Tag: DUP-03(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 05:26	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.49

Sample Tag: DUP-04(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 04:42	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S23017.50

Sample Tag: DUP-05(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	04/12/21 21:20	TS210412H	TS210412H	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	04/17/21 05:04	Z210416B	SP210415S2	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS210412F

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.01	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.02	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.03	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.04	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.05	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.06	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.07	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.08	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.09	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.10	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.11	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.12	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.13	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.14	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.15	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.16	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.17	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.18	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.19	Total Solids	SM2540B	04/12/21 20:57	TS210412F
S23017.20	Total Solids	SM2540B	04/12/21 20:57	TS210412F

Inorganics, Prep Batch ID: TS210412G

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.21	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.22	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.23	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.24	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.25	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.26	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.27	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.28	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.29	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.30	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.31	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.32	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.33	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.34	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.35	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.36	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.37	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.38	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.39	Total Solids	SM2540B	04/12/21 20:57	TS210412G
S23017.40	Total Solids	SM2540B	04/12/21 20:57	TS210412G

Inorganics, Prep Batch ID: TS210412H

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.41	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.42	Total Solids	SM2540B	04/12/21 21:20	TS210412H

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS210412H (continued)

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.43	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.44	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.45	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.46	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.47	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.48	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.49	Total Solids	SM2540B	04/12/21 21:20	TS210412H
S23017.50	Total Solids	SM2540B	04/12/21 21:20	TS210412H

Metals, Prep Batch ID: MTD-041421-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.01	Arsenic	SW6020A	04/14/21 11:02	MT4-21-0414A
S23017.02	Arsenic	SW6020A	04/14/21 11:05	MT4-21-0414A
S23017.03	Arsenic	SW6020A	04/14/21 11:06	MT4-21-0414A
S23017.04	Arsenic	SW6020A	04/14/21 11:08	MT4-21-0414A
S23017.05	Arsenic	SW6020A	04/14/21 11:12	MT4-21-0414A
S23017.06	Arsenic	SW6020A	04/14/21 11:13	MT4-21-0414A
S23017.07	Arsenic	SW6020A	04/14/21 11:15	MT4-21-0414A
S23017.08	Arsenic	SW6020A	04/14/21 11:23	MT4-21-0414A
S23017.09	Arsenic	SW6020A	04/14/21 11:24	MT4-21-0414A
S23017.10	Arsenic	SW6020A	04/14/21 11:19	MT4-21-0414A
S23017.11	Arsenic	SW6020A	04/14/21 11:21	MT4-21-0414A
S23017.12	Arsenic	SW6020A	04/14/21 11:22	MT4-21-0414A
S23017.13	Arsenic	SW6020A	04/14/21 11:32	MT4-21-0414A
S23017.14	Arsenic	SW6020A	04/14/21 11:34	MT4-21-0414A
S23017.15	Arsenic	SW6020A	04/14/21 11:35	MT4-21-0414A
S23017.16	Arsenic	SW6020A	04/14/21 11:36	MT4-21-0414A
S23017.17	Arsenic	SW6020A	04/14/21 11:38	MT4-21-0414A
S23017.18	Arsenic	SW6020A	04/14/21 11:39	MT4-21-0414A
S23017.19	Arsenic	SW6020A	04/14/21 11:41	MT4-21-0414A
S23017.20	Arsenic	SW6020A	04/14/21 11:43	MT4-21-0414A
S23017.21	Arsenic	SW6020A	04/14/21 11:44	MT4-21-0414A

Organics - Semi-Volatiles, Prep Batch ID: SP210409S2

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.27	Benzo(a)pyrene	SW8270D	04/15/21 20:06	H210415
S23017.27	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 15:49	Z210416
S23017.28	Benzo(a)pyrene	SW8270D	04/15/21 20:25	H210415
S23017.28	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 16:11	Z210416
S23017.29	Benzo(a)pyrene	SW8270D	04/15/21 20:43	H210415
S23017.29	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 16:34	Z210416

Organics - Semi-Volatiles, Prep Batch ID: SP210413S1

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.22	Benzo(a)pyrene	SW8270D	04/15/21 21:56	H210415
S23017.22	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 17:18	Z210416

QC Report - Prep Batch Summary

Organics - Semi-Volatiles, Prep Batch ID: SP210413S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.23	Benzo(a)pyrene	SW8270D	04/15/21 21:01	H210415
S23017.23	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 15:27	Z210416
S23017.24	Benzo(a)pyrene	SW8270D	04/15/21 21:38	H210415
S23017.24	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 17:40	Z210416
S23017.25	Benzo(a)pyrene	SW8270D	04/15/21 19:11	H210415
S23017.26	Benzo(a)pyrene	SW8270D	04/15/21 22:14	H210415
S23017.26	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 18:02	Z210416
S23017.30	Benzo(a)pyrene	SW8270D	04/15/21 19:30	H210415
S23017.31	Benzo(a)pyrene	SW8270D	04/15/21 16:45	H210415
S23017.32	Benzo(a)pyrene	SW8270D	04/15/21 21:20	H210415
S23017.32	Benzo(a)pyrene (Replicate 01)	SW8270D	04/16/21 16:56	Z210416
S23017.33	Benzo(a)pyrene	SW8270D	04/15/21 19:48	H210415
S23017.34	Benzo(a)pyrene	SW8270D	04/15/21 17:03	H210415
S23017.35	Benzo(a)pyrene	SW8270D	04/15/21 17:22	H210415
S23017.36	Benzo(a)pyrene	SW8270D	04/15/21 17:40	H210415
S23017.37	Benzo(a)pyrene	SW8270D	04/15/21 17:58	H210415
S23017.38	Benzo(a)pyrene	SW8270D	04/15/21 18:16	H210415
S23017.39	Benzo(a)pyrene	SW8270D	04/15/21 18:35	H210415
S23017.40	Benzo(a)pyrene	SW8270D	04/15/21 18:53	H210415

Organics - Semi-Volatiles, Prep Batch ID: SP210415S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S23017.41	Benzo(a)pyrene	SW8270D	04/17/21 02:52	Z210416B
S23017.42	Benzo(a)pyrene	SW8270D	04/17/21 03:14	Z210416B
S23017.43	Benzo(a)pyrene	SW8270D	04/17/21 03:36	Z210416B
S23017.44	Benzo(a)pyrene	SW8270D	04/17/21 03:58	Z210416B
S23017.45	Benzo(a)pyrene	SW8270D	04/17/21 04:20	Z210416B
S23017.46	Benzo(a)pyrene	SW8270D	04/17/21 00:40	Z210416B
S23017.47	Benzo(a)pyrene	SW8270D	04/17/21 01:02	Z210416B
S23017.48	Benzo(a)pyrene	SW8270D	04/17/21 05:26	Z210416B
S23017.49	Benzo(a)pyrene	SW8270D	04/17/21 04:42	Z210416B
S23017.50	Benzo(a)pyrene	SW8270D	04/17/21 05:04	Z210416B

Lab Sample ID: S23017.22

Sample Tag: SB-A5.2-OG161_0-1(040821)

Collected Date/Time: 04/08/2021 09:40

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:56, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		61.0	18.5	120.0
2-Fluorobiphenyl		81.5	10.0	115.0
Terphenyl-D14		56.0	10.3	137.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 17:18, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		58.1	18.5	120.0
2-Fluorobiphenyl		66.5	10.0	115.0
Terphenyl-D14		48.2	10.3	137.0

Lab Sample ID: S23017.23

Sample Tag: SB-A5.2-OF161_1-2(040821)

Collected Date/Time: 04/08/2021 09:45

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:01, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		64.7	18.5	120.0
2-Fluorobiphenyl		84.5	10.0	115.0
Terphenyl-D14		66.3	10.3	137.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 15:27, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		65.2	18.5	120.0
2-Fluorobiphenyl		71.1	10.0	115.0
Terphenyl-D14		58.2	10.3	137.0

Lab Sample ID: S23017.24

Sample Tag: SB-A5.2-OF162_0-1(040821)

Collected Date/Time: 04/08/2021 10:00

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:38, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		54.4	18.5	120.0
2-Fluorobiphenyl		69.8	10.0	115.0
Terphenyl-D14		48.6	10.3	137.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 17:40, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		51.2	18.5	120.0
2-Fluorobiphenyl		56.3	10.0	115.0
Terphenyl-D14		38.7	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.25

Sample Tag: SB-A5.2-OF162_1-2(040821)

Collected Date/Time: 04/08/2021 10:05

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 19:11, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		63.9	18.5	120.0
2-Fluorobiphenyl		93.0	10.0	115.0
Terphenyl-D14		86.1	10.3	137.0

Lab Sample ID: S23017.26

Sample Tag: SB-A5.2-OG163_0-1(040821)

Collected Date/Time: 04/08/2021 10:15

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 22:14, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		51.3	18.5	120.0
2-Fluorobiphenyl		66.9	10.0	115.0
Terphenyl-D14		41.7	10.3	137.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 18:02, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		50.5	18.5	120.0
2-Fluorobiphenyl		56.3	10.0	115.0
Terphenyl-D14		35.3	10.3	137.0

Lab Sample ID: S23017.27

Sample Tag: SB-A5.2-OG163_1-2(040821)

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 20:06, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		72.2	18.5	120.0
2-Fluorobiphenyl		94.3	10.0	115.0
Terphenyl-D14		81.1	10.3	137.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 15:49, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		76.2	18.5	120.0
2-Fluorobiphenyl		84.7	10.0	115.0
Terphenyl-D14		69.8	10.3	137.0

Lab Sample ID: S23017.28

Sample Tag: SB-A5.2-OG163_1-2(040821) MS

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 16:11, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		67.3	18.5	120.0
2-Fluorobiphenyl		76.9	10.0	115.0
Terphenyl-D14		63.5	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.29

Sample Tag: SB-A5.2-OG163_1-2(040821) MSD

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 16:34, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		65.2	18.5	120.0
2-Fluorobiphenyl		73.2	10.0	115.0
Terphenyl-D14		59.0	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.30

Sample Tag: SB-A5.3-OY123_1-2(040821)

Collected Date/Time: 04/08/2021 10:45

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 19:30, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		74.6	18.5	120.0
2-Fluorobiphenyl		97.7	10.0	115.0
Terphenyl-D14		90.2	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.31

Sample Tag: SB-A5.3-OY123_2-3(040821)

Collected Date/Time: 04/08/2021 10:50

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 16:45, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		81.0	18.5	120.0
2-Fluorobiphenyl		108.9	10.0	115.0
Terphenyl-D14		103.6	10.3	137.0

Lab Sample ID: S23017.32

Sample Tag: SB-A5.3-OX122_1-2(040821)

Collected Date/Time: 04/08/2021 11:05

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:20, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		62.0	18.5	120.0
2-Fluorobiphenyl		80.3	10.0	115.0
Terphenyl-D14		59.3	10.3	137.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 16:56, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		58.4	18.5	120.0
2-Fluorobiphenyl		65.1	10.0	115.0
Terphenyl-D14		49.4	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.33

Sample Tag: SB-A5.3-OX122_2-3(040821)

Collected Date/Time: 04/08/2021 11:10

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 19:48, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		75.7	18.5	120.0
2-Fluorobiphenyl		94.4	10.0	115.0
Terphenyl-D14		82.1	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S23017.34**

Sample Tag: SB-A5.3-OW123_1-2(040821)

Collected Date/Time: 04/08/2021 11:30

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 17:03, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		77.4	18.5	120.0
2-Fluorobiphenyl		100.2	10.0	115.0
Terphenyl-D14		96.2	10.3	137.0

Lab Sample ID: S23017.35

Sample Tag: SB-A5.3-OW123_2-3(040821)

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 17:22, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		75.0	18.5	120.0
2-Fluorobiphenyl		96.7	10.0	115.0
Terphenyl-D14		92.2	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.38

Sample Tag: SB-A18-CJ150_1-2(040821)

Collected Date/Time: 04/08/2021 13:10

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 18:16, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		70.9	18.5	120.0
2-Fluorobiphenyl		94.4	10.0	115.0
Terphenyl-D14		86.9	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.39

Sample Tag: SB-A18-CJ150_2-3(040821)

Collected Date/Time: 04/08/2021 13:15

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 18:35, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		75.9	18.5	120.0
2-Fluorobiphenyl		99.0	10.0	115.0
Terphenyl-D14		93.1	10.3	137.0

Lab Sample ID: S23017.40

Sample Tag: SB-A18-CJ149_1-2(040821)

Collected Date/Time: 04/08/2021 13:25

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 18:53, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		62.7	18.5	120.0
2-Fluorobiphenyl		83.3	10.0	115.0
Terphenyl-D14		75.7	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S23017.41**

Sample Tag: SB-A18-CJ149_2-3(040821)

Collected Date/Time: 04/08/2021 13:30

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 02:52, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		68.8	18.5	120.0
2-Fluorobiphenyl		80.8	10.0	115.0
Terphenyl-D14		69.9	10.3	137.0

Lab Sample ID: S23017.42

Sample Tag: SB-A18-CI150_1-2(040821)

Collected Date/Time: 04/08/2021 13:35

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 03:14, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		72.1	18.5	120.0
2-Fluorobiphenyl		84.3	10.0	115.0
Terphenyl-D14		74.1	10.3	137.0

Lab Sample ID: S23017.43

Sample Tag: SB-A18-CI150_2-3(040821)

Collected Date/Time: 04/08/2021 13:40

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 03:36, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		71.5	18.5	120.0
2-Fluorobiphenyl		88.1	10.0	115.0
Terphenyl-D14		78.6	10.3	137.0

Lab Sample ID: S23017.44

Sample Tag: SB-A18-CI151_1-2(040821)

Collected Date/Time: 04/08/2021 13:50

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 03:58, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		65.8	18.5	120.0
2-Fluorobiphenyl		77.8	10.0	115.0
Terphenyl-D14		66.6	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.45

Sample Tag: SB-A18-CI151_2-3(040821)

Collected Date/Time: 04/08/2021 13:55

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 04:20, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		71.2	18.5	120.0
2-Fluorobiphenyl		81.0	10.0	115.0
Terphenyl-D14		71.4	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.46

Sample Tag: SB-A18-CK150_1.5-2(040821)

Collected Date/Time: 04/08/2021 14:20

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 00:40, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		76.2	18.5	120.0
2-Fluorobiphenyl		83.9	10.0	115.0
Terphenyl-D14		80.6	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.47

Sample Tag: SB-A18-CK150_2-3(040821)

Collected Date/Time: 04/08/2021 14:25

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 01:02, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		69.8	18.5	120.0
2-Fluorobiphenyl		78.4	10.0	115.0
Terphenyl-D14		76.7	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.48

Sample Tag: DUP-03(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 05:26, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		57.9	18.5	120.0
2-Fluorobiphenyl		65.7	10.0	115.0
Terphenyl-D14		53.4	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.49

Sample Tag: DUP-04(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 04:42, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		66.2	18.5	120.0
2-Fluorobiphenyl		75.0	10.0	115.0
Terphenyl-D14		63.7	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S23017.50

Sample Tag: DUP-05(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 05:04, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		70.0	18.5	120.0
2-Fluorobiphenyl		80.8	10.0	115.0
Terphenyl-D14		68.6	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210409S2

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: Z210415B.BLKS09B

Run in Batch: Z210415B, Run Date: 04/15/2021 18:50, Prep Date: 04/09/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		67.6	18.5	120.0
2-Fluorobiphenyl		65.1	10.0	115.0
Terphenyl-D14		81.8	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z210415B.LCSS09B

Run in Batch: Z210415B, Run Date: 04/15/2021 19:12, Prep Date: 04/09/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		77.3	18.5	120.0
2-Fluorobiphenyl		72.4	10.0	115.0
Terphenyl-D14		90.7	10.3	137.0

Matrix Spike (MS)

Lab Sample ID: H210415.2301728M, Parent Sample ID: S23017.27

Run in Batch: H210415, Run Date: 04/15/2021 20:25, Prep Date: 04/09/2021, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		68.4	18.5	120.0
2-Fluorobiphenyl		90.1	10.0	115.0
Terphenyl-D14		78.7	10.3	137.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210415.2301729N, Parent Sample ID: H210415.2301728M

Run in Batch: H210415, Run Date: 04/15/2021 20:43, Prep Date: 04/09/2021, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		65.9	18.5	120.0
2-Fluorobiphenyl		85.9	10.0	115.0
Terphenyl-D14		69.6	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210413S1

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H210415.BLKS13A

Run in Batch: H210415, Run Date: 04/15/2021 16:09, Prep Date: 04/13/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		79.6	18.5	120.0
2-Fluorobiphenyl		80.8	10.0	115.0
Terphenyl-D14		83.3	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: H210415.LCSS13A

Run in Batch: H210415, Run Date: 04/15/2021 16:27, Prep Date: 04/13/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		84.7	18.5	120.0
2-Fluorobiphenyl		80.5	10.0	115.0
Terphenyl-D14		83.4	10.3	137.0

Matrix Spike (MS)

Lab Sample ID: H210415.2301736M, Parent Sample ID: S23017.35

Run in Batch: H210415, Run Date: 04/15/2021 17:40, Prep Date: 04/13/2021, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		74.5	18.5	120.0
2-Fluorobiphenyl		99.8	10.0	115.0
Terphenyl-D14		93.8	10.3	137.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210415.2301737N, Parent Sample ID: H210415.2301736M

Run in Batch: H210415, Run Date: 04/15/2021 17:58, Prep Date: 04/13/2021, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		73.0	18.5	120.0
2-Fluorobiphenyl		97.9	10.0	115.0
Terphenyl-D14		92.2	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210415S2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: H210416B.BLKS15B

Run in Batch: H210416B, Run Date: 04/16/2021 17:56, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		71.9	18.5	120.0
2-Fluorobiphenyl		71.9	10.0	115.0
Terphenyl-D14		88.5	10.3	137.0

Blank (BLK)

Lab Sample ID: H210416C.BLKS15B

Run in Batch: H210416C, Run Date: 04/16/2021 17:56, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		71.6	40.1	122.3

Laboratory Control Sample (LCS)

Lab Sample ID: H210416B.LCSS15B

Run in Batch: H210416B, Run Date: 04/16/2021 18:14, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		78.4	18.5	120.0
2-Fluorobiphenyl		73.5	10.0	115.0
Terphenyl-D14		97.4	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: H210416C.LCSS15B

Run in Batch: H210416C, Run Date: 04/16/2021 18:14, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		73.5	40.1	122.3

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H210416B.LCSDS15B, Parent Sample ID: H210416B.LCSS15B

Run in Batch: H210416B, Run Date: 04/16/2021 18:32, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		80.3	18.5	120.0
2-Fluorobiphenyl		74.8	10.0	115.0
Terphenyl-D14		98.7	10.3	137.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H210416C.LCSDS15B, Parent Sample ID: H210416C.LCSS15B

Run in Batch: H210416C, Run Date: 04/16/2021 18:32, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		74.8	40.1	122.3

Lab Sample ID: S23017.22

Sample Tag: SB-A5.2-OG161_0-1(040821)

Collected Date/Time: 04/08/2021 09:40

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:56, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		142.6	50.0	200.0
Acenaphthalene-D10		131.2	50.0	200.0
Phenanthrene-D10		117.0	50.0	200.0
Chrysene-D12	*	45.9	50.0	200.0
Perylene-D12	*	21.1	50.0	200.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 17:18, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		130.0	50.0	200.0
Acenaphthalene-D10		133.5	50.0	200.0
Phenanthrene-D10		122.7	50.0	200.0
Chrysene-D12		61.1	50.0	200.0
Perylene-D12	*	21.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.23

Sample Tag: SB-A5.2-OF161_1-2(040821)

Collected Date/Time: 04/08/2021 09:45

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:01, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		147.5	50.0	200.0
Acenaphthalene-D10		135.3	50.0	200.0
Phenanthrene-D10		124.0	50.0	200.0
Chrysene-D12		66.2	50.0	200.0
Perylene-D12	*	29.7	50.0	200.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 15:27, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		127.1	50.0	200.0
Acenaphthalene-D10		131.1	50.0	200.0
Phenanthrene-D10		121.3	50.0	200.0
Chrysene-D12		113.3	50.0	200.0
Perylene-D12		72.0	50.0	200.0

Lab Sample ID: S23017.24

Sample Tag: SB-A5.2-OF162_0-1(040821)

Collected Date/Time: 04/08/2021 10:00

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:38, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		147.3	50.0	200.0
Acenaphthalene-D10		135.9	50.0	200.0
Phenanthrene-D10		123.1	50.0	200.0
Chrysene-D12		52.4	50.0	200.0
Perylene-D12	*	24.0	50.0	200.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 17:40, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		128.2	50.0	200.0
Acenaphthalene-D10		132.3	50.0	200.0
Phenanthrene-D10		119.6	50.0	200.0
Chrysene-D12		54.6	50.0	200.0
Perylene-D12	*	19.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.25

Sample Tag: SB-A5.2-OF162_1-2(040821)

Collected Date/Time: 04/08/2021 10:05

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 19:11, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		139.8	50.0	200.0
Acenaphthalene-D10		131.8	50.0	200.0
Phenanthrene-D10		125.1	50.0	200.0
Chrysene-D12		105.5	50.0	200.0
Perylene-D12		70.4	50.0	200.0

Lab Sample ID: S23017.26

Sample Tag: SB-A5.2-OG163_0-1(040821)

Collected Date/Time: 04/08/2021 10:15

Matrix: Soil

COC Reference: 142593

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 22:14, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		144.5	50.0	200.0
Acenaphthalene-D10		131.2	50.0	200.0
Phenanthrene-D10		118.2	50.0	200.0
Chrysene-D12	*	42.1	50.0	200.0
Perylene-D12	*	20.2	50.0	200.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 18:02, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		127.6	50.0	200.0
Acenaphthalene-D10		129.5	50.0	200.0
Phenanthrene-D10		116.7	50.0	200.0
Chrysene-D12	*	44.9	50.0	200.0
Perylene-D12	*	16.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.27

Sample Tag: SB-A5.2-OG163_1-2(040821)

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 20:06, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		150.2	50.0	200.0
Acenaphthalene-D10		138.0	50.0	200.0
Phenanthrene-D10		129.6	50.0	200.0
Chrysene-D12		86.5	50.0	200.0
Perylene-D12	*	42.5	50.0	200.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 15:49, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		122.3	50.0	200.0
Acenaphthalene-D10		126.9	50.0	200.0
Phenanthrene-D10		118.0	50.0	200.0
Chrysene-D12		97.1	50.0	200.0
Perylene-D12	*	46.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.28

Sample Tag: SB-A5.2-OG163_1-2(040821) MS

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 16:11, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		128.8	50.0	200.0
Acenaphthalene-D10		132.3	50.0	200.0
Phenanthrene-D10		123.1	50.0	200.0
Chrysene-D12		96.0	50.0	200.0
Perylene-D12	*	42.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.29

Sample Tag: SB-A5.2-OG163_1-2(040821) MSD

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 16:34, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		128.9	50.0	200.0
Acenaphthalene-D10		132.7	50.0	200.0
Phenanthrene-D10		122.1	50.0	200.0
Chrysene-D12		80.5	50.0	200.0
Perylene-D12	*	31.1	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.30

Sample Tag: SB-A5.3-OY123_1-2(040821)

Collected Date/Time: 04/08/2021 10:45

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 19:30, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		145.3	50.0	200.0
Acenaphthalene-D10		135.9	50.0	200.0
Phenanthrene-D10		130.9	50.0	200.0
Chrysene-D12		106.5	50.0	200.0
Perylene-D12		64.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.31

Sample Tag: SB-A5.3-OY123_2-3(040821)

Collected Date/Time: 04/08/2021 10:50

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 16:45, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		137.2	50.0	200.0
Acenaphthalene-D10		131.9	50.0	200.0
Phenanthrene-D10		131.2	50.0	200.0
Chrysene-D12		126.4	50.0	200.0
Perylene-D12		128.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.32

Sample Tag: SB-A5.3-OX122_1-2(040821)

Collected Date/Time: 04/08/2021 11:05

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 21:20, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		142.2	50.0	200.0
Acenaphthalene-D10		129.0	50.0	200.0
Phenanthrene-D10		119.9	50.0	200.0
Chrysene-D12		58.3	50.0	200.0
Perylene-D12	*	25.8	50.0	200.0

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene (Replicate 01)

Run in Batch: Z210416, Run Date: 04/16/2021 16:56, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		125.0	50.0	200.0
Acenaphthalene-D10		127.1	50.0	200.0
Phenanthrene-D10		117.8	50.0	200.0
Chrysene-D12		72.7	50.0	200.0
Perylene-D12	*	26.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.33

Sample Tag: SB-A5.3-OX122_2-3(040821)

Collected Date/Time: 04/08/2021 11:10

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 19:48, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		141.5	50.0	200.0
Acenaphthalene-D10		132.4	50.0	200.0
Phenanthrene-D10		127.8	50.0	200.0
Chrysene-D12		97.9	50.0	200.0
Perylene-D12		55.8	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.34

Sample Tag: SB-A5.3-OW123_1-2(040821)

Collected Date/Time: 04/08/2021 11:30

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 17:03, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		136.8	50.0	200.0
Acenaphthalene-D10		132.3	50.0	200.0
Phenanthrene-D10		127.5	50.0	200.0
Chrysene-D12		123.5	50.0	200.0
Perylene-D12		122.1	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.35

Sample Tag: SB-A5.3-OW123_2-3(040821)

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 17:22, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		140.4	50.0	200.0
Acenaphthalene-D10		134.9	50.0	200.0
Phenanthrene-D10		130.0	50.0	200.0
Chrysene-D12		125.1	50.0	200.0
Perylene-D12		119.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.38

Sample Tag: SB-A18-CJ150_1-2(040821)

Collected Date/Time: 04/08/2021 13:10

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 18:16, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		145.9	50.0	200.0
Acenaphthalene-D10		137.2	50.0	200.0
Phenanthrene-D10		136.8	50.0	200.0
Chrysene-D12		122.7	50.0	200.0
Perylene-D12		101.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.39

Sample Tag: SB-A18-CJ150_2-3(040821)

Collected Date/Time: 04/08/2021 13:15

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 18:35, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		138.8	50.0	200.0
Acenaphthalene-D10		132.5	50.0	200.0
Phenanthrene-D10		128.1	50.0	200.0
Chrysene-D12		109.6	50.0	200.0
Perylene-D12		81.1	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.40

Sample Tag: SB-A18-CJ149_1-2(040821)

Collected Date/Time: 04/08/2021 13:25

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210415, Run Date: 04/15/2021 18:53, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		141.2	50.0	200.0
Acenaphthalene-D10		133.1	50.0	200.0
Phenanthrene-D10		129.4	50.0	200.0
Chrysene-D12		113.4	50.0	200.0
Perylene-D12		82.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.41

Sample Tag: SB-A18-CJ149_2-3(040821)

Collected Date/Time: 04/08/2021 13:30

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 02:52, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		129.6	50.0	200.0
Acenaphthalene-D10		134.4	50.0	200.0
Phenanthrene-D10		124.5	50.0	200.0
Chrysene-D12		126.9	50.0	200.0
Perylene-D12		129.8	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.42

Sample Tag: SB-A18-CI150_1-2(040821)

Collected Date/Time: 04/08/2021 13:35

Matrix: Soil

COC Reference: 142595

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 03:14, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		125.3	50.0	200.0
Acenaphthalene-D10		129.5	50.0	200.0
Phenanthrene-D10		121.4	50.0	200.0
Chrysene-D12		125.0	50.0	200.0
Perylene-D12		124.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.43

Sample Tag: SB-A18-CI150_2-3(040821)

Collected Date/Time: 04/08/2021 13:40

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 03:36, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		123.6	50.0	200.0
Acenaphthalene-D10		128.2	50.0	200.0
Phenanthrene-D10		117.6	50.0	200.0
Chrysene-D12		119.2	50.0	200.0
Perylene-D12		115.7	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.44

Sample Tag: SB-A18-CI151_1-2(040821)

Collected Date/Time: 04/08/2021 13:50

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 03:58, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		124.1	50.0	200.0
Acenaphthalene-D10		127.2	50.0	200.0
Phenanthrene-D10		118.4	50.0	200.0
Chrysene-D12		117.4	50.0	200.0
Perylene-D12		105.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.45

Sample Tag: SB-A18-CI151_2-3(040821)

Collected Date/Time: 04/08/2021 13:55

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 04:20, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		125.5	50.0	200.0
Acenaphthalene-D10		129.2	50.0	200.0
Phenanthrene-D10		120.9	50.0	200.0
Chrysene-D12		122.3	50.0	200.0
Perylene-D12		103.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.46

Sample Tag: SB-A18-CK150_1.5-2(040821)

Collected Date/Time: 04/08/2021 14:20

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 00:40, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		121.5	50.0	200.0
Acenaphthalene-D10		127.0	50.0	200.0
Phenanthrene-D10		120.8	50.0	200.0
Chrysene-D12		128.8	50.0	200.0
Perylene-D12		130.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.47

Sample Tag: SB-A18-CK150_2-3(040821)

Collected Date/Time: 04/08/2021 14:25

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 01:02, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		124.0	50.0	200.0
Acenaphthalene-D10		128.1	50.0	200.0
Phenanthrene-D10		121.9	50.0	200.0
Chrysene-D12		132.0	50.0	200.0
Perylene-D12		132.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.48

Sample Tag: DUP-03(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 05:26, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		130.8	50.0	200.0
Acenaphthalene-D10		133.0	50.0	200.0
Phenanthrene-D10		124.2	50.0	200.0
Chrysene-D12		110.0	50.0	200.0
Perylene-D12		59.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.49

Sample Tag: DUP-04(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 04:42, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		130.3	50.0	200.0
Acenaphthalene-D10		132.9	50.0	200.0
Phenanthrene-D10		124.0	50.0	200.0
Chrysene-D12		123.0	50.0	200.0
Perylene-D12		97.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S23017.50

Sample Tag: DUP-05(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z210416B, Run Date: 04/17/2021 05:04, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		124.6	50.0	200.0
Acenaphthalene-D10		127.5	50.0	200.0
Phenanthrene-D10		118.0	50.0	200.0
Chrysene-D12		110.8	50.0	200.0
Perylene-D12		80.0	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210409S2

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: Z210415B.BLKS09B

Run in Batch: Z210415B, Run Date: 04/15/2021 18:50, Prep Date: 04/09/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		129.1	50.0	200.0
Acenaphthalene-D10		133.1	50.0	200.0
Phenanthrene-D10		126.6	50.0	200.0
Chrysene-D12		133.9	50.0	200.0
Perylene-D12		134.9	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z210415B.LCSS09B

Run in Batch: Z210415B, Run Date: 04/15/2021 19:12, Prep Date: 04/09/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		122.2	50.0	200.0
Acenaphthalene-D10		125.1	50.0	200.0
Phenanthrene-D10		123.1	50.0	200.0
Chrysene-D12		123.3	50.0	200.0
Perylene-D12		128.4	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: H210415.2301728M, Parent Sample ID: S23017.27

Run in Batch: H210415, Run Date: 04/15/2021 20:25, Prep Date: 04/09/2021, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		143.2	50.0	200.0
Acenaphthalene-D10		133.3	50.0	200.0
Phenanthrene-D10		126.3	50.0	200.0
Chrysene-D12		80.2	50.0	200.0
Perylene-D12	*	37.4	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210415.2301729N, Parent Sample ID: H210415.2301728M

Run in Batch: H210415, Run Date: 04/15/2021 20:43, Prep Date: 04/09/2021, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		147.2	50.0	200.0
Acenaphthalene-D10		135.9	50.0	200.0
Phenanthrene-D10		127.6	50.0	200.0
Chrysene-D12		69.6	50.0	200.0
Perylene-D12	*	31.7	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210413S1

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H210415.BLKS13A

Run in Batch: H210415, Run Date: 04/15/2021 16:09, Prep Date: 04/13/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		125.4	50.0	200.0
Acenaphthalene-D10		120.6	50.0	200.0
Phenanthrene-D10		123.5	50.0	200.0
Chrysene-D12		121.4	50.0	200.0
Perylene-D12		127.4	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: H210415.LCSS13A

Run in Batch: H210415, Run Date: 04/15/2021 16:27, Prep Date: 04/13/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		120.7	50.0	200.0
Acenaphthalene-D10		119.8	50.0	200.0
Phenanthrene-D10		121.5	50.0	200.0
Chrysene-D12		122.8	50.0	200.0
Perylene-D12		128.6	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: H210415.2301736M, Parent Sample ID: S23017.35

Run in Batch: H210415, Run Date: 04/15/2021 17:40, Prep Date: 04/13/2021, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		133.9	50.0	200.0
Acenaphthalene-D10		127.0	50.0	200.0
Phenanthrene-D10		124.6	50.0	200.0
Chrysene-D12		117.8	50.0	200.0
Perylene-D12		106.9	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210415.2301737N, Parent Sample ID: H210415.2301736M

Run in Batch: H210415, Run Date: 04/15/2021 17:58, Prep Date: 04/13/2021, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		136.6	50.0	200.0
Acenaphthalene-D10		129.6	50.0	200.0
Phenanthrene-D10		127.4	50.0	200.0
Chrysene-D12		119.3	50.0	200.0
Perylene-D12		101.4	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210415S2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: H210416B.BLKS15B

Run in Batch: H210416B, Run Date: 04/16/2021 17:56, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		111.3	50.0	200.0
Acenaphthalene-D10		110.4	50.0	200.0
Phenanthrene-D10		111.6	50.0	200.0
Chrysene-D12		112.6	50.0	200.0
Perylene-D12		115.8	50.0	200.0

Blank (BLK)

Lab Sample ID: H210416C.BLKS15B

Run in Batch: H210416C, Run Date: 04/16/2021 17:56, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		101.3	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: H210416B.LCSS15B

Run in Batch: H210416B, Run Date: 04/16/2021 18:14, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		111.0	50.0	200.0
Acenaphthalene-D10		109.7	50.0	200.0
Phenanthrene-D10		108.5	50.0	200.0
Chrysene-D12		116.3	50.0	200.0
Perylene-D12		121.8	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: H210416C.LCSS15B

Run in Batch: H210416C, Run Date: 04/16/2021 18:14, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		101.0	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H210416B.LCSDS15B, Parent Sample ID: H210416B.LCSS15B

Run in Batch: H210416B, Run Date: 04/16/2021 18:32, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		111.2	50.0	200.0
Acenaphthalene-D10		110.2	50.0	200.0
Phenanthrene-D10		108.2	50.0	200.0
Chrysene-D12		114.8	50.0	200.0
Perylene-D12		119.8	50.0	200.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H210416C.LCSDS15B, Parent Sample ID: H210416C.LCSS15B

Run in Batch: H210416C, Run Date: 04/16/2021 18:32, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		101.6	50.0	200.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS210412F

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS210412F.LRB1

Run in Batch: TS210412F, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS210412F.LCS1

Run in Batch: TS210412F, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS210412F.DP1, Parent Sample ID: S23017.01

Run in Batch: TS210412F, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		2	5

Duplicate (DUP)

Lab Sample ID: TS210412F.DP2, Parent Sample ID: S23017.11

Run in Batch: TS210412F, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS210412G

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS210412G.LRB1

Run in Batch: TS210412G, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS210412G.LCS1

Run in Batch: TS210412G, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS210412G.DP1, Parent Sample ID: S23017.21

Run in Batch: TS210412G, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

Duplicate (DUP)

Lab Sample ID: TS210412G.DP2, Parent Sample ID: S23017.31

Run in Batch: TS210412G, Run Date: 04/12/2021 20:57, Prep Date: 04/12/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS210412H

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS210412H.LRB1

Run in Batch: TS210412H, Run Date: 04/12/2021 21:20, Prep Date: 04/12/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS210412H.LCS1

Run in Batch: TS210412H, Run Date: 04/12/2021 21:20, Prep Date: 04/12/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS210412H.DP1, Parent Sample ID: S23017.41

Run in Batch: TS210412H, Run Date: 04/12/2021 21:20, Prep Date: 04/12/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

Duplicate (DUP)

Lab Sample ID: TS210412H.DP2, Parent Sample ID: S23039.01

Run in Batch: TS210412H, Run Date: 04/12/2021 21:20, Prep Date: 04/12/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-041421-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT4-21-0414A.019.LRB

Run in Batch: MT4-21-0414A, Run Date: 04/14/2021 10:54, Prep Date: 04/14/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-21-0414A.017.LCS

Run in Batch: MT4-21-0414A, Run Date: 04/14/2021 10:52, Prep Date: 04/14/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		101	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-21-0414A.042.MS, Parent Sample ID: S23017.07

Run in Batch: MT4-21-0414A, Run Date: 04/14/2021 11:23, Prep Date: 04/14/2021, Matrix: Soil, Dilution: 254

Analyte	Flags	% Rec	LCL	UCL
Arsenic	*	217	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-21-0414A.044.MS, Parent Sample ID: S23017.07

Run in Batch: MT4-21-0414A, Run Date: 04/14/2021 11:28, Prep Date: 04/14/2021, Matrix: Soil, Dilution: 231

Analyte	Flags	% Rec	LCL	UCL
Arsenic		113	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-21-0414A.043.MSD, Parent Sample ID: MT4-21-0414A.042.MS

Run in Batch: MT4-21-0414A, Run Date: 04/14/2021 11:24, Prep Date: 04/14/2021, Matrix: Soil, Dilution: 234

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic	*	257	75	125	8	20

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP210409S2

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: Z210415B.BLKS09B

Run in Batch: Z210415B, Run Date: 04/15/2021 18:50, Prep Date: 04/09/2021, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.025	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: Z210415B.LCSS09B

Run in Batch: Z210415B, Run Date: 04/15/2021 19:12, Prep Date: 04/09/2021, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		80.0	10.0	140.8

Matrix Spike (MS)

Lab Sample ID: H210415.2301728M, Parent Sample ID: S23017.27

Run in Batch: H210415, Run Date: 04/15/2021 20:25, Prep Date: 04/09/2021, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		116.3	10.0	140.8

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210415.2301729N, Parent Sample ID: H210415.2301728M

Run in Batch: H210415, Run Date: 04/15/2021 20:43, Prep Date: 04/09/2021, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene	*	339.2	10.0	140.8	37.2	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP210413S1

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H210415.BLKS13A

Run in Batch: H210415, Run Date: 04/15/2021 16:09, Prep Date: 04/13/2021, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.025	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: H210415.LCSS13A

Run in Batch: H210415, Run Date: 04/15/2021 16:27, Prep Date: 04/13/2021, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		85.3	10.0	140.8

Matrix Spike (MS)

Lab Sample ID: H210415.2301736M, Parent Sample ID: S23017.35

Run in Batch: H210415, Run Date: 04/15/2021 17:40, Prep Date: 04/13/2021, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		130.0	10.0	140.8

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210415.2301737N, Parent Sample ID: H210415.2301736M

Run in Batch: H210415, Run Date: 04/15/2021 17:58, Prep Date: 04/13/2021, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene	*	164.6	10.0	140.8	11.2	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP210415S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: H210416B.BLKS15B

Run in Batch: H210416B, Run Date: 04/16/2021 17:56, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.024	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: H210416B.LCSS15B

Run in Batch: H210416B, Run Date: 04/16/2021 18:14, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		80.9	10.0	140.8

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H210416B.LCSDS15B, Parent Sample ID: H210416B.LCSS15B

Run in Batch: H210416B, Run Date: 04/16/2021 18:32, Prep Date: 04/15/2021, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene		83.4	10.0	140.8	3.1	30.0

Merit Laboratories Login Checklist

Lab Set ID:S23017

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30075941.01101 / Racer Lansing

Submitted:04/09/2021 12:10 Login User: MMC

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.4
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Tiffany Linder			
COMPANY Arcadis			
ADDRESS 28550 Cabot Drive, Suite 500			
CITY Novi		STATE MI	ZIP CODE 48377
PHONE NO. 810-225-1928		FAX NO. _____	P.O. NO. 30075941.01101
E-MAIL ADDRESS Tiffany.Linder@arcadis.com Alex.Villhauer@arcadis.com			QUOTE NO.

CONTACT NAME		☒ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO.		E-MAIL ADDRESS	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME 30075941.01101/RACER Lansing	SAMPLER(S) - PLEASE PRINT/SIGN NAME Austin Westhuis/AW
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR W=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Arsenic	Benzene						☒ Other <u>MI</u>	Special Instructions
	DATE	TIME																			
23017.01	4/7/21	1255	SB-A2-PD68-0.5-1(040721)	S	1	1							X								
.02	4/7/21	1300	SB-A2-PD68-1-2(040721)	S	1	1							X								
.03	4/7/21	1310	SB-A2-PA68-0.5-1(040721)	S	1	1							X								
.04	4/7/21	1315	SB-A2-PA68-1-2(040721)	S	1	1							X								
.05	4/7/21	1325	SB-A2-OX68-0.5-1(040721)	S	1	1							X								
.06	4/7/21	1330	SB-A2-OX68-1-2(040721)	S	1	1							X								
07/08/09	4/7/21	1420	SB-A2-PD65-0-1(040721) ms/msd	S	3	3							X								ms/msd
.10	4/7/21	1430	SB-A2-PD65-1-2(040721)	S	1	1							X								
.11	4/7/21	1445	SB-A2-PA65-0-1(040721)	S	1	1							X								
.12	4/7/21	1500	SB-A2-OX65-0-1(040721)	S	1	1							X								
.13	4/7/21	1505	SB-A2-OX65-1-2(040721)	S	1	1							X								
.14	4/7/21	1540	SB-A2-PD62-0-1(040721)	S	1	1							X								

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Amel L. L. / Arcadis</i>	☒ Sampler	DATE 4/9/21	TIME 12/10
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>M. Chilcote</i>		DATE 4/9/21	TIME 12/10
RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES:	TEMP. ON ARRIVAL <u>3.4</u>
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Rev. 5.18.12



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Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 3 OF 5

142595

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <i>Tiffany Linder</i>			
COMPANY <i>Arcadis</i>			
ADDRESS <i>28550 Cabot Drive, Suite 500</i>			
CITY <i>NoVI</i>	STATE <i>MI</i>	ZIP CODE <i>48317</i>	
PHONE NO. <i>810-225-1928</i>	FAX NO.	P.O. NO. <i>30075941.01101</i>	QUOTE NO.
E-MAIL ADDRESS <i>Tiffany.Linder@arcadis.com</i> <i>Alex.Villhauer@arcadis.com</i>			

CONTACT NAME <i>ASAME</i>		
COMPANY		
ADDRESS		
CITY	STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME <i>30075941.01101 / RACER Lansing</i>	SAMPLER(S) - PLEASE PRINT/SIGN NAME <i>Austin Westhuis / Kim C. Wink</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

MATRIX CODE:	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID	
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	W=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Arsen	Benzo																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Alex Villhauer / Arcadis</i>	☒ Sampler	DATE <i>4/9/21</i>	TIME <i>1210</i>
RECEIVED BY: SIGNATURE/ORGANIZATION <i>M. Alcala</i>		DATE <i>4/9/21</i>	TIME <i>1210</i>
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL: <i>3.4</i>

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S24424.01(01)+QC01
Generated on 05/28/2021

Report to
Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Additional Contacts: Alex Villhauer, Patrick Curry

Report produced by
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2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary
Lab Sample ID(s): S24424.01-S24424.17
Project: 30075941.1101
Collected Date(s): 05/20/2021
Submitted Date/Time: 05/20/2021 13:30
Sampled by: Seth Turner
P.O. #: 30075941.1101

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
SM2540B	Standard Method 2540 B 2011
SW3050B	SW 846 Method 3050B Revision 2 December 1996
SW3546	SW 846 Method 3546 Revision 0 February 2007
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Sample Summary (17 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S24424.01	SB-A18-CI149_1-2(052021)	Soil	05/20/21 11:00
S24424.02	SB-A18-CI149_2-3(052021)	Soil	05/20/21 12:55
S24424.03	SB-A18-CJ148_1-2(052021)	Soil	05/20/21 10:45
S24424.04	SB-A18-CJ148_1-2(052021) MS	Soil	05/20/21 10:45
S24424.05	SB-A18-CJ148_1-2(052021) MSD	Soil	05/20/21 10:45
S24424.06	SB-A18-CJ148_2-3(052021)	Soil	05/20/21 12:45
S24424.07	SB-A18-CK149_1-2(052021)	Soil	05/20/21 10:35
S24424.08	SB-A18-CK149_2-3(052021)	Soil	05/20/21 13:05
S24424.09	SB-A2-PE65_1-2(052021)	Soil	05/20/21 10:15
S24424.10	SB-A2-PD65_2-3(052021)	Soil	05/20/21 10:00
S24424.11	SB-A2-PD65_2-3(052021) MS	Soil	05/20/21 10:00
S24424.12	SB-A2-PD65_2-3(052021) MSD	Soil	05/20/21 10:00
S24424.13	SB-A2-PD64_0-1(052021)	Soil	05/20/21 09:45
S24424.14	SB-A2-PE65_0-1(052021)	Soil	05/20/21 10:10
S24424.15	SB-A2-PD64_1-2(052021)	Soil	05/20/21 09:50
S24424.16	DUP-A18(052021)	Soil	05/20/21 00:01
S24424.17	DUP-A2(052021)	Soil	05/20/21 00:01



Analytical Laboratory Report

Lab Sample ID: S24424.01
Sample Tag: SB-A18-CI149_1-2(052021)
Collected Date/Time: 05/20/2021 11:00
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	94	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/27/21 23:02, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	1,300	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S24424.02
Sample Tag: SB-A18-CI149_2-3(052021)
Collected Date/Time: 05/20/2021 12:55
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	94	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/27/21 23:19, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	1,200	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S24424.03

Sample Tag: SB-A18-CJ148_1-2(052021)

Collected Date/Time: 05/20/2021 10:45

Matrix: Soil

COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	92	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/27/21 19:02, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	300	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S24424.04

Sample Tag: SB-A18-CJ148_1-2(052021) MS

Collected Date/Time: 05/20/2021 10:45

Matrix: Soil

COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	93	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/27/21 23:37, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	4,800	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg



Analytical Laboratory Report

Lab Sample ID: S24424.05
Sample Tag: SB-A18-CJ148_1-2(052021) MSD
Collected Date/Time: 05/20/2021 10:45
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	92	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/27/21 19:19, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,300	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg



Analytical Laboratory Report

Lab Sample ID: S24424.06
Sample Tag: SB-A18-CJ148_2-3(052021)
Collected Date/Time: 05/20/2021 12:45
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	93	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/28/21 00:11, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	1,600	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S24424.07

Sample Tag: SB-A18-CK149_1-2(052021)

Collected Date/Time: 05/20/2021 10:35

Matrix: Soil

COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	92	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/28/21 01:02, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	14,500	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S24424.08
Sample Tag: SB-A18-CK149_2-3(052021)
Collected Date/Time: 05/20/2021 13:05
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	94	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/28/21 00:28, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,500	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S24424.09
Sample Tag: SB-A2-PE65_1-2(052021)
Collected Date/Time: 05/20/2021 10:15
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 10:47, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.43	0.20		mg/kg	265	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S24424.10

Sample Tag: SB-A2-PD65_2-3(052021)

Collected Date/Time: 05/20/2021 10:00

Matrix: Soil

COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 10:49, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.82	0.20		mg/kg	277	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S24424.11

Sample Tag: SB-A2-PD65_2-3(052021) MS

Collected Date/Time: 05/20/2021 10:00

Matrix: Soil

COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 11:06, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	29.5	0.20		mg/kg	268	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S24424.12

Sample Tag: SB-A2-PD65_2-3(052021) MSD

Collected Date/Time: 05/20/2021 10:00

Matrix: Soil

COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 11:14, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	29.2	0.20		mg/kg	269	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S24424.13
Sample Tag: SB-A2-PD64_0-1(052021)
Collected Date/Time: 05/20/2021 09:45
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 10:50, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	3.32	0.20		mg/kg	281	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S24424.14
Sample Tag: SB-A2-PE65_0-1(052021)
Collected Date/Time: 05/20/2021 10:10
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	93	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 10:51, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	16.0	0.20		mg/kg	250	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S24424.15
Sample Tag: SB-A2-PD64_1-2(052021)
Collected Date/Time: 05/20/2021 09:50
Matrix: Soil
COC Reference: 137685

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 10:52, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.37	0.20		mg/kg	272	7440-38-2	



Analytical Laboratory Report

Lab Sample ID: S24424.16
Sample Tag: DUP-A18(052021)
Collected Date/Time: 05/20/2021 00:01
Matrix: Soil
COC Reference: 146074

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/24/21 19:00	SP	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	94	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/28/21 00:45, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	1,800	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S24424.17

Sample Tag: DUP-A2(052021)

Collected Date/Time: 05/20/2021 00:01

Matrix: Soil

COC Reference: 146074

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.7	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	05/27/21 10:00	JRH	

Inorganics

Method: SM2540B, Run Date: 05/20/21 17:30, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	81	1		%	1		

Metals

Method: SW6020A, Run Date: 05/27/21 11:05, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.70	0.20		mg/kg	274	7440-38-2	



Quality Control Report

Report ID: S24424.01(01)+QC01
Generated on 05/28/2021

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Phone: 248-994-2272 FAX:

Report Summary

Lab Sample ID(s): S24424.01-S24424.17
Project: 30075941.1101
Submitted Date/Time: 05/20/2021 13:30
Sampled by: Seth Turner
P.O. #: 30075941.1101

QC Report Sections

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Analysis Summary (Pages 24-40)
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Surrogates per QC Sample (Page 49)
Internal Standards per Lab Sample (Pages 50-56)
Internal Standards per QC Sample (Page 57)
Batch QC Results (Pages 58-61)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S24424.01

Sample Tag: SB-A18-CI149_1-2(052021)

Collected Date/Time: 05/20/2021 11:00

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/27/21 23:02	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.02

Sample Tag: SB-A18-CI149_2-3(052021)

Collected Date/Time: 05/20/2021 12:55

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/27/21 23:19	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.03

Sample Tag: SB-A18-CJ148_1-2(052021)

Collected Date/Time: 05/20/2021 10:45

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/27/21 19:02	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.04

Sample Tag: SB-A18-CJ148_1-2(052021) MS

Collected Date/Time: 05/20/2021 10:45

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/27/21 23:37	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.05

Sample Tag: SB-A18-CJ148_1-2(052021) MSD

Collected Date/Time: 05/20/2021 10:45

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/27/21 19:19	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.06

Sample Tag: SB-A18-CJ148_2-3(052021)

Collected Date/Time: 05/20/2021 12:45

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
Organics - Semi-Volatiles						
Benzo(a)pyrene	SW8270D	05/28/21 00:11	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.07

Sample Tag: SB-A18-CK149_1-2(052021)

Collected Date/Time: 05/20/2021 10:35

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/28/21 01:02	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.08

Sample Tag: SB-A18-CK149_2-3(052021)

Collected Date/Time: 05/20/2021 13:05

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/28/21 00:28	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.09

Sample Tag: SB-A2-PE65_1-2(052021)

Collected Date/Time: 05/20/2021 10:15

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 10:47	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.10

Sample Tag: SB-A2-PD65_2-3(052021)

Collected Date/Time: 05/20/2021 10:00

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:20	TS210520F	TS210520F	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 10:49	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.11

Sample Tag: SB-A2-PD65_2-3(052021) MS

Collected Date/Time: 05/20/2021 10:00

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:30	TS210520G	TS210520G	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 11:06	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.12

Sample Tag: SB-A2-PD65_2-3(052021) MSD

Collected Date/Time: 05/20/2021 10:00

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:30	TS210520G	TS210520G	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 11:14	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.13

Sample Tag: SB-A2-PD64_0-1(052021)

Collected Date/Time: 05/20/2021 09:45

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:30	TS210520G	TS210520G	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 10:50	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.14

Sample Tag: SB-A2-PE65_0-1(052021)

Collected Date/Time: 05/20/2021 10:10

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:30	TS210520G	TS210520G	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 10:51	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.15

Sample Tag: SB-A2-PD64_1-2(052021)

Collected Date/Time: 05/20/2021 09:50

Matrix: Soil

COC Reference: 137685

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:30	TS210520G	TS210520G	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 10:52	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.16

Sample Tag: DUP-A18(052021)

Collected Date/Time: 05/20/2021 00:01

Matrix: Soil

COC Reference: 146074

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:30	TS210520G	TS210520G	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	05/28/21 00:45	H210527	SP210524S3	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S24424.17

Sample Tag: DUP-A2(052021)

Collected Date/Time: 05/20/2021 00:01

Matrix: Soil

COC Reference: 146074

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	05/20/21 17:30	TS210520G	TS210520G	No	BLK/LCS/DUP
<i>Metals</i>						
Arsenic	SW6020A	05/27/21 11:05	MT5-21-0527A	MTD-052721-2	No	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS210520F

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S24424.01	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.02	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.03	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.04	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.05	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.06	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.07	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.08	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.09	Total Solids	SM2540B	05/20/21 17:20	TS210520F
S24424.10	Total Solids	SM2540B	05/20/21 17:20	TS210520F

Inorganics, Prep Batch ID: TS210520G

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S24424.11	Total Solids	SM2540B	05/20/21 17:30	TS210520G
S24424.12	Total Solids	SM2540B	05/20/21 17:30	TS210520G
S24424.13	Total Solids	SM2540B	05/20/21 17:30	TS210520G
S24424.14	Total Solids	SM2540B	05/20/21 17:30	TS210520G
S24424.15	Total Solids	SM2540B	05/20/21 17:30	TS210520G
S24424.16	Total Solids	SM2540B	05/20/21 17:30	TS210520G
S24424.17	Total Solids	SM2540B	05/20/21 17:30	TS210520G

Metals, Prep Batch ID: MTD-052721-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S24424.09	Arsenic	SW6020A	05/27/21 10:47	MT5-21-0527A
S24424.10	Arsenic	SW6020A	05/27/21 10:49	MT5-21-0527A
S24424.11	Arsenic	SW6020A	05/27/21 11:06	MT5-21-0527A
S24424.12	Arsenic	SW6020A	05/27/21 11:14	MT5-21-0527A
S24424.13	Arsenic	SW6020A	05/27/21 10:50	MT5-21-0527A
S24424.14	Arsenic	SW6020A	05/27/21 10:51	MT5-21-0527A
S24424.15	Arsenic	SW6020A	05/27/21 10:52	MT5-21-0527A
S24424.17	Arsenic	SW6020A	05/27/21 11:05	MT5-21-0527A

Organics - Semi-Volatiles, Prep Batch ID: SP210524S3

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S24424.01	Benzo(a)pyrene	SW8270D	05/27/21 23:02	H210527
S24424.02	Benzo(a)pyrene	SW8270D	05/27/21 23:19	H210527
S24424.03	Benzo(a)pyrene	SW8270D	05/27/21 19:02	H210527
S24424.04	Benzo(a)pyrene	SW8270D	05/27/21 23:37	H210527
S24424.05	Benzo(a)pyrene	SW8270D	05/27/21 19:19	H210527
S24424.06	Benzo(a)pyrene	SW8270D	05/28/21 00:11	H210527
S24424.07	Benzo(a)pyrene	SW8270D	05/28/21 01:02	H210527
S24424.08	Benzo(a)pyrene	SW8270D	05/28/21 00:28	H210527
S24424.16	Benzo(a)pyrene	SW8270D	05/28/21 00:45	H210527

QC Report - Surrogates per Lab Sample

Lab Sample ID: S24424.01

Sample Tag: SB-A18-CI149_1-2(052021)

Collected Date/Time: 05/20/2021 11:00

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/27/2021 23:02, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		67.4	18.5	120.0
2-Fluorobiphenyl		97.6	10.0	115.0
Terphenyl-D14		93.3	10.3	137.0

Lab Sample ID: S24424.02

Sample Tag: SB-A18-CI149_2-3(052021)

Collected Date/Time: 05/20/2021 12:55

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/27/2021 23:19, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		70.4	18.5	120.0
2-Fluorobiphenyl		104.2	10.0	115.0
Terphenyl-D14		101.6	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S24424.03

Sample Tag: SB-A18-CJ148_1-2(052021)

Collected Date/Time: 05/20/2021 10:45

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/27/2021 19:02, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		56.0	18.5	120.0
2-Fluorobiphenyl		82.3	10.0	115.0
Terphenyl-D14		80.1	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S24424.06

Sample Tag: SB-A18-CJ148_2-3(052021)

Collected Date/Time: 05/20/2021 12:45

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 00:11, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		66.5	18.5	120.0
2-Fluorobiphenyl		95.4	10.0	115.0
Terphenyl-D14		89.9	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S24424.07

Sample Tag: SB-A18-CK149_1-2(052021)

Collected Date/Time: 05/20/2021 10:35

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 01:02, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		70.7	18.5	120.0
2-Fluorobiphenyl		100.0	10.0	115.0
Terphenyl-D14		88.4	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S24424.08

Sample Tag: SB-A18-CK149_2-3(052021)

Collected Date/Time: 05/20/2021 13:05

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 00:28, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		70.7	18.5	120.0
2-Fluorobiphenyl		101.5	10.0	115.0
Terphenyl-D14		94.3	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S24424.16

Sample Tag: DUP-A18(052021)

Collected Date/Time: 05/20/2021 00:01

Matrix: Soil

COC Reference: 146074

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 00:45, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		62.2	18.5	120.0
2-Fluorobiphenyl		88.5	10.0	115.0
Terphenyl-D14		82.2	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210524S3

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H210527.BLKS24C

Run in Batch: H210527, Run Date: 05/27/2021 14:19, Prep Date: 05/24/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		70.9	18.5	120.0
2-Fluorobiphenyl		76.0	10.0	115.0
Terphenyl-D14		73.0	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: H210527.LCSS24C

Run in Batch: H210527, Run Date: 05/27/2021 14:37, Prep Date: 05/24/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		63.7	18.5	120.0
2-Fluorobiphenyl		67.8	10.0	115.0
Terphenyl-D14		63.3	10.3	137.0

Matrix Spike (MS)

Lab Sample ID: H210527.2442404M, Parent Sample ID: S24424.03

Run in Batch: H210527, Run Date: 05/27/2021 23:37, Prep Date: 05/24/2021, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		71.4	18.5	120.0
2-Fluorobiphenyl		102.7	10.0	115.0
Terphenyl-D14		96.1	10.3	137.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210527.2442405N, Parent Sample ID: H210527.2442404M

Run in Batch: H210527, Run Date: 05/27/2021 19:19, Prep Date: 05/24/2021, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		66.3	18.5	120.0
2-Fluorobiphenyl		97.1	10.0	115.0
Terphenyl-D14		95.2	10.3	137.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S24424.01

Sample Tag: SB-A18-CI149_1-2(052021)

Collected Date/Time: 05/20/2021 11:00

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/27/2021 23:02, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		109.0	50.0	200.0
Acenaphthalene-D10		108.0	50.0	200.0
Phenanthrene-D10		102.6	50.0	200.0
Chrysene-D12		103.8	50.0	200.0
Perylene-D12		92.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S24424.02

Sample Tag: SB-A18-CI149_2-3(052021)

Collected Date/Time: 05/20/2021 12:55

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/27/2021 23:19, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		113.2	50.0	200.0
Acenaphthalene-D10		111.6	50.0	200.0
Phenanthrene-D10		105.9	50.0	200.0
Chrysene-D12		106.5	50.0	200.0
Perylene-D12		91.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S24424.03

Sample Tag: SB-A18-CJ148_1-2(052021)

Collected Date/Time: 05/20/2021 10:45

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/27/2021 19:02, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		111.3	50.0	200.0
Acenaphthalene-D10		109.6	50.0	200.0
Phenanthrene-D10		105.1	50.0	200.0
Chrysene-D12		112.2	50.0	200.0
Perylene-D12		106.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S24424.06

Sample Tag: SB-A18-CJ148_2-3(052021)

Collected Date/Time: 05/20/2021 12:45

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 00:11, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		111.0	50.0	200.0
Acenaphthalene-D10		109.6	50.0	200.0
Phenanthrene-D10		104.6	50.0	200.0
Chrysene-D12		104.0	50.0	200.0
Perylene-D12		80.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S24424.07

Sample Tag: SB-A18-CK149_1-2(052021)

Collected Date/Time: 05/20/2021 10:35

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 01:02, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		115.8	50.0	200.0
Acenaphthalene-D10		114.1	50.0	200.0
Phenanthrene-D10		108.7	50.0	200.0
Chrysene-D12		91.0	50.0	200.0
Perylene-D12		65.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S24424.08

Sample Tag: SB-A18-CK149_2-3(052021)

Collected Date/Time: 05/20/2021 13:05

Matrix: Soil

COC Reference: 137685

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 00:28, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		115.7	50.0	200.0
Acenaphthalene-D10		114.0	50.0	200.0
Phenanthrene-D10		108.2	50.0	200.0
Chrysene-D12		104.9	50.0	200.0
Perylene-D12		77.1	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S24424.16

Sample Tag: DUP-A18(052021)

Collected Date/Time: 05/20/2021 00:01

Matrix: Soil

COC Reference: 146074

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210527, Run Date: 05/28/2021 00:45, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		112.4	50.0	200.0
Acenaphthalene-D10		110.9	50.0	200.0
Phenanthrene-D10		105.2	50.0	200.0
Chrysene-D12		99.0	50.0	200.0
Perylene-D12		71.0	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210524S3

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H210527.BLKS24C

Run in Batch: H210527, Run Date: 05/27/2021 14:19, Prep Date: 05/24/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		95.9	50.0	200.0
Acenaphthalene-D10		95.1	50.0	200.0
Phenanthrene-D10		93.5	50.0	200.0
Chrysene-D12		98.3	50.0	200.0
Perylene-D12		97.0	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: H210527.LCSS24C

Run in Batch: H210527, Run Date: 05/27/2021 14:37, Prep Date: 05/24/2021, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		108.9	50.0	200.0
Acenaphthalene-D10		107.6	50.0	200.0
Phenanthrene-D10		109.2	50.0	200.0
Chrysene-D12		112.4	50.0	200.0
Perylene-D12		113.5	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: H210527.2442404M, Parent Sample ID: S24424.03

Run in Batch: H210527, Run Date: 05/27/2021 23:37, Prep Date: 05/24/2021, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		107.5	50.0	200.0
Acenaphthalene-D10		106.5	50.0	200.0
Phenanthrene-D10		101.2	50.0	200.0
Chrysene-D12		98.7	50.0	200.0
Perylene-D12		82.4	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210527.2442405N, Parent Sample ID: H210527.2442404M

Run in Batch: H210527, Run Date: 05/27/2021 19:19, Prep Date: 05/24/2021, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		108.2	50.0	200.0
Acenaphthalene-D10		107.1	50.0	200.0
Phenanthrene-D10		102.9	50.0	200.0
Chrysene-D12		107.1	50.0	200.0
Perylene-D12		103.1	50.0	200.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS210520F

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS210520F.LRB1

Run in Batch: TS210520F, Run Date: 05/20/2021 17:20, Prep Date: 05/20/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS210520F.LCS1

Run in Batch: TS210520F, Run Date: 05/20/2021 17:20, Prep Date: 05/20/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS210520F.DP1, Parent Sample ID: S24416.01

Run in Batch: TS210520F, Run Date: 05/20/2021 17:20, Prep Date: 05/20/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

Duplicate (DUP)

Lab Sample ID: TS210520F.DP2, Parent Sample ID: S24424.01

Run in Batch: TS210520F, Run Date: 05/20/2021 17:20, Prep Date: 05/20/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS210520G

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS210520G.LRB1

Run in Batch: TS210520G, Run Date: 05/20/2021 17:30, Prep Date: 05/20/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS210520G.LCS1

Run in Batch: TS210520G, Run Date: 05/20/2021 17:30, Prep Date: 05/20/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS210520G.DP1, Parent Sample ID: S24424.11

Run in Batch: TS210520G, Run Date: 05/20/2021 17:30, Prep Date: 05/20/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		2	5

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-052721-2

Surrogates: No, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: MT5-21-0527A.021.LRB

Run in Batch: MT5-21-0527A, Run Date: 05/27/2021 10:38, Prep Date: 05/27/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT5-21-0527A.019.LCS

Run in Batch: MT5-21-0527A, Run Date: 05/27/2021 10:36, Prep Date: 05/27/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		99	85	115

Matrix Spike (MS)

Lab Sample ID: MT5-21-0527A.030.MS, Parent Sample ID: S24424.10

Run in Batch: MT5-21-0527A, Run Date: 05/27/2021 11:06, Prep Date: 05/27/2021, Matrix: Soil, Dilution: 268

Analyte	Flags	% Rec	LCL	UCL
Arsenic		100	75	125

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT5-21-0527A.031.MSD, Parent Sample ID: MT5-21-0527A.030.MS

Run in Batch: MT5-21-0527A, Run Date: 05/27/2021 11:14, Prep Date: 05/27/2021, Matrix: Soil, Dilution: 269

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		98	75	125	1	20

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP210524S3

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H210527.BLKS24C

Run in Batch: H210527, Run Date: 05/27/2021 14:19, Prep Date: 05/24/2021, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.024	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: H210527.LCSS24C

Run in Batch: H210527, Run Date: 05/27/2021 14:37, Prep Date: 05/24/2021, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		71.7	10.0	140.8

Matrix Spike (MS)

Lab Sample ID: H210527.2442404M, Parent Sample ID: S24424.03

Run in Batch: H210527, Run Date: 05/27/2021 23:37, Prep Date: 05/24/2021, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene	*	182.7	10.0	140.8

Matrix Spike Duplicate (MSD)

Lab Sample ID: H210527.2442405N, Parent Sample ID: H210527.2442404M

Run in Batch: H210527, Run Date: 05/27/2021 19:19, Prep Date: 05/24/2021, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene	*	88.4	10.0	140.8	69.0	30.0

Merit Laboratories Login Checklist

Lab Set ID:S24424

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30075941.1101

Submitted:05/20/2021 13:30 Login User: REJ

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 3.7
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CONTACT NAME Tiffany Linder, Alex Villhauer, Patrick Curry			
COMPANY Arcadis			
ADDRESS 2850 Cabot Dr			
CITY Novi		STATE MI	ZIP CODE 48377
PHONE NO.	FAX NO.	P.O. NO.	
E-MAIL ADDRESS Tiffany.Linder@arcadis.com, Alex.Villhauer@arcadis.com, Patrick.Curry@arcadis.com		QUOTE NO.	

CHAIN OF CUSTODY RECORD

CONTACT NAME		☒ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS		

INVOICE TO

PROJECT NO./NAME 30075941.1101	SAMPLER(S) - PLEASE PRINT/SIGN NAME Seth Turner / <i>Seth Turner</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER _____	
DELIVERABLES REQUIRED ☒ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____	

MATRIX	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID
CODE:	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR
					W=WASTE

Containers & Preservatives

Certifications

☐ OHIO VAP ☐ Drinking Water☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York☐ Other _____

Special Instructions

[illegible]RELINQUISHED BY: [Signature] ☒ Sampler

SIGNATURE/ORGANIZATION *John Turner / Arcadis*

RECEIVED BY:
SIGNATURE/ORGANIZATION

RELINQUISHED BY:
SIGNATURE/ORGANIZATION

RECEIVED BY:
SIGNATURE/ORGANIZATION

DATE 5/20/21 TIME 1330

DATE 5/21/21 TIME 1335

DATE	TIME

DATE	TIME

RELINQUISHED BY:

SIGNATURE/ORGANIZATION

RECEIVED BY:
SIGNATURE/ORGANIZATION

SEAL NO.

SEAL INTACT

INITIALS

SEAL NO.

SEAL INTACT

INITIALS

NOTES:

TEMP. ON ARRIVAL

3.



Report ID: S26601.01(02)
Generated on 08/09/2021
Replaces report S26601.01(01) generated on 08/02/2021

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Additional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Voet

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S26601.01-S26601.06
Project: 30075941.01101 / RACER Lansing
Collected Date(s): 07/28/2021
Submitted Date/Time: 07/28/2021 13:40
Sampled by: Unknown
P.O. #: 30075941.01101

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Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Report Narrative

All analyses completed

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
SM2540B	Standard Method 2540 B 2011
SW1311	SW 846 Method 1311 Revision 0 July 1992
SW3015A	SW 846 Method 3015A Revision 1 February 2007
SW3546	SW 846 Method 3546 Revision 0 February 2007
SW6020A	SW 846 Method 6020A Revision 1 February 2007
SW7471B	SW 846 Method 7471B Revision 2 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S26601.01	SB-A2-PD65_1-2(072821)	Soil	07/28/21 10:45
S26601.02	SB-A18-CK148_1-2(072821)	Soil	07/28/21 11:45
S26601.03	SB-A18-CK148_2-3(072821)	Soil	07/28/21 11:50
S26601.04	SB-A18-CK147_1-2(072821)	Soil	07/28/21 12:15
S26601.05	SB-A18-CK147_2-3(072821)	Soil	07/28/21 12:20
S26601.06	Dup-01(072821)	Soil	07/28/21 00:01



Analytical Laboratory Report

Final Report

Lab Sample ID: S26601.01

Sample Tag: SB-A2-PD65_1-2(072821)

Collected Date/Time: 07/28/2021 10:45

Matrix: Soil

COC Reference: 138861

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion*	Completed	SW3015A	08/09/21 11:20	CCM	
Mercury Digestion	Completed	SW7471B	08/09/21 09:00	JRH	

TCLP Extraction

Parameter	Result	Method	Run Date	Analyst	Flags
Initial Sample pH	9.26	SW1311	08/04/21 17:00 - 08/05/21	ELR	
pH after 3.5 ml HCl	2.39	SW1311	08/04/21 17:00 - 08/05/21	ELR	
% Solids	100	SW1311	08/04/21 17:00 - 08/05/21	ELR	
Sample Used g	40	SW1311	08/04/21 17:00 - 08/05/21	ELR	
Final Volume mL	800	SW1311	08/04/21 17:00 - 08/05/21	ELR	
TCLP Extraction Fluid	1	SW1311	08/04/21 17:00 - 08/05/21	ELR	
Final Extract pH	6.57	SW1311	08/04/21 17:00 - 08/05/21	ELR	

Metals

Method: SW6020A, Run Date: 08/09/21 13:18, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Arsenic, TCLP	Not detected	0.02		mg/L	25	7440-38-2		5.0
Barium, TCLP	0.62	0.05		mg/L	25	7440-39-3		100.0
Cadmium, TCLP	Not detected	0.005		mg/L	25	7440-43-9		1.0
Chromium, TCLP	Not detected	0.05		mg/L	25	7440-47-3		5.0
Lead, TCLP	Not detected	0.03		mg/L	25	7439-92-1		5.0
Selenium, TCLP	Not detected	0.05		mg/L	25	7782-49-2		1.0
Silver, TCLP	Not detected	0.005		mg/L	25	7440-22-4		5.0

Method: SW7471B, Run Date: 08/09/21 11:55, Analyst: JRH

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Mercury, TCLP	Not detected	0.0005		mg/L	2	7439-97-6		0.2



Analytical Laboratory Report

Final Report

Lab Sample ID: S26601.02

Sample Tag: SB-A18-CK148_1-2(072821)

Collected Date/Time: 07/28/2021 11:45

Matrix: Soil

COC Reference: 138861

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	07/29/21 17:00	JWR	

Inorganics

Method: SM2540B, Run Date: 07/28/21 15:50, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Total Solids*	88	1		%	1			

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 07/31/21 01:27, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Benzo(a)pyrene	1,400	300		ug/kg	10	50-32-8		



Analytical Laboratory Report

Final Report

Lab Sample ID: S26601.03

Sample Tag: SB-A18-CK148_2-3(072821)

Collected Date/Time: 07/28/2021 11:50

Matrix: Soil

COC Reference: 138861

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	07/29/21 17:00	JWR	

Inorganics

Method: SM2540B, Run Date: 07/28/21 15:50, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Total Solids*	88	1		%	1			

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 07/30/21 23:27, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Benzo(a)pyrene	300	300		ug/kg	10	50-32-8		



Lab Sample ID: S26601.04
Sample Tag: SB-A18-CK147_1-2(072821)
Collected Date/Time: 07/28/2021 12:15
Matrix: Soil
COC Reference: 138861

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.8	IR

Other / Misc.

Method: , Run Date: 07/28/21 15:54, Analyst: SRS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Hold until notified*	Completed				1			



Lab Sample ID: S26601.05
Sample Tag: SB-A18-CK147_2-3(072821)
Collected Date/Time: 07/28/2021 12:20
Matrix: Soil
COC Reference: 138861

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.8	IR

Other / Misc.

Method: , Run Date: 07/28/21 15:54, Analyst: SRS

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Hold until notified*	Completed				1			



Lab Sample ID: S26601.06

Sample Tag: Dup-01(072821)

Collected Date/Time: 07/28/2021 00:01

Matrix: Soil

COC Reference: 138861

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.8	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	07/29/21 17:00	JWR	

Inorganics

Method: SM2540B, Run Date: 07/28/21 15:50, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Total Solids*	89	1		%	1			

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 07/31/21 01:44, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags	Limits
Benzo(a)pyrene	1,600	300		ug/kg	10	50-32-8		

Merit Laboratories Login Checklist

Lab Set ID:S26601

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30075941.01101 / RACER Lansing

Submitted:07/28/2021 13:40 Login User: SRS

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis-us.com

Selection	Description	Note
Sample Receiving		
01.	☐ Yes ☒ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 6.8
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☐ Yes ☐ No ☒ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



Quality Control Report

Report ID: QC-S26601-01
Generated on 08/09/2021

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Report Summary

Lab Sample ID(s): S26601.01-S26601.03, S26601.06
Project: 30075941.01101 / RACER Lansing
Submitted Date/Time: 07/28/2021 13:40
Sampled by: Unknown
P.O. #: 30075941.01101

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-5)
Prep Batch Summary (Page 6)
Surrogates per Lab Sample (Pages 7-9)
Surrogates per QC Sample (Page 10)
Batch QC Results (Pages 11-15)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S26601.01

Sample Tag: SB-A2-PD65_1-2(072821)

Collected Date/Time: 07/28/2021 10:45

Matrix: Soil

COC Reference: 138861

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Metals						
Arsenic, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B	MTD-080921-4	No	BLK/LCS/MS/MSD/DU
Barium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B	MTD-080921-4	No	BLK/LCS/MS/MSD/DU
Cadmium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B	MTD-080921-4	No	BLK/LCS/MS/MSD/DU
Chromium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B	MTD-080921-4	No	BLK/LCS/MS/MSD/DU
Lead, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B	MTD-080921-4	No	BLK/LCS/MS/MSD/DU
Mercury, TCLP	SW7471B	08/09/21 11:55	HG2-HG3-21-0809	AHGD-080921-1	No	BLK/LCS/MS/MSD/DU
Selenium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B	MTD-080921-4	No	BLK/LCS/MS/MSD/DU
Silver, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B	MTD-080921-4	No	BLK/LCS/MS/MSD/DU

QC Report - Analysis Summary

Lab Sample ID: S26601.02

Sample Tag: SB-A18-CK148_1-2(072821)

Collected Date/Time: 07/28/2021 11:45

Matrix: Soil

COC Reference: 138861

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	07/28/21 15:50	TS210728B	TS210728B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	07/31/21 01:27	H210730	SP210729S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S26601.03

Sample Tag: SB-A18-CK148_2-3(072821)

Collected Date/Time: 07/28/2021 11:50

Matrix: Soil

COC Reference: 138861

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	07/28/21 15:50	TS210728B	TS210728B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	07/30/21 23:27	H210730	SP210729S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S26601.06

Sample Tag: Dup-01(072821)

Collected Date/Time: 07/28/2021 00:01

Matrix: Soil

COC Reference: 138861

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	07/28/21 15:50	TS210728B	TS210728B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	07/31/21 01:44	H210730	SP210729S1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS210728B

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S26601.02	Total Solids	SM2540B	07/28/21 15:50	TS210728B
S26601.03	Total Solids	SM2540B	07/28/21 15:50	TS210728B
S26601.06	Total Solids	SM2540B	07/28/21 15:50	TS210728B

Metals, Prep Batch ID: HGD-080921-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S26601.01	Mercury, TCLP	SW7471B	08/09/21 11:55	HG2-HG3-21-0809A

Metals, Prep Batch ID: MTD-080921-4

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S26601.01	Arsenic, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B
S26601.01	Barium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B
S26601.01	Cadmium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B
S26601.01	Chromium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B
S26601.01	Lead, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B
S26601.01	Selenium, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B
S26601.01	Silver, TCLP	SW6020A	08/09/21 13:18	MT4-21-0809B

Organics - Semi-Volatiles, Prep Batch ID: SP210729S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S26601.02	Benzo(a)pyrene	SW8270D	07/31/21 01:27	H210730
S26601.03	Benzo(a)pyrene	SW8270D	07/30/21 23:27	H210730
S26601.06	Benzo(a)pyrene	SW8270D	07/31/21 01:44	H210730

QC Report - Surrogates per Lab Sample

Lab Sample ID: S26601.02

Sample Tag: SB-A18-CK148_1-2(072821)

Collected Date/Time: 07/28/2021 11:45

Matrix: Soil

COC Reference: 138861

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210730, Run Date: 07/31/2021 01:27, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		57.2	18.5	120.0
2-Fluorobiphenyl		66.3	10.0	115.0
Terphenyl-D14		71.5	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S26601.03

Sample Tag: SB-A18-CK148_2-3(072821)

Collected Date/Time: 07/28/2021 11:50

Matrix: Soil

COC Reference: 138861

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210730, Run Date: 07/30/2021 23:27, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		59.3	18.5	120.0
2-Fluorobiphenyl		64.9	10.0	115.0
Terphenyl-D14		71.3	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S26601.06

Sample Tag: Dup-01(072821)

Collected Date/Time: 07/28/2021 00:01

Matrix: Soil

COC Reference: 138861

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H210730, Run Date: 07/31/2021 01:44, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		57.7	18.5	120.0
2-Fluorobiphenyl		68.4	10.0	115.0
Terphenyl-D14		72.2	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP210729S1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: P210730.BLKS29A

Run in Batch: P210730, Run Date: 07/30/2021 15:17, Prep Date: 07/29/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		62.9	13.2	121.0
Phenol-D5		64.7	16.9	113.0
Nitrobenzene-D5		65.0	18.5	120.0
2-Fluorobiphenyl		72.4	10.0	115.0
2,4,6-Tribromophenol		68.2	13.4	122.0
Terphenyl-D14		77.5	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: P210730.LCSS29A

Run in Batch: P210730, Run Date: 07/30/2021 15:47, Prep Date: 07/29/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		65.3	13.2	121.0
Phenol-D5		69.1	16.9	113.0
Nitrobenzene-D5		68.6	18.5	120.0
2-Fluorobiphenyl		78.1	10.0	115.0
2,4,6-Tribromophenol		78.1	13.4	122.0
Terphenyl-D14		87.4	10.3	137.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P210730.LCSDS29A, Parent Sample ID: P210730.LCSS29A

Run in Batch: P210730, Run Date: 07/30/2021 16:17, Prep Date: 07/29/2021, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		66.7	13.2	121.0
Phenol-D5		69.2	16.9	113.0
Nitrobenzene-D5		71.2	18.5	120.0
2-Fluorobiphenyl		78.4	10.0	115.0
2,4,6-Tribromophenol		81.7	13.4	122.0
Terphenyl-D14		88.9	10.3	137.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS210728B

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS210728B.LRB1

Run in Batch: TS210728B, Run Date: 07/28/2021 15:50, Prep Date: 07/28/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS210728B.LCS1

Run in Batch: TS210728B, Run Date: 07/28/2021 15:50, Prep Date: 07/28/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS210728B.DP1, Parent Sample ID: S26579.02

Run in Batch: TS210728B, Run Date: 07/28/2021 15:50, Prep Date: 07/28/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

Duplicate (DUP)

Lab Sample ID: TS210728B.DP2, Parent Sample ID: S26601.02

Run in Batch: TS210728B, Run Date: 07/28/2021 15:50, Prep Date: 07/28/2021, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

QC Report - Batch QC Results

Metals, Prep Batch ID: HGD-080921-1

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: HG2-HG3-21-0809A.015

Run in Batch: HG2-HG3-21-0809A, Run Date: 08/09/2021 11:50, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Mercury		ND	0.05	ug/L

Laboratory Control Sample (LCS)

Lab Sample ID: HG2-HG3-21-0809A.014

Run in Batch: HG2-HG3-21-0809A, Run Date: 08/09/2021 11:48, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Mercury		101	85	115

Matrix Spike (MS)

Lab Sample ID: HG2-HG3-21-0809A.020, Parent Sample ID: S26601.01

Run in Batch: HG2-HG3-21-0809A, Run Date: 08/09/2021 11:59, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Mercury		95	80	120

Matrix Spike (MS)

Lab Sample ID: HG2-HG3-21-0809A.025, Parent Sample ID: S26748.02

Run in Batch: HG2-HG3-21-0809A, Run Date: 08/09/2021 12:09, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Mercury		101	80	120

Matrix Spike Duplicate (MSD)

Lab Sample ID: HG2-HG3-21-0809A.026, Parent Sample ID: HG2-HG3-21-0809A.025

Run in Batch: HG2-HG3-21-0809A, Run Date: 08/09/2021 12:12, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Mercury		102	80	120	2	20

Duplicate (DUP)

Lab Sample ID: HG2-HG3-21-0809A.019, Parent Sample ID: S26601.01

Run in Batch: HG2-HG3-21-0809A, Run Date: 08/09/2021 11:57, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 2

Analyte	Flags	RPD	RPD CL
Mercury		0	20

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-080921-4

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Blank (BLK)

Lab Sample ID: MT4-21-0809B.021.LRB

Run in Batch: MT4-21-0809B, Run Date: 08/09/2021 13:08, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Arsenic		ND	0.0004	mg/L
Barium		ND	0.001	mg/L
Cadmium		ND	0.0001	mg/L
Chromium		ND	0.001	mg/L
Lead		ND	0.0006	mg/L
Selenium		ND	0.001	mg/L
Silver		ND	0.0001	mg/L

Laboratory Control Sample (LCS)

Lab Sample ID: MT4-21-0809B.019.LCS

Run in Batch: MT4-21-0809B, Run Date: 08/09/2021 13:05, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Arsenic		98	85	115
Barium		100	85	115
Cadmium		101	85	115
Chromium		96	85	115
Lead		101	85	115
Selenium		95	85	115
Silver		97	85	115

Matrix Spike (MS)

Lab Sample ID: MT4-21-0809B.034.MS, Parent Sample ID: S26601.01

Run in Batch: MT4-21-0809B, Run Date: 08/09/2021 13:32, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL
Arsenic		102	75	125
Barium		111	75	125
Cadmium		103	75	125
Chromium		99	75	125
Lead		113	75	125
Selenium		100	75	125
Silver		95	75	125

Matrix Spike (MS)

Lab Sample ID: MT4-21-0809B.049.MS, Parent Sample ID: S26748.02

Run in Batch: MT4-21-0809B, Run Date: 08/09/2021 14:03, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL
Arsenic		103	75	125
Barium		110	75	125
Cadmium		104	75	125
Chromium		98	75	125
Lead		109	75	125
Selenium		107	75	125
Silver		95	75	125

QC Report - Batch QC Results

Metals, Prep Batch ID: MTD-080921-4 (continued)

Surrogates: No, QC Types: BLK/LCS/MS/MSD/DUP

Matrix Spike Duplicate (MSD)

Lab Sample ID: MT4-21-0809B.050.MSD, Parent Sample ID: MT4-21-0809B.049.MS

Run in Batch: MT4-21-0809B, Run Date: 08/09/2021 14:04, Prep Date: 08/09/2021, Matrix: Liquid, Dilution: 25

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Arsenic		106	75	125	2	20
Barium		121	75	125	7	20
Cadmium		105	75	125	1	20
Chromium		102	75	125	4	20
Lead		112	75	125	3	20
Selenium		111	75	125	4	20
Silver		95	75	125	0	20

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP210729S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: P210730.BLKS29A

Run in Batch: P210730, Run Date: 07/30/2021 15:17, Prep Date: 07/29/2021, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.025	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: P210730.LCSS29A

Run in Batch: P210730, Run Date: 07/30/2021 15:47, Prep Date: 07/29/2021, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		85.7	50.99	117.91

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P210730.LCSDS29A, Parent Sample ID: P210730.LCSS29A

Run in Batch: P210730, Run Date: 07/30/2021 16:17, Prep Date: 07/29/2021, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene		85.2	50.99	117.91	0.5	30.0



Report ID: S39059.01(03)+QC01
Generated on 08/17/2022
Replaces report S39059.01(02) generated on 08/16/2022

Report to

Attention: Kaitlyn Hunt
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Report Summary

Lab Sample ID(s): S39059.01-S39059.24
Project: Racer Lansing
Collected Date(s): 08/10/2022
Submitted Date/Time: 08/10/2022 15:15
Sampled by: Seth Turner
P.O. #: 30112892

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Maya Murshak
Technical Director



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

Added analyses complete

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
SM2540B	Standard Method 2540 B 2015
SW3546	SW 846 Method 3546 Revision 0 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007

Sample Summary (24 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S39059.01	SB-A5.3-OU122_1-2(081022)	Soil	08/10/22 10:50
S39059.02	SB-A5.3-OU122_1-2(081022) MS	Soil	08/10/22 10:50
S39059.03	SB-A5.3-OU122_1-2(081022) MSD	Soil	08/10/22 10:50
S39059.04	SB-A5.3-OU122_2-3(081022)	Soil	08/10/22 10:55
S39059.05	SB-A5.3-OU123_1-2(081022)	Soil	08/10/22 09:55
S39059.06	SB-A5.3-OU123_2-3(081022)	Soil	08/10/22 10:00
S39059.07	SB-A5.3-OU124_1-2(081022)	Soil	08/10/22 11:40
S39059.08	SB-A5.3-OU124_2-3(081022)	Soil	08/10/22 11:45
S39059.09	DUP-1(081022)	Soil	08/10/22 00:01
S39059.10	DUP-2(081022)	Soil	08/10/22 00:01
S39059.11	SB-A5.3-OV124_1-2(081022)	Soil	08/10/22 11:05
S39059.12	SB-A5.3-OV124_2-3(081022)	Soil	08/10/22 11:10
S39059.13	SB-A5.3-OS122_1-2(081022)	Soil	08/10/22 10:12
S39059.14	SB-A5.3-OS122_2-3(081022)	Soil	08/10/22 10:15
S39059.15	SB-A5.3-OT122_1-2(081022)	Soil	08/10/22 10:25
S39059.16	SB-A5.3-OT122_2-3(081022)	Soil	08/10/22 10:30
S39059.17	SB-A5.3-OS123_1-2(081022)	Soil	08/10/22 09:30
S39059.18	SB-A5.3-OS123_2-3(081022)	Soil	08/10/22 09:35
S39059.19	SB-A5.3-OT123_1-2(081022)	Soil	08/10/22 09:40
S39059.20	SB-A5.3-OT123_2-3(081022)	Soil	08/10/22 09:45
S39059.21	SB-A5.3-OS124_1-2(081022)	Soil	08/10/22 12:55
S39059.22	SB-A5.3-OS124_2-3(081022)	Soil	08/10/22 13:00
S39059.23	SB-A5.3-OT124_1-2(081022)	Soil	08/10/22 12:25
S39059.24	SB-A5.3-OT124_2-3(081022)	Soil	08/10/22 12:30

**Lab Sample ID: S39059.01**

Sample Tag: SB-A5.3-OU122_1-2(081022)

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 19:57, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.02**

Sample Tag: SB-A5.3-OU122_1-2(081022) MS

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	79	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 20:20, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,300	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg

**Lab Sample ID: S39059.03**

Sample Tag: SB-A5.3-OU122_1-2(081022) MSD

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	81	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 20:42, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	1,900	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg

**Lab Sample ID: S39059.04**

Sample Tag: SB-A5.3-OU122_2-3(081022)

Collected Date/Time: 08/10/2022 10:55

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 21:04, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.05**

Sample Tag: SB-A5.3-OU123_1-2(081022)

Collected Date/Time: 08/10/2022 09:55

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 00:46, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	22,900	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.06**

Sample Tag: SB-A5.3-OU123_2-3(081022)

Collected Date/Time: 08/10/2022 10:00

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 00:24, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	12,800	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.07**

Sample Tag: SB-A5.3-OU124_1-2(081022)

Collected Date/Time: 08/10/2022 11:40

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 21:26, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.08**

Sample Tag: SB-A5.3-OU124_2-3(081022)

Collected Date/Time: 08/10/2022 11:45

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 17:54, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Lab Sample ID: S39059.09

Sample Tag: DUP-1(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 08/11/22 22:13, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	9,900	300		ug/kg	10	50-32-8	



Lab Sample ID: S39059.10

Sample Tag: DUP-2(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 08/11/22 18:12, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.11**

Sample Tag: SB-A5.3-OV124_1-2(081022)

Collected Date/Time: 08/10/2022 11:05

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 18:29, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.12**

Sample Tag: SB-A5.3-OV124_2-3(081022)

Collected Date/Time: 08/10/2022 11:10

Matrix: Soil

COC Reference: 151624

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/10/22 17:24, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 18:46, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.13**

Sample Tag: SB-A5.3-OS122_1-2(081022)

Collected Date/Time: 08/10/2022 10:12

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/16/22 18:17, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 20:28, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.14**

Sample Tag: SB-A5.3-OS122_2-3(081022)

Collected Date/Time: 08/10/2022 10:15

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/16/22 18:17, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/11/22 19:03, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.15**

Sample Tag: SB-A5.3-OT122_1-2(081022)

Collected Date/Time: 08/10/2022 10:25

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/15/22 15:56, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	71	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 20:45, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.16**

Sample Tag: SB-A5.3-OT122_2-3(081022)

Collected Date/Time: 08/10/2022 10:30

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/15/22 15:56, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 21:02, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.17**

Sample Tag: SB-A5.3-OS123_1-2(081022)

Collected Date/Time: 08/10/2022 09:30

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/16/22 18:17, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 22:45, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	12,700	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.18**

Sample Tag: SB-A5.3-OS123_2-3(081022)

Collected Date/Time: 08/10/2022 09:35

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/16/22 18:17, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/16/22 00:18, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	89,200	600		ug/kg	20	50-32-8	Y

Y-Elevated reporting limit due to high target concentration

**Lab Sample ID: S39059.19**

Sample Tag: SB-A5.3-OT123_1-2(081022)

Collected Date/Time: 08/10/2022 09:40

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/15/22 15:56, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 22:28, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	33,200	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.20**

Sample Tag: SB-A5.3-OT123_2-3(081022)

Collected Date/Time: 08/10/2022 09:45

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/15/22 15:56, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/16/22 00:35, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	50,300	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.21**

Sample Tag: SB-A5.3-OS124_1-2(081022)

Collected Date/Time: 08/10/2022 12:55

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/16/22 18:17, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	91	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 21:20, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.22**

Sample Tag: SB-A5.3-OS124_2-3(081022)

Collected Date/Time: 08/10/2022 13:00

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/16/22 18:17, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 21:37, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.23**

Sample Tag: SB-A5.3-OT124_1-2(081022)

Collected Date/Time: 08/10/2022 12:25

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/15/22 15:56, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 21:54, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S39059.24**

Sample Tag: SB-A5.3-OT124_2-3(081022)

Collected Date/Time: 08/10/2022 12:30

Matrix: Soil

COC Reference: 152108

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.9	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	08/11/22 13:00	JWR	

Inorganics**Method: SM2540B, Run Date: 08/15/22 15:56, Analyst: MAM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 08/12/22 22:11, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Quality Control Report

Report ID: S39059.01(03)+QC01
Generated on 08/12/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by

Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Summary

Lab Sample ID(s): S39059.01-S39059.12
Project: Racer Lansing
Submitted Date/Time: 08/10/2022 15:15
Sampled by: Seth Turner
P.O. #: 30112892

QC Report Sections

Cover Page (Page 30)
Analysis Summary (Pages 31-42)
Prep Batch Summary (Page 43)
Surrogates per Lab Sample (Pages 44-53)
Surrogates per QC Sample (Pages 54-55)
Internal Standards per Lab Sample (Pages 56-65)
Internal Standards per QC Sample (Pages 66-68)
Batch QC Results (Pages 69-71)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S39059.01

Sample Tag: SB-A5.3-OU122_1-2(081022)

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 19:57	Z220811	SP220811S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.02

Sample Tag: SB-A5.3-OU122_1-2(081022) MS

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 20:20	Z220811	SP220811S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.03

Sample Tag: SB-A5.3-OU122_1-2(081022) MSD

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 20:42	Z220811	SP220811S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.04

Sample Tag: SB-A5.3-OU122_2-3(081022)

Collected Date/Time: 08/10/2022 10:55

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 21:04	Z220811	SP220811S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.05

Sample Tag: SB-A5.3-OU123_1-2(081022)

Collected Date/Time: 08/10/2022 09:55

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/12/22 00:46	Z220811	SP220811S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.06

Sample Tag: SB-A5.3-OU123_2-3(081022)

Collected Date/Time: 08/10/2022 10:00

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/12/22 00:24	Z220811	SP220811S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.07

Sample Tag: SB-A5.3-OU124_1-2(081022)

Collected Date/Time: 08/10/2022 11:40

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 21:26	Z220811	SP220811S1	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.08

Sample Tag: SB-A5.3-OU124_2-3(081022)

Collected Date/Time: 08/10/2022 11:45

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 17:54	H220811	SP220811S2	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.09

Sample Tag: DUP-1(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 22:13	H220811	SP220811S2	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.10

Sample Tag: DUP-2(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
Organics - Semi-Volatiles						
Benzo(a)pyrene	SW8270D	08/11/22 18:12	H220811	SP220811S2	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.11

Sample Tag: SB-A5.3-OV124_1-2(081022)

Collected Date/Time: 08/10/2022 11:05

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 18:29	H220811	SP220811S2	Yes	BLK/LCS/MS/MSD

QC Report - Analysis Summary

Lab Sample ID: S39059.12

Sample Tag: SB-A5.3-OV124_2-3(081022)

Collected Date/Time: 08/10/2022 11:10

Matrix: Soil

COC Reference: 151624

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	08/10/22 17:24	TS220810D	TS220810D	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	08/11/22 18:46	H220811	SP220811S2	Yes	BLK/LCS/MS/MSD

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS220810D

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39059.01	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.02	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.03	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.04	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.05	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.06	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.07	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.08	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.09	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.10	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.11	Total Solids	SM2540B	08/10/22 17:24	TS220810D
S39059.12	Total Solids	SM2540B	08/10/22 17:24	TS220810D

Organics - Semi-Volatiles, Prep Batch ID: SP220811S1

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39059.01	Benzo(a)pyrene	SW8270D	08/11/22 19:57	Z220811
S39059.02	Benzo(a)pyrene	SW8270D	08/11/22 20:20	Z220811
S39059.03	Benzo(a)pyrene	SW8270D	08/11/22 20:42	Z220811
S39059.04	Benzo(a)pyrene	SW8270D	08/11/22 21:04	Z220811
S39059.05	Benzo(a)pyrene	SW8270D	08/12/22 00:46	Z220811
S39059.06	Benzo(a)pyrene	SW8270D	08/12/22 00:24	Z220811
S39059.07	Benzo(a)pyrene	SW8270D	08/11/22 21:26	Z220811

Organics - Semi-Volatiles, Prep Batch ID: SP220811S2

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S39059.08	Benzo(a)pyrene	SW8270D	08/11/22 17:54	H220811
S39059.09	Benzo(a)pyrene	SW8270D	08/11/22 22:13	H220811
S39059.10	Benzo(a)pyrene	SW8270D	08/11/22 18:12	H220811
S39059.11	Benzo(a)pyrene	SW8270D	08/11/22 18:29	H220811
S39059.12	Benzo(a)pyrene	SW8270D	08/11/22 18:46	H220811

QC Report - Surrogates per Lab Sample

Lab Sample ID: S39059.01

Sample Tag: SB-A5.3-OU122_1-2(081022)

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/11/2022 19:57, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		59.7	18.5	120.0
2-Fluorobiphenyl		70.0	10.0	115.0
Terphenyl-D14		78.1	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S39059.04**

Sample Tag: SB-A5.3-OU122_2-3(081022)

Collected Date/Time: 08/10/2022 10:55

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/11/2022 21:04, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		54.5	18.5	120.0
2-Fluorobiphenyl		66.7	10.0	115.0
Terphenyl-D14		76.1	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S39059.05**

Sample Tag: SB-A5.3-OU123_1-2(081022)

Collected Date/Time: 08/10/2022 09:55

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/12/2022 00:46, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		62.4	18.5	120.0
2-Fluorobiphenyl		72.4	10.0	115.0
Terphenyl-D14		67.8	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S39059.06

Sample Tag: SB-A5.3-OU123_2-3(081022)

Collected Date/Time: 08/10/2022 10:00

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/12/2022 00:24, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		66.6	18.5	120.0
2-Fluorobiphenyl		76.0	10.0	115.0
Terphenyl-D14		69.7	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S39059.07**

Sample Tag: SB-A5.3-OU124_1-2(081022)

Collected Date/Time: 08/10/2022 11:40

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/11/2022 21:26, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		60.9	18.5	120.0
2-Fluorobiphenyl		71.7	10.0	115.0
Terphenyl-D14		75.2	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S39059.08**

Sample Tag: SB-A5.3-OU124_2-3(081022)

Collected Date/Time: 08/10/2022 11:45

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 17:54, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		57.7	18.5	120.0
2-Fluorobiphenyl		57.7	10.0	115.0
Terphenyl-D14		62.4	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S39059.09**

Sample Tag: DUP-1(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 22:13, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		67.2	18.5	120.0
2-Fluorobiphenyl		64.6	10.0	115.0
Terphenyl-D14		68.9	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S39059.10**

Sample Tag: DUP-2(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 18:12, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		55.6	18.5	120.0
2-Fluorobiphenyl		54.9	10.0	115.0
Terphenyl-D14		63.5	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: **S39059.11**

Sample Tag: SB-A5.3-OV124_1-2(081022)

Collected Date/Time: 08/10/2022 11:05

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 18:29, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		43.8	18.5	120.0
2-Fluorobiphenyl		43.2	10.0	115.0
Terphenyl-D14		51.1	10.3	137.0

Lab Sample ID: S39059.12

Sample Tag: SB-A5.3-OV124_2-3(081022)

Collected Date/Time: 08/10/2022 11:10

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 18:46, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		63.2	18.5	120.0
2-Fluorobiphenyl		62.8	10.0	115.0
Terphenyl-D14		75.3	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP220811S1

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: Z220811.BLKS11A

Run in Batch: Z220811, Run Date: 08/11/2022 17:14, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		66.9	18.5	120.0
2-Fluorobiphenyl		67.3	10.0	115.0
Terphenyl-D14		73.3	10.3	137.0

Blank (BLK)

Lab Sample ID: Z220811B.BLKS11A

Run in Batch: Z220811B, Run Date: 08/11/2022 17:14, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		70.8	10.0	115.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z220811.LCSS11A

Run in Batch: Z220811, Run Date: 08/11/2022 17:36, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		67.2	18.5	120.0
2-Fluorobiphenyl		68.3	10.0	115.0
Terphenyl-D14		73.1	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z220811B.LCSS11A

Run in Batch: Z220811B, Run Date: 08/11/2022 17:36, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		72.1	10.0	115.0

Matrix Spike (MS)

Lab Sample ID: Z220811.3905902M, Parent Sample ID: S39059.01

Run in Batch: Z220811, Run Date: 08/11/2022 20:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		65.0	18.5	120.0
2-Fluorobiphenyl		76.2	10.0	115.0
Terphenyl-D14		78.3	10.3	137.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: Z220811.3905903N, Parent Sample ID: Z220811.3905902M

Run in Batch: Z220811, Run Date: 08/11/2022 20:42, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		61.7	18.5	120.0
2-Fluorobiphenyl		70.9	10.0	115.0
Terphenyl-D14		69.3	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP220811S2

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H220811.BLKS11B

Run in Batch: H220811, Run Date: 08/11/2022 17:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		73.6	18.5	120.0
2-Fluorobiphenyl		73.9	10.0	115.0
Terphenyl-D14		84.4	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: H220811.LCSS11B

Run in Batch: H220811, Run Date: 08/11/2022 17:37, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		74.8	18.5	120.0
2-Fluorobiphenyl		76.0	10.0	115.0
Terphenyl-D14		87.0	10.3	137.0

Matrix Spike (MS)

Lab Sample ID: H220811.3905914M, Parent Sample ID: S39059.14

Run in Batch: H220811, Run Date: 08/11/2022 19:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		71.2	18.5	120.0
2-Fluorobiphenyl		70.3	10.0	115.0
Terphenyl-D14		81.2	10.3	137.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H220811.3905914N, Parent Sample ID: H220811.3905914M

Run in Batch: H220811, Run Date: 08/11/2022 19:38, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		62.1	18.5	120.0
2-Fluorobiphenyl		63.5	10.0	115.0
Terphenyl-D14		74.2	10.3	137.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.01

Sample Tag: SB-A5.3-OU122_1-2(081022)

Collected Date/Time: 08/10/2022 10:50

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/11/2022 19:57, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		112.9	50.0	200.0
Acenaphthalene-D10		119.4	50.0	200.0
Phenanthrene-D10		115.5	50.0	200.0
Chrysene-D12		116.6	50.0	200.0
Perylene-D12		121.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.04

Sample Tag: SB-A5.3-OU122_2-3(081022)

Collected Date/Time: 08/10/2022 10:55

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/11/2022 21:04, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		117.1	50.0	200.0
Acenaphthalene-D10		122.8	50.0	200.0
Phenanthrene-D10		118.7	50.0	200.0
Chrysene-D12		120.5	50.0	200.0
Perylene-D12		124.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.05

Sample Tag: SB-A5.3-OU123_1-2(081022)

Collected Date/Time: 08/10/2022 09:55

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/12/2022 00:46, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		117.9	50.0	200.0
Acenaphthalene-D10		122.9	50.0	200.0
Phenanthrene-D10		117.4	50.0	200.0
Chrysene-D12		111.6	50.0	200.0
Perylene-D12		86.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.06

Sample Tag: SB-A5.3-OU123_2-3(081022)

Collected Date/Time: 08/10/2022 10:00

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/12/2022 00:24, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		122.4	50.0	200.0
Acenaphthalene-D10		128.5	50.0	200.0
Phenanthrene-D10		123.5	50.0	200.0
Chrysene-D12		118.4	50.0	200.0
Perylene-D12		114.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.07

Sample Tag: SB-A5.3-OU124_1-2(081022)

Collected Date/Time: 08/10/2022 11:40

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z220811, Run Date: 08/11/2022 21:26, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		117.3	50.0	200.0
Acenaphthalene-D10		123.1	50.0	200.0
Phenanthrene-D10		119.3	50.0	200.0
Chrysene-D12		121.3	50.0	200.0
Perylene-D12		124.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.08

Sample Tag: SB-A5.3-OU124_2-3(081022)

Collected Date/Time: 08/10/2022 11:45

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 17:54, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		133.0	50.0	200.0
Acenaphthalene-D10		138.6	50.0	200.0
Phenanthrene-D10		136.7	50.0	200.0
Chrysene-D12		129.3	50.0	200.0
Perylene-D12		126.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.09

Sample Tag: DUP-1(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 22:13, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		136.2	50.0	200.0
Acenaphthalene-D10		139.8	50.0	200.0
Phenanthrene-D10		138.0	50.0	200.0
Chrysene-D12		133.0	50.0	200.0
Perylene-D12		103.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.10

Sample Tag: DUP-2(081022)

Collected Date/Time: 08/10/2022 00:01

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 18:12, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		131.0	50.0	200.0
Acenaphthalene-D10		136.3	50.0	200.0
Phenanthrene-D10		134.3	50.0	200.0
Chrysene-D12		131.4	50.0	200.0
Perylene-D12		130.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S39059.11

Sample Tag: SB-A5.3-OV124_1-2(081022)

Collected Date/Time: 08/10/2022 11:05

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 18:29, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		136.2	50.0	200.0
Acenaphthalene-D10		140.5	50.0	200.0
Phenanthrene-D10		138.8	50.0	200.0
Chrysene-D12		135.9	50.0	200.0
Perylene-D12		135.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: **S39059.12**

Sample Tag: SB-A5.3-OV124_2-3(081022)

Collected Date/Time: 08/10/2022 11:10

Matrix: Soil

COC Reference: 151624

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H220811, Run Date: 08/11/2022 18:46, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		128.8	50.0	200.0
Acenaphthalene-D10		132.6	50.0	200.0
Phenanthrene-D10		131.4	50.0	200.0
Chrysene-D12		127.9	50.0	200.0
Perylene-D12		125.7	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP220811S1

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: Z220811.BLKS11A

Run in Batch: Z220811, Run Date: 08/11/2022 17:14, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		109.6	50.0	200.0
Acenaphthalene-D10		115.2	50.0	200.0
Phenanthrene-D10		113.8	50.0	200.0
Chrysene-D12		116.5	50.0	200.0
Perylene-D12		120.7	50.0	200.0

Blank (BLK)

Lab Sample ID: Z220811B.BLKS11A

Run in Batch: Z220811B, Run Date: 08/11/2022 17:14, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		133.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z220811.LCSS11A

Run in Batch: Z220811, Run Date: 08/11/2022 17:36, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		101.9	50.0	200.0
Acenaphthalene-D10		104.1	50.0	200.0
Phenanthrene-D10		101.5	50.0	200.0
Chrysene-D12		108.0	50.0	200.0
Perylene-D12		114.5	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z220811B.LCSS11A

Run in Batch: Z220811B, Run Date: 08/11/2022 17:36, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		120.0	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: Z220811.3905902M, Parent Sample ID: S39059.01

Run in Batch: Z220811, Run Date: 08/11/2022 20:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		116.3	50.0	200.0
Acenaphthalene-D10		120.6	50.0	200.0
Phenanthrene-D10		118.5	50.0	200.0
Chrysene-D12		120.3	50.0	200.0
Perylene-D12		123.1	50.0	200.0

QC Report - Internal Standards per QC Sample

Matrix Spike Duplicate (MSD)

Lab Sample ID: Z220811.3905903N, Parent Sample ID: Z220811.3905902M

Run in Batch: Z220811, Run Date: 08/11/2022 20:42, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		116.2	50.0	200.0
Acenaphthalene-D10		120.9	50.0	200.0
Phenanthrene-D10		117.9	50.0	200.0
Chrysene-D12		118.9	50.0	200.0
Perylene-D12		122.6	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP220811S2

QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H220811.BLKS11B

Run in Batch: H220811, Run Date: 08/11/2022 17:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		128.1	50.0	200.0
Acenaphthalene-D10		132.7	50.0	200.0
Phenanthrene-D10		134.3	50.0	200.0
Chrysene-D12		128.9	50.0	200.0
Perylene-D12		126.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: H220811.LCSS11B

Run in Batch: H220811, Run Date: 08/11/2022 17:37, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		128.4	50.0	200.0
Acenaphthalene-D10		130.7	50.0	200.0
Phenanthrene-D10		133.0	50.0	200.0
Chrysene-D12		134.1	50.0	200.0
Perylene-D12		134.6	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: H220811.3905914M, Parent Sample ID: S39059.14

Run in Batch: H220811, Run Date: 08/11/2022 19:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		125.4	50.0	200.0
Acenaphthalene-D10		129.5	50.0	200.0
Phenanthrene-D10		128.4	50.0	200.0
Chrysene-D12		127.9	50.0	200.0
Perylene-D12		125.5	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H220811.3905914N, Parent Sample ID: H220811.3905914M

Run in Batch: H220811, Run Date: 08/11/2022 19:38, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		127.6	50.0	200.0
Acenaphthalene-D10		131.4	50.0	200.0
Phenanthrene-D10		130.2	50.0	200.0
Chrysene-D12		128.3	50.0	200.0
Perylene-D12		127.7	50.0	200.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS220810D

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS220810D.LRB1

Run in Batch: TS220810D, Run Date: 08/10/2022 17:24, Prep Date: 08/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS220810D.LCS1

Run in Batch: TS220810D, Run Date: 08/10/2022 17:24, Prep Date: 08/10/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS220810D.DP1, Parent Sample ID: S39047.01

Run in Batch: TS220810D, Run Date: 08/10/2022 17:24, Prep Date: 08/10/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

Duplicate (DUP)

Lab Sample ID: TS220810D.DP2, Parent Sample ID: S39059.08

Run in Batch: TS220810D, Run Date: 08/10/2022 17:24, Prep Date: 08/10/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP220811S1

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: Z220811.BLKS11A

Run in Batch: Z220811, Run Date: 08/11/2022 17:14, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.025	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: Z220811.LCSS11A

Run in Batch: Z220811, Run Date: 08/11/2022 17:36, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		70.4	10.0	140.8

Matrix Spike (MS)

Lab Sample ID: Z220811.3905902M, Parent Sample ID: S39059.01

Run in Batch: Z220811, Run Date: 08/11/2022 20:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		75.5	10.0	140.8

Matrix Spike Duplicate (MSD)

Lab Sample ID: Z220811.3905903N, Parent Sample ID: Z220811.3905902M

Run in Batch: Z220811, Run Date: 08/11/2022 20:42, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene		61.0	10.0	140.8	21.2	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP220811S2

Surrogates: Yes, QC Types: BLK/LCS/MS/MSD

Blank (BLK)

Lab Sample ID: H220811.BLKS11B

Run in Batch: H220811, Run Date: 08/11/2022 17:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.025	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: H220811.LCSS11B

Run in Batch: H220811, Run Date: 08/11/2022 17:37, Prep Date: 08/11/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		64.1	10.0	140.8

Matrix Spike (MS)

Lab Sample ID: H220811.3905914M, Parent Sample ID: S39059.14

Run in Batch: H220811, Run Date: 08/11/2022 19:20, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		64.5	10.0	140.8

Matrix Spike Duplicate (MSD)

Lab Sample ID: H220811.3905914N, Parent Sample ID: H220811.3905914M

Run in Batch: H220811, Run Date: 08/11/2022 19:38, Prep Date: 08/11/2022, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene		59.6	10.0	140.8	7.8	30.0

Merit Laboratories Login Checklist

Lab Set ID:S39059

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: Racer Lansing

Submitted:08/10/2022 15:15 Login User: MMC

Attention: Kaitlyn Hunt

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 FAX:

Email: Kaitlyn.Hunt@arcadis.com

Selection	Description	Note
Sample Receiving		
01. ☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.9
02. ☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun	
03. ☐ Yes ☒ No ☐ N/A	Samples shipped	
04. ☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box	
05. ☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked	
Chain of Custody		
06. ☒ Yes ☐ No ☐ N/A	COC adequately filled out	
07. ☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab	
08. ☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC	
09. ☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:	
Preservation		
10. ☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation	
11. ☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)	
12. ☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?	
Bottle Conditions		
13. ☒ Yes ☐ No ☐ N/A	All bottles intact	
14. ☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used	
15. ☒ Yes ☐ No ☐ N/A	Merit bottles used	
16. ☒ Yes ☐ No ☐ N/A	Sufficient sample volume received	
17. ☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration	
18. ☒ Yes ☐ No ☐ N/A	Samples submitted within holding time	
19. ☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Tiffany Linder			CONTACT NAME			SAME		
COMPANY Arcadis			COMPANY					
ADDRESS 28550 Cabot Dr, St. 500			ADDRESS					
CITY Novi		STATE MI	ZIP CODE 48377		CITY		STATE	ZIP CODE
PHONE NO. 517-861-0138		CELL NO.	P.O. NO. 3012892		PHONE NO.		E-MAIL ADDRESS	
E-MAIL ADDRESS Tiffany.Linder@arcadis.com			QUOTE NO.		ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)			

PROJECT NO./NAME RACER Lansing			SAMPLER(S) - PLEASE PRINT/SIGN NAME Seth Turner / [Signature]									Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☐ Other _____ Special Instructions										
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☒ OTHER 5 day																						
DELIVERABLES REQUIRED ☒ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER _____																						
MATRIX W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID CODE SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR WS=WASTE									# Containers & Preservatives													
MERIT LAB NO. FOR LAB USE ONLY			COLLECTION DATE TIME		SAMPLE TAG IDENTIFICATION-DESCRIPTION		MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Benzo(a)Pyrene						
39059.01			8/10/05 1050		SB-A5.3-OV122-1-2(081022)		S	3	3						X							MS/MSD
.02			1055		SB-A5.3-OV122-2-3(081022)		1	1	1						X							
.05			955		SB-A5.3-OV123-1-2(081022)																	
.06			1000		SB-A5.3-OV123-2-3(081022)																	
.07			1140		SB-A5.3-OV124-1-2(081022)																	
.08			1145		SB-A5.3-OV124-2-3(081022)																	
.09			—		Dup-1(081022)																	
.10			—		Dup-2(081022)																	
.11			1105		SB-A5.3-OV124-1-2(081022)																	
.12			1110		SB-A5.3-OV124-2-3(081022)																	

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Sh. Iternal Arcasis</i>	DATE	TIME	RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>M. Chilosta</i>	8/10/22	1515	RECEIVED BY: SIGNATURE/ORGANIZATION			
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: TEMP. ON ARRIVAL 5.9
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

REV. 1/26/22



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 2 OF 2 152108

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <u>Tiffany Linder</u>	
COMPANY <u>Arcadis</u>	
ADDRESS <u>28550 Cabot Dr, St 500</u>	
CITY <u>Novi</u>	STATE <u>MI</u>
PHONE NO. <u>517-861-0138</u>	ZIP CODE <u>48377</u>
E-MAIL ADDRESS <u>Tiffany.Linder@arcadis.com</u>	P.O. NO. <u>30112892</u>
QUOTE NO.	

CONTACT NAME ☒ SAME	
COMPANY	
ADDRESS	
CITY	STATE
PHONE NO.	ZIP CODE
E-MAIL ADDRESS	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME <u>RACER Lansing</u>	SAMPLER(S) - PLEASE PRINT/SIGN NAME
TURNAROUND TIME REQUIRED: ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☐ STANDARD ☒ OTHER <u>HOLD</u>	
DELIVERABLES REQUIRED: ☒ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

MATRIX: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID CODE SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIRE A=AIR WS=WASTE	# Containers & Preservatives

MERIT LAB NO. (FOR LAB USE ONLY)	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
39059.13	8/10/22	1012	SB-A5.3-OS122-1-2(081022)	S	1	1						
.14		1015	SB-A5.3-OS122-2-3(081022)									
.15		1025	SB-A5.3-OT122-1-2(081022)									
.16		1030	SB-A5.3-OT122-2-3(081022)									
.17		930	SB-A5.3-OS123-1-2(081022)									
.18		935	SB-A5.3-OS123-2-3(081022)									
.19		940	SB-A5.3-OT123-1-2(081022)									
.20		945	SB-A5.3-OT123-2-3(081022)									
.21		1255	SB-A5.3-OS124-1-2(081022)									
.22		1300	SB-A5.3-OS124-2-3(081022)									
.23		1225	SB-A5.3-OT124-1-2(081022)									
.24		1230	SB-A5.3-OT124-2-3(081022)									

Benzo(a) Pyrene	Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☐ Other Special Instructions <u>Extract, Put on Hold</u>											

RELINQUISHED BY: SIGNATURE/ORGANIZATION <u>Shuturn/Arcadis</u>	☒ Sampler	DATE <u>8/10/22</u>	TIME <u>1515</u>
RECEIVED BY: SIGNATURE/ORGANIZATION <u>M. Chiswick</u>		DATE <u>8/10/22</u>	TIME <u>1515</u>
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES		TEMP. ON ARRIVAL <u>5.9</u>

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



Analytical Laboratory Report

Report ID: S40664.01(01)
Generated on 09/29/2022

Report to

Attention: Tiffany Linder
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S40664.01-S40664.16
Project: Plant2 Area5-3 Soil Corrective Measure Boring 30192892.00102
Collected Date(s): 09/23/2022
Submitted Date/Time: 09/23/2022 15:19
Sampled by: LF
P.O. #: 30112892.01101

Table of Contents

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Analytical Laboratory Report

Method Summary

Method	Version
SM2540B	Standard Method 2540 B 2015
SW3546	SW 846 Method 3546 Revision 0 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Sample Summary (16 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40664.01	SB-A5.3-ON122_1-2(092322)	Soil	09/23/22 09:11
S40664.02	SB-A5.3-ON122_2-3(092322)	Soil	09/23/22 09:18
S40664.03	SB-A5.3-OI121_1-2(092322)	Soil	09/23/22 09:40
S40664.04	SB-A5.3-OI121_2-3(092322)	Soil	09/23/22 09:48
S40664.05	SB-A5.3-OH123_2-3(092322)	Soil	09/23/22 10:10
S40664.06	SB-A5.3-OI123_0-0.5(092322)	Soil	09/23/22 10:49
S40664.07	SB-A5.3-ON123_0-0.5(092322)	Soil	09/23/22 10:55
S40664.08	SB-A5.3-OP123_0-0.3(092322)	Soil	09/23/22 11:05
S40664.09	SB-A5.3-OI125_1-2(092322)	Soil	09/23/22 11:35
S40664.10	SB-A5.3-OI125_2-3(092322)	Soil	09/23/22 11:44
S40664.11	SB-A5.3-OI125_2-3(092322) MS	Soil	09/23/22 11:44
S40664.12	SB-A5.3-OI125_2-3(092322) MSD	Soil	09/23/22 11:44
S40664.13	SB-A5.3-ON124_1-2(092322)	Soil	09/23/22 12:06
S40664.14	SB-A5.3-ON124_2-3(092322)	Soil	09/23/22 12:16
S40664.15	DUP-01_092322	Soil	09/23/22 00:01
S40664.16	DUP-02_092322	Soil	09/23/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40664.01

Sample Tag: SB-A5.3-ON122_1-2(092322)

Collected Date/Time: 09/23/2022 09:11

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 17:40, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.02

Sample Tag: SB-A5.3-ON122_2-3(092322)

Collected Date/Time: 09/23/2022 09:18

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	91	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 18:10, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.03

Sample Tag: SB-A5.3-OI121_1-2(092322)

Collected Date/Time: 09/23/2022 09:40

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 18:40, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.04

Sample Tag: SB-A5.3-OI121_2-3(092322)

Collected Date/Time: 09/23/2022 09:48

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 19:10, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.05
Sample Tag: SB-A5.3-OH123_2-3(092322)
Collected Date/Time: 09/23/2022 10:10
Matrix: Soil
COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 23:08, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	8,200	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.06
Sample Tag: SB-A5.3-OI123_0-0.5(092322)
Collected Date/Time: 09/23/2022 10:49
Matrix: Soil
COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 23:38, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	7,300	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.07

Sample Tag: SB-A5.3-ON123_0-0.5(092322)

Collected Date/Time: 09/23/2022 10:55

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/28/22 00:37, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,500	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.08
Sample Tag: SB-A5.3-OP123_0-0.3(092322)
Collected Date/Time: 09/23/2022 11:05
Matrix: Soil
COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	74	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/28/22 00:08, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	10,000	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.09

Sample Tag: SB-A5.3-OI125_1-2(092322)

Collected Date/Time: 09/23/2022 11:35

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 19:39, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.10
Sample Tag: SB-A5.3-OI125_2-3(092322)
Collected Date/Time: 09/23/2022 11:44
Matrix: Soil
COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/29/22 00:25, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.11

Sample Tag: SB-A5.3-OI125_2-3(092322) MS

Collected Date/Time: 09/23/2022 11:44

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/29/22 00:55, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,200	300		ug/kg	7.5	50-32-8	1

1-Sample spiked at 2.5 mg/kg



Analytical Laboratory Report

Lab Sample ID: S40664.12
Sample Tag: SB-A5.3-OI125_2-3(092322) MSD
Collected Date/Time: 09/23/2022 11:44
Matrix: Soil
COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/29/22 01:24, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,200	300		ug/kg	7.5	50-32-8	1

1-Sample spiked at 2.5 mg/kg



Analytical Laboratory Report

Lab Sample ID: S40664.13

Sample Tag: SB-A5.3-ON124_1-2(092322)

Collected Date/Time: 09/23/2022 12:06

Matrix: Soil

COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 20:09, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.14
Sample Tag: SB-A5.3-ON124_2-3(092322)
Collected Date/Time: 09/23/2022 12:16
Matrix: Soil
COC Reference: 154499

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/27/22 20:39, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.15

Sample Tag: DUP-01_092322

Collected Date/Time: 09/23/2022 00:01

Matrix: Soil

COC Reference: 154498

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/29/22 01:53, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S40664.16

Sample Tag: DUP-02_092322

Collected Date/Time: 09/23/2022 00:01

Matrix: Soil

COC Reference: 154498

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	5.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
BNA Extraction*	Completed	SW3546	09/26/22 16:00	TAW	

Inorganics

Method: SM2540B, Run Date: 09/23/22 17:47, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 09/29/22 02:23, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	7.5	50-32-8	

Merit Laboratories Login Checklist

Lab Set ID:S40664

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: Plant2 Area5-3 Soil Corrective Measure Boring 30192892.00102

Submitted:09/23/2022 15:19 Login User: MMC

Attention: Tiffany Linder

Address: Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:

Email: tiffany.linder@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.3
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 of 2 154499

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <u>Tiffany Linder</u>			
COMPANY <u>Arcoelis</u>			
ADDRESS <u>28550 Cabot Dr # 500</u>			
CITY <u>NOVI</u>	STATE <u>MI</u>	ZIP CODE <u>48377</u>	
PHONE NO.	CELL NO.	F.O. NO.	
E-MAIL ADDRESS		QUOTE NO.	

CONTACT NAME		☐ SAME
COMPANY		
ADDRESS		
CITY	STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS	

PROJECT NO. NAME 30192892-00102
Plant 2 Area S-3 Soil Corrective Measure Boring

SAMPLER(S) PLEASE PRINT/SIGN NAME Lehcia Ferreira

TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER

DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER

MATRIX: W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WPIE A=AIR WS=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	SVOCs via USEPA Method 8270 (SW-846)											Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☐ Other Special Instructions
	DATE	TIME																						
40664.01	09/23/22	0911	SB-A5.3-DM122-1-2(092322)	S	1	X							X											
.02		0918	SB-A5.3-DM122-2-3(092322)	S	1	X							X											
.03		0940	SB-A5.3-OI121-1-2(092322)	S	1	X							X											
.04		0948	SB-A5.3-OI121-2-3(092322)	S	1	X							X											
.05		1010	SB-A5.3-OH123-2-3(092322)	S	1	X							X											
.06		1049	SB-A5.3-OI123-0-0.5(092322)	S	1	X							X											
.07		1055	SB-A5.3-OM123-0-0.5(092322)	S	1	X							X											
.08		1105	SB-A5.3-OP123-0-0.3(092322)	S	1	X							X											
.09		1135	SB-A5.3-OI125-1-2(092322)	S	1	X							X											
10/11/12		1144	SB-A5.3-OI125-2-3(092322)	S	3	X							X											MS/MSD
.13		1206	SB-A5.3-OM124-1-2(092322)	S	1	X							X											
.14		1216	SB-A5.3-OM124-2-3(092322)	S	1	X							X											

RELINQUISHED BY: <u>Lehcia Ferreira</u>	Sampler	DATE <u>09/23/22</u>	TIME <u>1515</u>
SIGNATURE/ORGANIZATION			
RECEIVED BY: <u>Johanna Murray</u>		DATE <u>9/23/22</u>	TIME <u>1519</u>
SIGNATURE/ORGANIZATION			
RELINQUISHED BY:	DATE	TIME	
SIGNATURE/ORGANIZATION			
RECEIVED BY:	DATE	TIME	
SIGNATURE/ORGANIZATION			

RELINQUISHED BY:	DATE	TIME
SIGNATURE/ORGANIZATION		
RECEIVED BY:	DATE	TIME
SIGNATURE/ORGANIZATION		
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES		TEMP. ON ARRIVAL <u>5.3</u>

REPORT TO

CONTACT NAME		Tiffany Linder	
COMPANY		Arcadis	
ADDRESS			
28500 Cabot Dr #500			
CITY		STATE	ZIP CODE
Mon		MI	48377
PHONE NO.		CELL NO.	P.O. NO.
248 994 2440			
E-MAIL ADDRESS		QUOTE NO.	

CHAIN OF CUSTODY RECORD

CONTACT NAME		☐ SAME	
COMPANY			
ADDRESS			
CITY		STATE	ZIP CODE
PHONE NO.		E-MAIL ADDRESS	

INVOICE TO

PROJECT NO./NAME	30112892-00101 Plant 2 Area S-3 Soil Corrective Measure Boring	SAMPLER(S) PLEASE PRINT/SIGN NAME	John Ferrelin
TURNAROUND TIME REQUIRED	☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS	☒ STANDARD	☐ OTHER
DELIVERABLES REQUIRED:	☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER		

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

MATRIX W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID
CODE SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIPE A=AIR WS=WASTE

Containers & Preservatives

[illegible]

RELINQUISHED BY: SIGNATURE/ORGANIZATION	<i>Leticia Ferreim</i>	☒ Sample	DATE 09/23/22	TIME 1517
RECEIVED BY: SIGNATURE/ORGANIZATION	<i>Sharon Young</i>		DATE 9/23/22	TIME 1519
RELINQUISHED BY: SIGNATURE/ORGANIZATION			DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION			DATE	TIME

RELINQUISHED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
RECEIVED BY:			DATE	TIME
SIGNATURE/ORGANIZATION				
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES: 7	ARRIVAL 5.3
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		



Analytical Laboratory Report

Report ID: S43091.01(01)+QC01
Generated on 12/13/2022

Report to

Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Additional Contacts: Alex Villhauer, Marina Samp, Kaitlyn Hunt

Report produced by

Merit Laboratories, Inc.
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:
John Lavery (johnlavery@meritlabs.com)
Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S43091.01-S43091.11
Project: 30112892.01101 / RACER Lansing
Collected Date(s): 12/05/2022
Submitted Date/Time: 12/05/2022 12:45
Sampled by: Austin Westhuis
P.O. #: 30112892.01101

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Maya Murshak
Technical Director



Analytical Laboratory Report

General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method	Version
SM2540B	Standard Method 2540 B 2015
SW3546	SW 846 Method 3546 Revision 0 February 2007
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Sample Summary (11 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S43091.01	SB-A5.3-OH124_1-2(120522)	Soil	12/05/22 10:15
S43091.02	SB-A5.3-OH124_2-3(120522)	Soil	12/05/22 10:20
S43091.03	SB-A5.3-OH123_1-2(120522)	Soil	12/05/22 10:45
S43091.04	SB-A5.3-OH123_2-3(120522)	Soil	12/05/22 10:50
S43091.05	SB-A5.3-OH122_1.5-2(120522)	Soil	12/05/22 11:10
S43091.06	SB-A5.3-OH122_2-3(120522)	Soil	12/05/22 11:15
S43091.07	SB-A5.3-OG123_1.5-2(120522)	Soil	12/05/22 11:35
S43091.08	SB-A5.3-OG123_1.5-2(120522) MS	Soil	12/05/22 11:35
S43091.09	SB-A5.3-OG123_1.5-2(120522) MSD	Soil	12/05/22 11:35
S43091.10	SB-A5.3-OG123_2-3(120522)	Soil	12/05/22 11:40
S43091.11	DUP-01(120522)	Soil	12/05/22 00:01



Analytical Laboratory Report

Lab Sample ID: S43091.01

Sample Tag: SB-A5.3-OH124_1-2(120522)

Collected Date/Time: 12/05/2022 10:15

Matrix: Soil

COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/07/22 12:00	TAW	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/07/22 21:46, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.02
Sample Tag: SB-A5.3-OH124_2-3(120522)
Collected Date/Time: 12/05/2022 10:20
Matrix: Soil
COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/07/22 12:00	TAW	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	81	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/07/22 22:10, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.03

Sample Tag: SB-A5.3-OH123_1-2(120522)

Collected Date/Time: 12/05/2022 10:45

Matrix: Soil

COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/07/22 12:00	TAW	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/07/22 22:33, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.04

Sample Tag: SB-A5.3-OH123_2-3(120522)

Collected Date/Time: 12/05/2022 10:50

Matrix: Soil

COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/07/22 12:00	TAW	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/07/22 22:56, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.05

Sample Tag: SB-A5.3-OH122_1.5-2(120522)

Collected Date/Time: 12/05/2022 11:10

Matrix: Soil

COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/07/22 12:00	TAW	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/07/22 23:20, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.06
Sample Tag: SB-A5.3-OH122_2-3(120522)
Collected Date/Time: 12/05/2022 11:15
Matrix: Soil
COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/08/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/12/22 20:56, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,300	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.07
Sample Tag: SB-A5.3-OG123_1.5-2(120522)
Collected Date/Time: 12/05/2022 11:35
Matrix: Soil
COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/08/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/12/22 18:40, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.08

Sample Tag: SB-A5.3-OG123_1.5-2(120522) MS

Collected Date/Time: 12/05/2022 11:35

Matrix: Soil

COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/08/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:15, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/12/22 18:57, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,600	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg



Analytical Laboratory Report

Lab Sample ID: S43091.09

Sample Tag: SB-A5.3-OG123_1.5-2(120522) MSD

Collected Date/Time: 12/05/2022 11:35

Matrix: Soil

COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/08/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:33, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/12/22 19:14, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,400	300		ug/kg	10	50-32-8	1

1-Sample spiked at 2.5 mg/kg



Analytical Laboratory Report

Lab Sample ID: S43091.10
Sample Tag: SB-A5.3-OG123_2-3(120522)
Collected Date/Time: 12/05/2022 11:40
Matrix: Soil
COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/08/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:33, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/12/22 19:31, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Analytical Laboratory Report

Lab Sample ID: S43091.11

Sample Tag: DUP-01(120522)

Collected Date/Time: 12/05/2022 00:01

Matrix: Soil

COC Reference: 158617

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	12/08/22 13:00	JWR	

Inorganics

Method: SM2540B, Run Date: 12/05/22 17:33, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 12/12/22 19:48, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Quality Control Report

Report ID: S43091.01(01)+QC01
Generated on 12/13/2022

Report to
Attention: Tiffany Linder
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Phone: 248-994-2272 FAX:

Report Summary
Lab Sample ID(s): S43091.01-S43091.11
Project: 30112892.01101 / RACER Lansing
Submitted Date/Time: 12/05/2022 12:45
Sampled by: Austin Westhuis
P.O. #: 30112892.01101

QC Report Sections
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Analysis Summary (Pages 18-28)
Prep Batch Summary (Page 29)
Surrogates per Lab Sample (Pages 30-38)
Surrogates per QC Sample (Pages 39-41)
Internal Standards per Lab Sample (Pages 42-50)
Internal Standards per QC Sample (Pages 51-54)
Batch QC Results (Pages 55-58)

Report Flag Descriptions
*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.


Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S43091.01

Sample Tag: SB-A5.3-OH124_1-2(120522)

Collected Date/Time: 12/05/2022 10:15

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/07/22 21:46	Z221207B	SP221207S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S43091.02

Sample Tag: SB-A5.3-OH124_2-3(120522)

Collected Date/Time: 12/05/2022 10:20

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/07/22 22:10	Z221207B	SP221207S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S43091.03

Sample Tag: SB-A5.3-OH123_1-2(120522)

Collected Date/Time: 12/05/2022 10:45

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/07/22 22:33	Z221207B	SP221207S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S43091.04

Sample Tag: SB-A5.3-OH123_2-3(120522)

Collected Date/Time: 12/05/2022 10:50

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/07/22 22:56	Z221207B	SP221207S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S43091.05

Sample Tag: SB-A5.3-OH122_1.5-2(120522)

Collected Date/Time: 12/05/2022 11:10

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/07/22 23:20	Z221207B	SP221207S1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S43091.06

Sample Tag: SB-A5.3-OH122_2-3(120522)

Collected Date/Time: 12/05/2022 11:15

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/12/22 20:56	H221212	SP221208S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S43091.07

Sample Tag: SB-A5.3-OG123_1.5-2(120522)

Collected Date/Time: 12/05/2022 11:35

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/12/22 18:40	H221212	SP221208S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S43091.08

Sample Tag: SB-A5.3-OG123_1.5-2(120522) MS

Collected Date/Time: 12/05/2022 11:35

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:15	TS221205B	TS221205B	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/12/22 18:57	H221212	SP221208S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S43091.09

Sample Tag: SB-A5.3-OG123_1.5-2(120522) MSD

Collected Date/Time: 12/05/2022 11:35

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:33	TS221205C	TS221205C	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/12/22 19:14	H221212	SP221208S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S43091.10

Sample Tag: SB-A5.3-OG123_2-3(120522)

Collected Date/Time: 12/05/2022 11:40

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:33	TS221205C	TS221205C	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/12/22 19:31	H221212	SP221208S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S43091.11

Sample Tag: DUP-01(120522)

Collected Date/Time: 12/05/2022 00:01

Matrix: Soil

COC Reference: 158617

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
<i>Inorganics</i>						
Total Solids	SM2540B	12/05/22 17:33	TS221205C	TS221205C	No	BLK/LCS/DUP
<i>Organics - Semi-Volatiles</i>						
Benzo(a)pyrene	SW8270D	12/12/22 19:48	H221212	SP221208S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS221205B

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S43091.01	Total Solids	SM2540B	12/05/22 17:15	TS221205B
S43091.02	Total Solids	SM2540B	12/05/22 17:15	TS221205B
S43091.03	Total Solids	SM2540B	12/05/22 17:15	TS221205B
S43091.04	Total Solids	SM2540B	12/05/22 17:15	TS221205B
S43091.05	Total Solids	SM2540B	12/05/22 17:15	TS221205B
S43091.06	Total Solids	SM2540B	12/05/22 17:15	TS221205B
S43091.07	Total Solids	SM2540B	12/05/22 17:15	TS221205B
S43091.08	Total Solids	SM2540B	12/05/22 17:15	TS221205B

Inorganics, Prep Batch ID: TS221205C

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S43091.09	Total Solids	SM2540B	12/05/22 17:33	TS221205C
S43091.10	Total Solids	SM2540B	12/05/22 17:33	TS221205C
S43091.11	Total Solids	SM2540B	12/05/22 17:33	TS221205C

Organics - Semi-Volatiles, Prep Batch ID: SP221207S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S43091.01	Benzo(a)pyrene	SW8270D	12/07/22 21:46	Z221207B
S43091.02	Benzo(a)pyrene	SW8270D	12/07/22 22:10	Z221207B
S43091.03	Benzo(a)pyrene	SW8270D	12/07/22 22:33	Z221207B
S43091.04	Benzo(a)pyrene	SW8270D	12/07/22 22:56	Z221207B
S43091.05	Benzo(a)pyrene	SW8270D	12/07/22 23:20	Z221207B

Organics - Semi-Volatiles, Prep Batch ID: SP221208S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S43091.06	Benzo(a)pyrene	SW8270D	12/12/22 20:56	H221212
S43091.07	Benzo(a)pyrene	SW8270D	12/12/22 18:40	H221212
S43091.08	Benzo(a)pyrene	SW8270D	12/12/22 18:57	H221212
S43091.09	Benzo(a)pyrene	SW8270D	12/12/22 19:14	H221212
S43091.10	Benzo(a)pyrene	SW8270D	12/12/22 19:31	H221212
S43091.11	Benzo(a)pyrene	SW8270D	12/12/22 19:48	H221212

Lab Sample ID: S43091.01

Sample Tag: SB-A5.3-OH124_1-2(120522)

Collected Date/Time: 12/05/2022 10:15

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 21:46, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		59.7	18.5	120.0
2-Fluorobiphenyl		62.2	10.0	115.0
Terphenyl-D14		70.8	10.3	137.0

Lab Sample ID: S43091.02

Sample Tag: SB-A5.3-OH124_2-3(120522)

Collected Date/Time: 12/05/2022 10:20

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 22:10, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		59.6	18.5	120.0
2-Fluorobiphenyl		62.9	10.0	115.0
Terphenyl-D14		68.0	10.3	137.0

Lab Sample ID: S43091.03

Sample Tag: SB-A5.3-OH123_1-2(120522)

Collected Date/Time: 12/05/2022 10:45

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 22:33, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		62.7	18.5	120.0
2-Fluorobiphenyl		68.6	10.0	115.0
Terphenyl-D14		74.1	10.3	137.0

Lab Sample ID: S43091.04

Sample Tag: SB-A5.3-OH123_2-3(120522)

Collected Date/Time: 12/05/2022 10:50

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 22:56, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		62.3	18.5	120.0
2-Fluorobiphenyl		67.5	10.0	115.0
Terphenyl-D14		73.8	10.3	137.0

Lab Sample ID: S43091.05

Sample Tag: SB-A5.3-OH122_1.5-2(120522)

Collected Date/Time: 12/05/2022 11:10

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 23:20, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		64.9	18.5	120.0
2-Fluorobiphenyl		66.9	10.0	115.0
Terphenyl-D14		73.1	10.3	137.0

Lab Sample ID: S43091.06

Sample Tag: SB-A5.3-OH122_2-3(120522)

Collected Date/Time: 12/05/2022 11:15

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 20:56, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		72.4	18.5	120.0
2-Fluorobiphenyl		88.8	10.0	115.0
Terphenyl-D14		91.5	10.3	137.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S43091.07

Sample Tag: SB-A5.3-OG123_1.5-2(120522)

Collected Date/Time: 12/05/2022 11:35

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 18:40, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		59.7	18.5	120.0
2-Fluorobiphenyl		88.1	10.0	115.0
Terphenyl-D14		91.8	10.3	137.0

Lab Sample ID: S43091.10

Sample Tag: SB-A5.3-OG123_2-3(120522)

Collected Date/Time: 12/05/2022 11:40

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 19:31, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		63.3	18.5	120.0
2-Fluorobiphenyl		81.0	10.0	115.0
Terphenyl-D14		84.8	10.3	137.0

Lab Sample ID: S43091.11

Sample Tag: DUP-01(120522)

Collected Date/Time: 12/05/2022 00:01

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 19:48, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		63.4	18.5	120.0
2-Fluorobiphenyl		78.5	10.0	115.0
Terphenyl-D14		78.5	10.3	137.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP221207S1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: Z221207B.BLKS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 16:43, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		66.4	18.5	120.0
2-Fluorobiphenyl		65.5	10.0	115.0
Terphenyl-D14		72.4	10.3	137.0

Blank (BLK)

Lab Sample ID: Z221207C.BLKS07A

Run in Batch: Z221207C, Run Date: 12/07/2022 16:43, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		63.2	10.0	115.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z221207B.LCSS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 17:06, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		64.7	18.5	120.0
2-Fluorobiphenyl		60.2	10.0	115.0
Terphenyl-D14		68.9	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z221207C.LCSS07A

Run in Batch: Z221207C, Run Date: 12/07/2022 17:06, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		58.3	10.0	115.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: Z221207B.LCSDS07A, Parent Sample ID: Z221207B.LCSS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 17:30, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		66.0	18.5	120.0
2-Fluorobiphenyl		62.8	10.0	115.0
Terphenyl-D14		71.5	10.3	137.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: Z221207C.LCSDS07A, Parent Sample ID: Z221207C.LCSS07A

Run in Batch: Z221207C, Run Date: 12/07/2022 17:30, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		60.5	10.0	115.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP221208S1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: H221212.BLKS08A

Run in Batch: H221212, Run Date: 12/12/2022 16:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		78.2	18.5	120.0
2-Fluorobiphenyl		85.0	10.0	115.0
Terphenyl-D14		92.4	10.3	137.0

Blank (BLK)

Lab Sample ID: H221212B.BLKS08A

Run in Batch: H221212B, Run Date: 12/12/2022 16:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		82.3	10.0	115.0

Laboratory Control Sample (LCS)

Lab Sample ID: H221212.LCSS08A

Run in Batch: H221212, Run Date: 12/12/2022 17:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		77.7	18.5	120.0
2-Fluorobiphenyl		83.0	10.0	115.0
Terphenyl-D14		94.8	10.3	137.0

Laboratory Control Sample (LCS)

Lab Sample ID: H221212B.LCSS08A

Run in Batch: H221212B, Run Date: 12/12/2022 17:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		80.4	10.0	115.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H221212.LCSDS08A, Parent Sample ID: H221212.LCSS08A

Run in Batch: H221212, Run Date: 12/12/2022 17:31, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		84.4	18.5	120.0
2-Fluorobiphenyl		86.3	10.0	115.0
Terphenyl-D14		95.2	10.3	137.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H221212B.LCSDS08A, Parent Sample ID: H221212B.LCSS08A

Run in Batch: H221212B, Run Date: 12/12/2022 17:31, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorobiphenyl		83.5	10.0	115.0

QC Report - Surrogates per QC Sample

Matrix Spike (MS)

Lab Sample ID: H221212.4309108M, Parent Sample ID: S43091.07

Run in Batch: H221212, Run Date: 12/12/2022 18:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		63.9	18.5	120.0
2-Fluorobiphenyl		88.7	10.0	115.0
Terphenyl-D14		91.0	10.3	137.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H221212.4309109N, Parent Sample ID: H221212.4309108M

Run in Batch: H221212, Run Date: 12/12/2022 19:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
Nitrobenzene-D5		61.1	18.5	120.0
2-Fluorobiphenyl		89.2	10.0	115.0
Terphenyl-D14		90.9	10.3	137.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.01

Sample Tag: SB-A5.3-OH124_1-2(120522)

Collected Date/Time: 12/05/2022 10:15

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 21:46, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		140.6	50.0	200.0
Acenaphthalene-D10		147.7	50.0	200.0
Phenanthrene-D10		147.0	50.0	200.0
Chrysene-D12		147.5	50.0	200.0
Perylene-D12		140.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.02

Sample Tag: SB-A5.3-OH124_2-3(120522)

Collected Date/Time: 12/05/2022 10:20

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 22:10, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		142.9	50.0	200.0
Acenaphthalene-D10		150.8	50.0	200.0
Phenanthrene-D10		149.2	50.0	200.0
Chrysene-D12		150.0	50.0	200.0
Perylene-D12		143.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.03

Sample Tag: SB-A5.3-OH123_1-2(120522)

Collected Date/Time: 12/05/2022 10:45

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 22:33, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		144.7	50.0	200.0
Acenaphthalene-D10		151.7	50.0	200.0
Phenanthrene-D10		150.5	50.0	200.0
Chrysene-D12		147.8	50.0	200.0
Perylene-D12		139.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.04

Sample Tag: SB-A5.3-OH123_2-3(120522)

Collected Date/Time: 12/05/2022 10:50

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 22:56, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		142.0	50.0	200.0
Acenaphthalene-D10		149.0	50.0	200.0
Phenanthrene-D10		147.0	50.0	200.0
Chrysene-D12		144.5	50.0	200.0
Perylene-D12		136.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.05

Sample Tag: SB-A5.3-OH122_1.5-2(120522)

Collected Date/Time: 12/05/2022 11:10

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: Z221207B, Run Date: 12/07/2022 23:20, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		140.9	50.0	200.0
Acenaphthalene-D10		149.5	50.0	200.0
Phenanthrene-D10		147.6	50.0	200.0
Chrysene-D12		146.3	50.0	200.0
Perylene-D12		137.7	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.06

Sample Tag: SB-A5.3-OH122_2-3(120522)

Collected Date/Time: 12/05/2022 11:15

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 20:56, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		114.3	50.0	200.0
Acenaphthalene-D10		115.5	50.0	200.0
Phenanthrene-D10		114.5	50.0	200.0
Chrysene-D12		111.8	50.0	200.0
Perylene-D12		109.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.07

Sample Tag: SB-A5.3-OG123_1.5-2(120522)

Collected Date/Time: 12/05/2022 11:35

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 18:40, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		109.7	50.0	200.0
Acenaphthalene-D10		109.1	50.0	200.0
Phenanthrene-D10		110.0	50.0	200.0
Chrysene-D12		107.1	50.0	200.0
Perylene-D12		106.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.10

Sample Tag: SB-A5.3-OG123_2-3(120522)

Collected Date/Time: 12/05/2022 11:40

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 19:31, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		117.1	50.0	200.0
Acenaphthalene-D10		118.6	50.0	200.0
Phenanthrene-D10		115.0	50.0	200.0
Chrysene-D12		109.4	50.0	200.0
Perylene-D12		110.1	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S43091.11

Sample Tag: DUP-01(120522)

Collected Date/Time: 12/05/2022 00:01

Matrix: Soil

COC Reference: 158617

Organics - Semi-Volatiles, Analysis: Benzo(a)pyrene

Run in Batch: H221212, Run Date: 12/12/2022 19:48, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		119.1	50.0	200.0
Acenaphthalene-D10		121.3	50.0	200.0
Phenanthrene-D10		121.2	50.0	200.0
Chrysene-D12		115.0	50.0	200.0
Perylene-D12		113.3	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP221207S1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: Z221207B.BLKS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 16:43, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		125.6	50.0	200.0
Acenaphthalene-D10		132.6	50.0	200.0
Phenanthrene-D10		134.3	50.0	200.0
Chrysene-D12		135.1	50.0	200.0
Perylene-D12		124.4	50.0	200.0

Blank (BLK)

Lab Sample ID: Z221207C.BLKS07A

Run in Batch: Z221207C, Run Date: 12/07/2022 16:43, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		113.7	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z221207B.LCSS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 17:06, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		120.4	50.0	200.0
Acenaphthalene-D10		126.3	50.0	200.0
Phenanthrene-D10		124.6	50.0	200.0
Chrysene-D12		133.5	50.0	200.0
Perylene-D12		130.0	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: Z221207C.LCSS07A

Run in Batch: Z221207C, Run Date: 12/07/2022 17:06, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		108.0	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: Z221207B.LCSDS07A, Parent Sample ID: Z221207B.LCSS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 17:30, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		118.8	50.0	200.0
Acenaphthalene-D10		123.1	50.0	200.0
Phenanthrene-D10		122.2	50.0	200.0
Chrysene-D12		130.0	50.0	200.0
Perylene-D12		127.1	50.0	200.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: Z221207C.LCSDS07A, Parent Sample ID: Z221207C.LCSS07A

Run in Batch: Z221207C, Run Date: 12/07/2022 17:30, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		105.5	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SP221208S1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: H221212.BLKS08A

Run in Batch: H221212, Run Date: 12/12/2022 16:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		103.5	50.0	200.0
Acenaphthalene-D10		103.1	50.0	200.0
Phenanthrene-D10		103.9	50.0	200.0
Chrysene-D12		98.1	50.0	200.0
Perylene-D12		91.6	50.0	200.0

Blank (BLK)

Lab Sample ID: H221212B.BLKS08A

Run in Batch: H221212B, Run Date: 12/12/2022 16:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		119.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: H221212.LCSS08A

Run in Batch: H221212, Run Date: 12/12/2022 17:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		99.9	50.0	200.0
Acenaphthalene-D10		100.8	50.0	200.0
Phenanthrene-D10		102.5	50.0	200.0
Chrysene-D12		108.0	50.0	200.0
Perylene-D12		101.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: H221212B.LCSS08A

Run in Batch: H221212B, Run Date: 12/12/2022 17:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		116.4	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H221212.LCSDS08A, Parent Sample ID: H221212.LCSS08A

Run in Batch: H221212, Run Date: 12/12/2022 17:31, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		100.4	50.0	200.0
Acenaphthalene-D10		102.8	50.0	200.0
Phenanthrene-D10		104.7	50.0	200.0
Chrysene-D12		108.6	50.0	200.0
Perylene-D12		102.8	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H221212B.LCSDS08A, Parent Sample ID: H221212B.LCSS08A

Run in Batch: H221212B, Run Date: 12/12/2022 17:31, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Acenaphthalene-D10		118.7	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: H221212.4309108M, Parent Sample ID: S43091.07

Run in Batch: H221212, Run Date: 12/12/2022 18:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		110.6	50.0	200.0
Acenaphthalene-D10		111.5	50.0	200.0
Phenanthrene-D10		111.4	50.0	200.0
Chrysene-D12		107.0	50.0	200.0
Perylene-D12		106.8	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: H221212.4309109N, Parent Sample ID: H221212.4309108M

Run in Batch: H221212, Run Date: 12/12/2022 19:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Naphthalene-D8		115.3	50.0	200.0
Acenaphthalene-D10		117.0	50.0	200.0
Phenanthrene-D10		116.6	50.0	200.0
Chrysene-D12		111.6	50.0	200.0
Perylene-D12		112.5	50.0	200.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS221205B

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS221205B.LRB1

Run in Batch: TS221205B, Run Date: 12/05/2022 17:15, Prep Date: 12/05/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS221205B.LCS1

Run in Batch: TS221205B, Run Date: 12/05/2022 17:15, Prep Date: 12/05/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS221205B.DP1, Parent Sample ID: S43075.04

Run in Batch: TS221205B, Run Date: 12/05/2022 17:15, Prep Date: 12/05/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

Duplicate (DUP)

Lab Sample ID: TS221205B.DP2, Parent Sample ID: S43079.01

Run in Batch: TS221205B, Run Date: 12/05/2022 17:15, Prep Date: 12/05/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS221205C

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS221205C.LRB1

Run in Batch: TS221205C, Run Date: 12/05/2022 17:33, Prep Date: 12/05/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS221205C.LCS1

Run in Batch: TS221205C, Run Date: 12/05/2022 17:33, Prep Date: 12/05/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS221205C.DP1, Parent Sample ID: S43091.09

Run in Batch: TS221205C, Run Date: 12/05/2022 17:33, Prep Date: 12/05/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

Duplicate (DUP)

Lab Sample ID: TS221205C.DP2, Parent Sample ID: S43095.05

Run in Batch: TS221205C, Run Date: 12/05/2022 17:33, Prep Date: 12/05/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP221207S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: Z221207B.BLKS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 16:43, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.025	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: Z221207B.LCSS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 17:06, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		64.5	10.0	140.8

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: Z221207B.LCSDS07A, Parent Sample ID: Z221207B.LCSS07A

Run in Batch: Z221207B, Run Date: 12/07/2022 17:30, Prep Date: 12/07/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene		68.0	10.0	140.8	5.3	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SP221208S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: H221212.BLKS08A

Run in Batch: H221212, Run Date: 12/12/2022 16:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Benzo(a)pyrene		ND	0.025	mg/kg

Laboratory Control Sample (LCS)

Lab Sample ID: H221212.LCSS08A

Run in Batch: H221212, Run Date: 12/12/2022 17:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		87.9	10.0	140.8

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: H221212.LCSDS08A, Parent Sample ID: H221212.LCSS08A

Run in Batch: H221212, Run Date: 12/12/2022 17:31, Prep Date: 12/08/2022, Matrix: SO, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene		88.4	10.0	140.8	0.5	30.0

Matrix Spike (MS)

Lab Sample ID: H221212.4309108M, Parent Sample ID: S43091.07

Run in Batch: H221212, Run Date: 12/12/2022 18:57, Prep Date: 12/08/2022, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL
Benzo(a)pyrene		86.6	10.0	140.8

Matrix Spike Duplicate (MSD)

Lab Sample ID: H221212.4309109N, Parent Sample ID: H221212.4309108M

Run in Batch: H221212, Run Date: 12/12/2022 19:14, Prep Date: 12/08/2022, Matrix: SO, Dilution: 10

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Benzo(a)pyrene		82.8	10.0	140.8	4.6	30.0

Merit Laboratories Login Checklist

Lab Set ID:S43091

Client:ARCADIS_NOVI (ARCADIS U.S., Inc.)

Project: 30112892.01101 / RACER Lansing

Submitted: 12/05/2022 12:45 Login User: MMC

Attention: Tiffany Linder

Address: Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:

Email: tiffany.linder@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	☒ Yes ☐ No ☐ N/A	Samples are received at 4C +/- 2C Thermometer # IR 6.0
02.	☒ Yes ☐ No ☐ N/A	Received on ice/ cooling process begun
03.	☐ Yes ☒ No ☐ N/A	Samples shipped
04.	☐ Yes ☒ No ☐ N/A	Samples left in 24 hr. drop box
05.	☐ Yes ☐ No ☒ N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	☒ Yes ☐ No ☐ N/A	COC adequately filled out
07.	☒ Yes ☐ No ☐ N/A	COC signed and relinquished to the lab
08.	☒ Yes ☐ No ☐ N/A	Sample tag on bottles match COC
09.	☐ Yes ☒ No ☐ N/A	Subcontracting needed? Subcontacted to:
Preservation		
10.	☒ Yes ☐ No ☐ N/A	Do sample have correct chemical preservation
11.	☐ Yes ☐ No ☒ N/A	Completed pH checks on preserved samples? (no VOAs)
12.	☐ Yes ☒ No ☐ N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	☒ Yes ☐ No ☐ N/A	All bottles intact
14.	☒ Yes ☐ No ☐ N/A	Appropriate analytical bottles are used
15.	☒ Yes ☐ No ☐ N/A	Merit bottles used
16.	☒ Yes ☐ No ☐ N/A	Sufficient sample volume received
17.	☐ Yes ☒ No ☐ N/A	Samples require laboratory filtration
18.	☒ Yes ☐ No ☐ N/A	Samples submitted within holding time
19.	☐ Yes ☐ No ☒ N/A	Do water VOC or TOX bottles contain headspace

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: _____ Date: _____



2680 East Lansing Dr., East Lansing, MI 48823
Phone (517) 332-0167 Fax (517) 332-4034
www.meritlabs.com

C.O.C. PAGE # 1 OF 1

158617

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <u>Tiffany Linder</u>		CONTACT NAME <u>NAME</u>	
COMPANY <u>Arcadis</u>		COMPANY	
ADDRESS <u>28550 Cabot Avenue, Suite 500</u>		ADDRESS	
CITY <u>Novi</u>	STATE <u>MI</u>	ZIP CODE <u>48377</u>	STATE <u>MI</u>
PHONE NO. <u>810-225-1928</u>	CELL NO. <u>517-861-0138</u>	POL. NO.	E-MAIL ADDRESS
E-MAIL ADDRESS <u>Tiffany.Linder@arcadis.com</u>		QUOTE NO.	

PROJECT NO./NAME <u>30112892.01101/RACER Lansing</u>	SAMPLER(S) - PLEASE PRINT/SIGN NAME <u>Austin Westhous / [Signature]</u>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	
MATRIX W=WATER GW=GROUNDWATER WW=WASTEWATER S=SOIL L=LIQUID SD=SOLID CODE: SL=SLUDGE DW=DRINKING WATER O=OIL WP=WIFE A=AIR WS=WASTE	
# Containers & Preservatives	

MERIT LAB NO. FOR LAB USE ONLY	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	H ₂ O	HNO ₃	H ₂ SO ₄	NaOH	MCH	OTHER	ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)	Certifications ☐ OHIO VAP ☐ Drinking Water ☐ DoD ☐ NPDES Project Locations ☐ Detroit ☐ New York ☒ Other <u>MI</u> Special Instructions
	DATE	TIME												
43091.01	12/5/22	1015	SB-A5.3-OH124-1-2 (120522)	S	1	1							X	* Please analyze all soil samples for SVOCs via USEPA Method 8270 (SW-846) benzo(a)pyrene only ms/msb
02	12/5/22	1020	SB-A5.3-OH124-2-3 (120522)	S	1	1							X	
03	12/5/22	1045	SB-A5.3-OH123-1-2 (120522)	S	1	1							X	
04	12/5/22	1050	SB-A5.3-OH123-2-3 (120522)	S	1	1							X	
05	12/5/22	1110	SB-A5.3-OH122-1.5-2 (120522)	S	1	1							X	
06	12/5/22	1115	SB-A5.3-OH122-2-3 (120522)	S	1	1							X	
07/08/09	12/5/22	1135	SB-A5.3-OG123-1.5-2 (120522)	S	3	3							X	
10	12/5/22	1140	SB-A5.3-OG123-2-3 (120522)	S	1	1							X	
11	12/5/22	—	DUP-01 (120522)	S	1	1							X	

RELINQUISHED BY: SIGNATURE/ORGANIZATION <u>[Signature] / Arcadis</u>	DATE <u>12/5/22</u> TIME <u>1245</u>	RELINQUISHED BY: SIGNATURE/ORGANIZATION <u>Merit Drop Box</u>	DATE <u>12/5/22</u> TIME <u>1245</u>			
RECEIVED BY: SIGNATURE/ORGANIZATION <u>[Signature] / Merit Drop Box</u>	DATE <u>12/5/22</u> TIME <u>1245</u>	RECEIVED BY: SIGNATURE/ORGANIZATION <u>[Signature] / Merit Drop Box</u>	DATE <u>12/5/22</u> TIME <u>1245</u>			
RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS	NOTES	TEMP. ON ARRIVAL
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE TIME	SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS		

Appendix D

ProUCL Output Area 2

Table D-1
Arsenic Data in Plant 2, Area 2
RACER Lansing

Group	Constituent	Sample Location	Depth (ft bgs)	Sample Date	Exposure Area	Original Data (µg/kg) (1)	Result (µg/kg)(2)	D Result (3)
Arsenic_Area 2_0-2	Arsenic	MW-12-01	1 - 2	3/19/2012	Area 2	890 J	890	1
Arsenic_Area 2_0-2	Arsenic	P2-SB-31	1 - 2	8/30/2011	Area 2	2,020	2020	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PA65	0 - 1	4/7/2021	Area 2	14,200	14200	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PA65	1 - 2	6/4/2012	Area 2	53,200	53200	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PB67	0 - 1	6/4/2012	Area 2	1,670	1670	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PC64	1 - 2	6/4/2012	Area 2	2,300	2300	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD65	0 - 1	4/7/2021	Area 2	70,800	70800	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD65	1 - 2	6/4/2012	Area 2	790	790	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD65	1 - 2	4/7/2021	Area 2	307,000	307000	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD65	2 - 3	5/20/2021	Area 2	2,820 [2,700]	2760	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-OX62	0 - 1	4/7/2021	Area 2	9,020	9020	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-OX62	1 - 2	4/7/2021	Area 2	5,900	5900	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-OX65	0 - 1	4/7/2021	Area 2	3,920	3920	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-OX65	1 - 2	4/7/2021	Area 2	4,300	4300	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-OX68	0.5 - 1	4/7/2021	Area 2	6,210	6210	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-OX68	1 - 2	4/7/2021	Area 2	4,860	4860	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PA62	0 - 1	4/7/2021	Area 2	6,750 [5,210]	5980	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PA62	1 - 2	4/7/2021	Area 2	2,940	2940	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PA68	0.5 - 1	4/7/2021	Area 2	6,800	6800	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PA68	1 - 2	4/7/2021	Area 2	4,820 [2,810]	3815	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD62	0 - 1	4/7/2021	Area 2	5,910	5910	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD62	1 - 2	4/7/2021	Area 2	3,530	3530	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD64	0 - 1	5/20/2021	Area 2	3,320	3320	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD64	1 - 2	5/20/2021	Area 2	2,370	2370	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD68	0.5 - 1	4/7/2021	Area 2	7,590	7590	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PD68	1 - 2	4/7/2021	Area 2	4,660	4660	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PE65	0 - 1	5/20/2021	Area 2	16,000	16000	1
Arsenic_Area 2_0-2	Arsenic	SB-A2-PE65	1 - 2	5/20/2021	Area 2	2,430	2430	1
Arsenic_Area 2_0-2_no PD65	Arsenic	MW-12-01	1 - 2	3/19/2012	Area 2	890 J	890	1
Arsenic_Area 2_0-2_no PD65	Arsenic	P2-SB-31	1 - 2	8/30/2011	Area 2	2,020	2020	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PA65	0 - 1	4/7/2021	Area 2	14,200	14200	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PA65	1 - 2	6/4/2012	Area 2	53,200	53200	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PB67	0 - 1	6/4/2012	Area 2	1,670	1670	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PC64	1 - 2	6/4/2012	Area 2	2,300	2300	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-OX62	0 - 1	4/7/2021	Area 2	9,020	9020	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-OX62	1 - 2	4/7/2021	Area 2	5,900	5900	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-OX65	0 - 1	4/7/2021	Area 2	3,920	3920	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-OX65	1 - 2	4/7/2021	Area 2	4,300	4300	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-OX68	0.5 - 1	4/7/2021	Area 2	6,210	6210	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-OX68	1 - 2	4/7/2021	Area 2	4,860	4860	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PA62	0 - 1	4/7/2021	Area 2	6,750 [5,210]	5980	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PA62	1 - 2	4/7/2021	Area 2	2,940	2940	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PA68	0.5 - 1	4/7/2021	Area 2	6,800	6800	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PA68	1 - 2	4/7/2021	Area 2	4,820 [2,810]	3815	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PD62	0 - 1	4/7/2021	Area 2	5,910	5910	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PD62	1 - 2	4/7/2021	Area 2	3,530	3530	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PD64	0 - 1	5/20/2021	Area 2	3,320	3320	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PD64	1 - 2	5/20/2021	Area 2	2,370	2370	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PD68	0.5 - 1	4/7/2021	Area 2	7,590	7590	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PD68	1 - 2	4/7/2021	Area 2	4,660	4660	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PE65	0 - 1	5/20/2021	Area 2	16,000	16000	1
Arsenic_Area 2_0-2_no PD65	Arsenic	SB-A2-PE65	1 - 2	5/20/2021	Area 2	2,430	2430	1

Notes:

(1) Duplicate results are shown in square brackets.

(2) For duplicate pairs, if both were detected, the average is shown; if both were non-detect, the minimum reporting limit is shown; if one was detected and one was not detected, the detection is shown.

(3) 1 = detection; 0 = non-detect.

< = less than

ft bgs = feet below ground surface

J = estimated result

µg/kg = micrograms per kilogram

Table D-2
ProUCL Output Sheets for Arsenic in Plant 2, Area 2
RACER Lansing

UCL Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.111/16/2021 1:49:46 PM
From File Area 2 As for ProUCL.xls
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

Result (Arsenic_Area 2_0-2)

General Statistics

Total Number of Observations	28	Number of Distinct Observations	28
		Number of Missing Observations	0
Minimum	790	Mean	19828
Maximum	307000	Median	4480
SD	58382	Std. Error of Mean	11033
Coefficient of Variation	2.944	Skewness	4.762

Normal GOF Test

Shapiro Wilk Test Statistic 0.331
5% Shapiro Wilk Critical Value 0.924
Lilliefors Test Statistic 0.419
5% Lilliefors Critical Value 0.164

Shapiro Wilk GOF Test

Data Not Normal at 5% Significance Level

Lilliefors GOF Test

Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL

95% Student's-t UCL 38621

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 48585
95% Modified-t UCL (Johnson-1978) 40276

Gamma GOF Test

A-D Test Statistic 3.761
5% A-D Critical Value 0.811
K-S Test Statistic 0.321
5% K-S Critical Value 0.175

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.499	k star (bias corrected MLE)	0.469
Theta hat (MLE)	39740	Theta star (bias corrected MLE)	42250
nu hat (MLE)	27.94	nu star (bias corrected)	26.28
MLE Mean (bias corrected)	19828	MLE Sd (bias corrected)	28944
		Approximate Chi Square Value (0.05)	15.6
Adjusted Level of Significance	0.0404	Adjusted Chi Square Value	15.09

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when $n \geq 50$) 33413

95% Adjusted Gamma UCL (use when $n < 50$) 34541

Lognormal GOF Test

Shapiro Wilk Test Statistic 0.878
5% Shapiro Wilk Critical Value 0.924
Lilliefors Test Statistic 0.188
5% Lilliefors Critical Value 0.164

Shapiro Wilk Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Lilliefors Lognormal GOF Test

Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.672	Mean of logged Data	8.621
Maximum of Logged Data	12.63	SD of logged Data	1.271

Table D-2
ProUCL Output Sheets for Arsenic in Plant 2, Area 2
RACER Lansing

Assuming Lognormal Distribution

95% H-UCL	24743	90% Chebyshev (MVUE) UCL	22158
95% Chebyshev (MVUE) UCL	26823	97.5% Chebyshev (MVUE) UCL	33297
99% Chebyshev (MVUE) UCL	46015		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	37976	95% Jackknife UCL	38621
95% Standard Bootstrap UCL	37902	95% Bootstrap-t UCL	100801
95% Hall's Bootstrap UCL	103404	95% Percentile Bootstrap UCL	40583
95% BCA Bootstrap UCL	53263		
90% Chebyshev(Mean, Sd) UCL	52928	95% Chebyshev(Mean, Sd) UCL	67921
97.5% Chebyshev(Mean, Sd) UCL	88730	99% Chebyshev(Mean, Sd) UCL	129607

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL 67921

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Result (Arsenic_Area 2_0-2_no PD65)

General Statistics

Total Number of Observations	24	Number of Distinct Observations	24
		Number of Missing Observations	0
Minimum	890	Mean	7243
Maximum	53200	Median	4480
SD	10443	Std. Error of Mean	2132
Coefficient of Variation	1.442	Skewness	4.032

Normal GOF Test

Shapiro Wilk Test Statistic	0.491
5% Shapiro Wilk Critical Value	0.916
Lilliefors Test Statistic	0.32
5% Lilliefors Critical Value	0.177

Shapiro Wilk GOF Test

Data Not Normal at 5% Significance Level

Lilliefors GOF Test

Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL

95% Student's-t UCL 10897

95% UCLs (Adjusted for Skewness)

95% Adjusted-CLT UCL (Chen-1995) 12624
95% Modified-t UCL (Johnson-1978) 11189

Gamma GOF Test

A-D Test Statistic	1.29
5% A-D Critical Value	0.766
K-S Test Statistic	0.203
5% K-S Critical Value	0.182

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Table D-2
ProUCL Output Sheets for Arsenic in Plant 2, Area 2
RACER Lansing

Gamma Statistics			
k hat (MLE)	1.306	k star (bias corrected MLE)	1.17
Theta hat (MLE)	5546	Theta star (bias corrected MLE)	6188
nu hat (MLE)	62.69	nu star (bias corrected)	56.18
MLE Mean (bias corrected)	7243	MLE Sd (bias corrected)	6695
		Approximate Chi Square Value (0.05)	39.96
Adjusted Level of Significance	0.0392	Adjusted Chi Square Value	38.99

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when $n \geq 50$) 10185 95% Adjusted Gamma UCL (use when $n < 50$) 10436

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.952	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.916	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.123	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.177	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	6.791	Mean of logged Data	8.458
Maximum of Logged Data	10.88	SD of logged Data	0.837

Assuming Lognormal Distribution

95% H-UCL 10061	90% Chebyshev (MVUE) UCL	10272
95% Chebyshev (MVUE) UCL	97.5% Chebyshev (MVUE) UCL	14280
99% Chebyshev (MVUE) UCL		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	10749	95% Jackknife UCL	10897
95% Standard Bootstrap UCL	10660	95% Bootstrap-t UCL	18044
95% Hall's Bootstrap UCL	23314	95% Percentile Bootstrap UCL	11043
95% BCA Bootstrap UCL	13431		
90% Chebyshev(Mean, Sd) UCL	13638	95% Chebyshev(Mean, Sd) UCL	16535
97.5% Chebyshev(Mean, Sd) UCL	20556	99% Chebyshev(Mean, Sd) UCL	28453

Suggested UCL to Use

95% H-UCL 10061

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.

H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.

It is therefore recommended to avoid the use of H-statistic based 95% UCLs.

Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Appendix E

Photolog of Areas 5-2 and 5-3 Fill Material

Photograph Log

RACER Trust
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30075941



Photograph: 1

Description:

Photograph of asphalt roofing material observed within Area 5-2 at Plant 2

Location:

Plant 2 Area 5-2

Photograph taken by:

Alex Villhauer

Date: 6/9/2021



Photograph: 2

Description:

Another view of fill material observed within Area 5-2 at Plant 2

Location:

Plant 2 Area 5-2

Photograph taken by:

Alex Villhauer

Date: 6/9/2021

Photograph Log

RACER Trust
RACER Lansing
30075941



Photograph: 3

Description:

Close up photograph of asphalt roofing material within fill of Area 5-2.

Location:

Plant 2 Area 5-2

Photograph taken by:

Alex Villhauer

Date: 6/9/2021

Appendix F

Tier II Data Evaluation Summary

Racer – Lansing Plant 2 and Plant 3

Data Review

Lansing, Michigan

Semivolatile Organic Compounds (SVOCs) and Metals Analyses

SDG # S23017

Laboratory Analyses Performed By:

Merit Laboratories Inc.

East Lansing, Michigan

Report #45890R

Review Level: Tier II

Project: 30112892.0201

Summary

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # S23017 for samples collected in association with Plants 2 and Plant 3 in Lansing Michigan. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
					SVOC	MET	MISC
SB-A2-PD68_0.5-1(040721)	S23017.01	Soil	4/7/2021			X	
SB-A2-PD68_1-2(040721)	S23017.02	Soil	4/7/2021			X	
SB-A2-PA68_0.5-1(040721)	S23017.03	Soil	4/7/2021			X	
SB-A2-PA68_1-2(040721)	S23017.04	Soil	4/7/2021			X	
SB-A2-OX68_0.5-1(040721)	S23017.05	Soil	4/7/2021			X	
SB-A2-OX68_1-2(040721)	S23017.06	Soil	4/7/2021			X	
SB-A2-PD65_0-1(040721)	S23017.07	Soil	4/7/2021			X	
SB-A2-PD65_1-2(040721)	S23017.10	Soil	4/7/2021			X	
SB-A2-PA65_0-1(040721)	S23017.11	Soil	4/7/2021			X	
SB-A2-OX65_0-1(040721)	S23017.12	Soil	4/7/2021			X	
SB-A2-OX65_1-2(040721)	S23017.13	Soil	4/7/2021			X	
SB-A2-PD62_0-1(040721)	S23017.14	Soil	4/7/2021			X	
SB-A2-PD62_1-2(040721)	S23017.15	Soil	4/7/2021			X	
SB-A2-PA62_0-1(040721)	S23017.16	Soil	4/7/2021			X	
SB-A2-PA62_1-2(040721)	S23017.17	Soil	4/7/2021			X	
SB-A2-OX62_0-1(040721)	S23017.18	Soil	4/7/2021			X	
SB-A2-OX62_1-2(040721)	S23017.19	Soil	4/7/2021			X	
DUP-01(040721)	S23017.20	Soil	4/7/2021	SB-A2-PA68_1-2(040721)		X	
DUP-02(040721)	S23017.21	Soil	4/7/2021	SB-A2-PA62_0-1(040721)		X	
SB-A5.2-OG161_0-1(040821)	S23017.22	Soil	4/8/2021		X		
SB-A5.2-OG161_1-2(040821)	S23017.23	Soil	4/8/2021		X		
SB-A5.2-OF162_0-1(040821)	S23017.24	Soil	4/8/2021		X		
SB-A5.2-OF162_1-2(040821)	S23017.25	Soil	4/8/2021		X		

Data Review Report

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
					SVOC	MET	MISC
SB-A5.2-OG163_0-1(040821)	S23017.26	Soil	4/8/2021		X		
SB-A5.2-OG163_1-2(040821)	S23017.27	Soil	4/8/2021		X		
SB-A5.3-OY123_1-2(040821)	S23017.30	Soil	4/8/2021		X		
SB-A5.3-OY123_2-3(040821)	S23017.31	Soil	4/8/2021		X		
SB-A5.3-OX122_1-2(040821)	S23017.32	Soil	4/8/2021		X		
SB-A5.3-OX122_2-3(040821)	S23017.33	Soil	4/8/2021		X		
SB-A5.3-OW123_1-2(040821)	S23017.34	Soil	4/8/2021		X		
SB-A5.3-OW123_2-3(040821)	S23017.35	Soil	4/8/2021		X		
SB-A18-CJ150_1-2(040821)	S23017.38	Soil	4/8/2021		X		
SB-A18-CJ150_2-3(040821)	S23017.39	Soil	4/8/2021		X		
SB-A18-CJ149_1-2(040821)	S23017.40	Soil	4/8/2021		X		
SB-A18-CJ149_2-3(040821)	S23017.41	Soil	4/8/2021		X		
SB-A18-CI150_1-2(040821)	S23017.42	Soil	4/8/2021		X		
SB-A18-CI150_2-3(040821)	S23017.43	Soil	4/8/2021		X		
SB-A18-CJ151_1-2(040821)	S23017.44	Soil	4/8/2021		X		
SB-A18-CJ151_2-3(040821)	S23017.45	Soil	4/8/2021		X		
SB-A18-CK150_1.5-2(040821)	S23017.46	Soil	4/8/2021		X		
SB-A18-CK150_2-3(040821)	S23017.47	Soil	4/8/2021		X		
DUP-03(040821)	S23017.48	Soil	4/8/2021	SB-A5.2-OG161_0-1(040821)	X		
DUP-04(040821)	S23017.49	Soil	4/8/2021	SB-A5.3-OY123_1-2(040821)	X		
DUP-05(040821)	S23017.50	Soil	4/8/2021	SB-A18-CJ150_1-2(040821)	X		
SB-A5.2-OG160_0-1(040821)	S23017.51	Soil	4/8/2021		X		
SB-A5.2-OG160_1-2(040821)	S23017.52	Soil	4/8/2021		X		
SB-A5.2-OH160_0.5-1(040821)	S23017.53	Soil	4/8/2021		X		
SB-A5.2-OH160_2-3(040821)	S23017.54	Soil	4/8/2021		X		
SB-A5.2-OG165_2-3(040821)	S23017.55	Soil	4/8/2021		X		
SB-A5.3-OV123_1-2(040921)	S23017.56	Soil	4/9/2021		X		
SB-A5.3-OV123_2-3(040921)	S23017.57	Soil	4/9/2021		X		
SB-A5.3-OV122_1-2(040921)	S23017.58	Soil	4/9/2021		X		

Data Review Report

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis		
					SVOC	MET	MISC
SB-A5.3-OV122_2-3(040921)	S23017.59	Soil	4/9/2021		X		
SB-A5.3-OX121_1-2(040921)	S23017.60	Soil	4/9/2021		X		
SB-A5.3-OX121_2-3(040921)	S23017.61	Soil	4/9/2021		X		
SB-A5.3-OZ123_1-2(040921)	S23017.62	Soil	4/9/2021		X		
SB-A5.3-OZ123_2-3(040921)	S23017.63	Soil	4/9/2021		X		
SB-A5.2-OF162A_1-2(040921)	S23017.64	Soil	4/9/2021		X		
SB-A5.2-OF162A_2-3(040921)	S23017.65	Soil	4/9/2021		X		

Note:

1. The matrix spike/matrix spike duplicate analysis was performed on sample SB-A2-PD65_0-1(040721) for metals analysis and sample SB-A5.2-OG163_1-2(040821), and SB-A5.3-OW123_2-3(040821) for SVOC analysis.

Analytical Data Package Documentation

The table below evaluates the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed chain-of-custody form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data package completeness and compliance		X		X	

Note:

QA = quality assurance

Organic Analysis Introduction

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8270D. Data were reviewed in accordance with USEPA National Functional Guidelines NFG for Organic Superfund Methods Data Review, EPA-540-R-20-005 (November 2020), with reference to the historical (USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
 - B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- Quantitation (Q) Qualifiers
 - E The compound was quantitated above the calibration range.
 - D Concentration is based on a diluted sample analysis.
- Validation Qualifiers
 - J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
 - JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
 - UB Compound is considered non-detect at the listed value due to associated blank contamination.
 - N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
 - R The sample results are rejected.

The "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second

fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Semivolatile Organic Compound (SVOC) Analyses

1. Holding Times

The specified holding times for the following methods are presented in the table below.

Method	Matrix	Holding Time	Preservation
SW-846 8270	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

Note:

< = less than

°C = degrees Celsius

The analyses that exceeded the holding are presented in the following table.

Sample Locations	Holding Time	Criteria
SB-A5.2-OG160_0-1(040821) SB-A5.2-OG160_1-2(040821) SB-A5.2-OH160_0.5-1(040821) SB-A5.2-OH160_2-3(040821) SB-A5.2-OG165_2-3(040821) SB-A5.3-OV123_1-2(040921) SB-A5.3-OV123_2-3(040921) SB-A5.3-OV122_1-2(040921) SB-A5.3-OV122_2-3(040921) SB-A5.3-OX121_1-2(040921) SB-A5.3-OX121_2-3(040921) SB-A5.3-OZ123_1-2(040921) SB-A5.3-OZ123_2-3(040921) SB-A5.2-OF162A_1-2(040921) SB-A5.2-OF162A_2-3(040921)	Extraction completed >14 days but < 28 days	<14 Days

Sample results associated with sample locations analyzed by analytical method SW-846 8270D were qualified, as specified in the table below. All other holding times were met.

Criteria	Qualification	
	Detected Analytes	Non-detect Analytes
Extraction completed less than two times holding time	J	UJ

Note:

The samples listed in the table above were extracted by the laboratory beyond the method required 14-day hold time. The industry standard for grossly exceeding the hold time is two times the 14-day method required hold time

from sample collection to extraction is 28 days. Sample locations listed in the table above were extracted less than 28 days; therefore, the associated sample results were qualified as estimate.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

Sample locations associated with the MS/MSD exhibiting recoveries outside of the control limits are presented in the following table.

Sample Locations	Compound	MS Recovery	MSD Recovery
SB-A5.2-OG163_1-2(040821)	Benzo(a)pyrene	AC	>UL
SB-A5.3-OW123_2-3(040821)	Benzo(a)pyrene	AC	>UL

Note:

AC = acceptable

The criteria used to evaluate the MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No Action
	Detect	J
< the lower control limit (LL) but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Parent sample concentration > four times the MS/MSD spiking solution concentration.	Detect	No Action
	Non-detect	

Sample locations associated with MS/MSD recoveries exhibiting an RPD greater than the control limit are presented in the following table.

Sample Locations	Compound
SB-A5.2-OG163_1-2(040821)	Benzo(a)pyrene

The criteria used to evaluate the RPD between the MS/MSD recoveries are presented in the following table. In the case of an RPD deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	UJ
	Detect	J

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the accuracy and precision of the analytical method independent of matrix interferences. The compounds associated with the LCS/LCSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

The LCS/LCSD analysis exhibited recoveries and RPDs within the control limits.

6. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil.

Results for duplicate samples are summarized in the following table.

Sample ID/ Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-A5.2-OG161_0-1(040821) / DUP-03(040821)	Benzo(a)pyrene	29700	10600	94.7%
SB-A5.3-OY123_1-2(040821) / DUP-04(040821)	Benzo(a)pyrene	21500	10200	71.2%
SB-A18-CJ150_1-2(040821) / DUP-05(040821)	Benzo(a)pyrene	7600	16300	72.8%

The compound benzo(a)pyrene associated with sample locations SB-A5.2-OG161_0-1(040821) and DUP-03(040821), sample locations SB-A5.3-OY123_1-2(040821) and DUP-04(040821), and sample locations SB-A18-CJ150_1-2(040821) and DUP-05(040821) exhibited a field duplicate RPDs greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

7. System Performance and Overall Assessment

Internal standard review is not included with level 2 reports, however, several samples were flagged by the laboratory due to internal standard deviations. Therefore, further review of internal standard summaries were evaluated within this data review.

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

Sample locations associated with internal standards exhibiting responses outside of the control limits are presented in the following table.

Sample Locations	Internal Standard	Response
SB-A5.2-OG161_0-1(040821) (initial and replicate)	Perylene-d12	< 25%
SB-A5.2-OG161_1-2(040821) (initial)		< LL but > 25%
SB-A5.2-OG161_1-2(040821) (replicate)		AC
SB-A5.2-OF162_0-1(040821) (initial and replicate)		< 25%
SB-A5.2-OG163_0-1(040821) (initial and replicate)		< 25%
SB-A5.2-OG163_1-2(040821) (initial and replicate)		< LL but > 25%

Data Review Report

Sample Locations	Internal Standard	Response
SB-A5.3-OX122_1-2(040821) (initial and replicate)		< LL but > 25%
SB-A5.2-OG160_0-1(040821) (initial and replicate)		< LL but > 25%

Note:

AC = acceptable

The criteria used to evaluate the internal standard responses are presented in the following table. In the case of an internal standard deviation, the compounds quantitated under the deviant internal standard are qualified as documented in the table below.

Control limit	Sample Result	Qualification
> the upper control limit (UL)	Non-detect	No action
	Detect	J
< the lower control limit (LL) but > 25%	Non-detect	UJ
	Detect	J
< 25%	Non-detect	R
	Detect	J

In the instance when the initial and replicate internal standard recoveries are both outside the control limits in table above, the initial analysis was used for reporting.

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checklist for SVOCs

SVOCs: SW-846 8270D	Reported		Performance Acceptable		Not Required	
	No	Yes	No	Yes		
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)						
Tier II Validation						
Holding times		X	X			
Reporting limits (units)		X		X		
Blanks						
A. Method blanks		X		X		
B. Equipment blanks	X				X	
Laboratory Control Sample (LCS)		X		X		
Laboratory Control Sample Duplicate (LCSD)		X		X		
LCS/LCSD Precision (RPD)		X		X		
Matrix Spike (MS)		X	X			
Matrix Spike Duplicate (MSD)		X	X			
MS/MSD Precision (RPD)		X	X			
Field/Lab Duplicate (RPD)		X	X			
Surrogate Spike Recoveries		X		X		
Dilution Factor		X		X		
Moisture Content	X				X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

Inorganic Analysis Introduction

Analyses were performed according to United States Environmental Protection Agency (USEPA) Method 6020A. Data were reviewed in accordance with the USEPA National Functional Guidelines NFG for Inorganic Superfund Methods Data Review, EPA-540-R-20-006 (November 2020), with reference to the historical (USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-05A-P, October 2004, as appropriate).

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers
 - U The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
 - J The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).
- Quantitation (Q) Qualifiers
 - E The reported value is estimated due to the presence of interference.
 - N Spiked sample recovery is not within control limits.
 - * Duplicate analysis is not within control limits.
- Validation Qualifiers
 - J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
 - UJ The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
 - UB Analyte considered non-detect at the listed value due to associated blank contamination.
 - R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Metals Analyses

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6020A	Soil	180 days from collection to analysis	Cool to <6 °C.

Samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were detected in the associated QA blanks; however, the associated sample results were greater than the BAL and/or were non-detect. Therefore, no other qualification of the sample results was required.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the analyte's concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

Analytes associated with MS/MSD recoveries were within control limits with the exception of the following analyte present in the table below.

DATA USABILITY SUMMARY REPORT

Sample Location	Analyte	MS Recovery	MSD Recovery
SB-A2-PD65_0-1(040721)	Arsenic	217%	257%

The criteria used to evaluate MS/MSD recoveries are presented in the following table. In the case of an MS/MSD deviation, the sample results are qualified. The qualifications are applied to all sample results associated with this SDG.

Control limit	Sample Result	Qualification
MS/MSD percent recovery 30% to 74%	Non-detect	UJ
	Detect	J
MS/MSD percent recovery <30%	Non-detect	R
	Detect	J
MS/MSD percent recovery >125%	Non-detect	No Action
	Detect	J

3.2 Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for water matrices and 35% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one time the RL is applied for water matrices and two times the RL for soil matrices.

A laboratory duplicate analysis was not performed within this SDG.

4. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of three times the RL is applied for soil.

Results for duplicate samples are summarized in the following table.

Sample ID/ Duplicate ID	Analyte	Sample Result	Duplicate Result	RPD
SB-A2-PA68_1-2(040721) / DUP-01(040721)	Arsenic	4.82	2.81	52.6%
SB-A2-PA62_0-1(040721) / DUP-02(040721)	Arsenic	6.75	5.21	25.7%

DATA USABILITY SUMMARY REPORT

The analyte arsenic associated with sample locations SB-A2-PA68_1-2(040721) and DUP-01(040721) exhibited a field duplicate RPD greater than the control limit. The associated sample results from sample locations for the listed analyte were qualified as estimated.

5. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit a percent recovery between the control limits of 80% and 120%.

The LCS analysis exhibited recoveries within the control limits.

6. Serial Dilution

The serial dilution analysis is used to assess if a significant physical or chemical interference exists due to sample matrix. Analytes exhibiting concentrations greater than 50 times the MDL in the undiluted sample are evaluated to determine if matrix interference exists. These analytes are required to have less than a 10% difference (%D) between sample results from the undiluted (parent) sample and results associated with the same sample analyzed with a five-fold dilution.

The serial dilution analysis was not performed on a sample location within this SDG.

8. General Assessment – Total vs. Dissolved

When the dissolved concentration exceeded the associated total concentration, and both results were five times greater than the RL, then the %D between the total and dissolved concentrations must be less than 20%.

The calculated %D between the total and the dissolved sample results were within the control limit.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checklist for Metals

METALS; SW-846 6020A	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Instrument Blanks	X				X
B. Method Blanks		X		X	
C. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS)		X		X	
Matrix Spike (MS) %R		X	X		
Matrix Spike Duplicate (MSD) %R		X	X		
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X	X		
ICP Serial Dilution %D	X				X
Total vs. Dissolved		X		X	
Reporting Limit Verification		X		X	

Notes:

%R Percent recovery

RPD Relative percent difference

DATA USABILITY SUMMARY REPORT

VALIDATION PERFORMED BY: Todd Church

SIGNATURE:



DATE: June 22, 2022 (Revised 7/25/2022)

PEER REVIEW: Dennis Capria

DATE: June 23, 2022

Chain of Custody Corrected Sample Analysis Data Sheets



2680 East Lansing Dr., East Lansing, MI 48823
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C.O.C. PAGE # 3 OF 5

142595

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <i>Tiffany Linder</i>			
COMPANY <i>Arcadis</i>			
ADDRESS <i>28550 Cabot Drive, Suite 500</i>			
CITY <i>NoVI</i>	STATE <i>MI</i>	ZIP CODE <i>48317</i>	
PHONE NO. <i>810-225-1928</i>	FAX NO.	P.O. NO. <i>30075941.01101</i>	QUOTE NO.
E-MAIL ADDRESS <i>Tiffany.Linder@arcadis.com</i> <i>Alex.Villhauer@arcadis.com</i>			

CONTACT NAME <i>ASAME</i>		
COMPANY		
ADDRESS		
CITY	STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME <i>30075941.01101 / RACER Lansing</i>	SAMPLER(S) - PLEASE PRINT/SIGN NAME <i>Austin Westhuis / Kim C. Wink</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

MATRIX CODE:	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID	
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	W=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Ar Sen	Ben Z0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Alex Villhauer / Arcadis</i>	☒ Sampler	DATE <i>4/9/21</i>	TIME <i>1210</i>
RECEIVED BY: SIGNATURE/ORGANIZATION <i>M. Alcala</i>		DATE <i>4/9/21</i>	TIME <i>1210</i>
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL: <i>3.4</i>

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



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C.O.C. PAGE # 5 OF 5

142597

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME <i>Tiffany Linder</i>			
COMPANY <i>Arcadis</i>			
ADDRESS <i>28550 Cabot Drive, Suite 500</i>			
CITY <i>Novi</i>	STATE <i>MI</i>	ZIP CODE <i>48377</i>	
PHONE NO. <i>810-225-1928</i>	FAX NO.	P.O. NO. <i>30075941.01101</i>	QUOTE NO.
E-MAIL ADDRESS <i>Tiffany.Linder@arcadis.com</i> <i>Alex.Villhauer@arcadis.com</i>			

CONTACT NAME ☒ SAME		
COMPANY		
ADDRESS		
CITY	STATE	ZIP CODE
PHONE NO.	E-MAIL ADDRESS	

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME <i>30075941.01101 / RACER Lansing</i>	SAMPLER(S) - PLEASE PRINT/SIGN NAME <i>Austin Westhuis</i>
TURNAROUND TIME REQUIRED ☐ 1 DAY ☐ 2 DAYS ☐ 3 DAYS ☒ STANDARD ☐ OTHER	
DELIVERABLES REQUIRED ☐ STD ☐ LEVEL II ☐ LEVEL III ☐ LEVEL IV ☐ EDD ☐ OTHER	

MATRIX CODE:	GW=GROUNDWATER	WW=WASTEWATER	S=SOIL	L=LIQUID	SD=SOLID	
	SL=SLUDGE	DW=DRINKING WATER	O=OIL	WP=WIPE	A=AIR	W=WASTE

Containers & Preservatives

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER
	DATE	TIME										
<i>2301755</i>	<i>4/8/21</i>	<i>1630</i>	<i>SB-A5.2-OG165-2-3(040821)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.56</i>	<i>4/9/21</i>	<i>0925</i>	<i>SB-A5.3-OV123-1-2(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.57</i>	<i>4/9/21</i>	<i>0930</i>	<i>SB-A5.3-OV123-2-3(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.58</i>	<i>4/9/21</i>	<i>1015</i>	<i>SB-A5.3-OV122-1-2(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.59</i>	<i>4/9/21</i>	<i>1020</i>	<i>SB-A5.3-OV122-2-3(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.60</i>	<i>4/9/21</i>	<i>1030</i>	<i>SB-A5.3-0X121-1-2(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.61</i>	<i>4/9/21</i>	<i>1035</i>	<i>SB-A5.3-0X121-2-3(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.62</i>	<i>4/9/21</i>	<i>1045</i>	<i>SB-A5.3-02123-1-2(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.63</i>	<i>4/9/21</i>	<i>1050</i>	<i>SB-A5.3-02123-2-3(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.64</i>	<i>4/9/21</i>	<i>1105</i>	<i>SB-A5.2-OF162A-1-2(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						
<i>.65</i>	<i>4/9/21</i>	<i>1110</i>	<i>SB-A5.2-OF162A-2-3(040921)</i>	<i>S</i>	<i>1</i>	<i>1</i>						

Arsenic
Benz(a)pyrene

Certifications

☐ OHIO VAP ☐ Drinking Water
☐ DoD ☐ NPDES

Project Locations

☐ Detroit ☐ New York

☒ Other *MI*

Special Instructions

Hold

Hold

Hold

Hold

Hold

Hold

Hold

Hold

Hold

Hold

Hold

RELINQUISHED BY: SIGNATURE/ORGANIZATION <i>Austin Westhuis / Arcadis</i>	☒ Sampler	DATE <i>4/9/21</i>	TIME <i>1210</i>
RECEIVED BY: SIGNATURE/ORGANIZATION <i>MC Calco</i>		DATE <i>4/9/21</i>	TIME <i>1210</i>
RELINQUISHED BY: SIGNATURE/ORGANIZATION		DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION		DATE	TIME

RELINQUISHED BY: SIGNATURE/ORGANIZATION	DATE	TIME
RECEIVED BY: SIGNATURE/ORGANIZATION	DATE	TIME
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
SEAL NO.	SEAL INTACT YES ☐ NO ☐	INITIALS
NOTES:		TEMP. ON ARRIVAL <i>3.4</i>

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE

Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
B	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
H	Sample submitted and run outside of holding time
I	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
O	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
T	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
e	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched

**Lab Sample ID: S23017.01**

Sample Tag: SB-A2-PD68_0.5-1(040721)

Collected Date/Time: 04/07/2021 12:55

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	91	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:02, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	7.59	0.20		mg/kg	243	7440-38-2	J

**Lab Sample ID: S23017.02**

Sample Tag: SB-A2-PD68_1-2(040721)

Collected Date/Time: 04/07/2021 13:00

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:05, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.66	0.20		mg/kg	260	7440-38-2	J

**Lab Sample ID: S23017.03**

Sample Tag: SB-A2-PA68_0.5-1(040721)

Collected Date/Time: 04/07/2021 13:10

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	79	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:06, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	6.80	0.20		mg/kg	273	7440-38-2	J

**Lab Sample ID: S23017.04**

Sample Tag: SB-A2-PA68_1-2(040721)

Collected Date/Time: 04/07/2021 13:15

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:08, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.82	0.20		mg/kg	252	7440-38-2	J

**Lab Sample ID: S23017.05**

Sample Tag: SB-A2-OX68_0.5-1(040721)

Collected Date/Time: 04/07/2021 13:25

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:12, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	6.21	0.20		mg/kg	181	7440-38-2	J

**Lab Sample ID: S23017.06**

Sample Tag: SB-A2-OX68_1-2(040721)

Collected Date/Time: 04/07/2021 13:30

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:13, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.86	0.20		mg/kg	175	7440-38-2	J

**Lab Sample ID: S23017.07**

Sample Tag: SB-A2-PD65_0-1(040721)

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:15, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	70.8	0.20		mg/kg	231	7440-38-2	J

**Lab Sample ID: S23017.08**

Sample Tag: SB-A2-PD65_0-1(040721) MS

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:23, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	126	0.20		mg/kg	254	7440-38-2	J

**Lab Sample ID: S23017.09**

Sample Tag: SB-A2-PD65_0-1(040721) MSD

Collected Date/Time: 04/07/2021 14:20

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:24, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	136	0.20		mg/kg	234	7440-38-2	J

**Lab Sample ID: S23017.10**

Sample Tag: SB-A2-PD65_1-2(040721)

Collected Date/Time: 04/07/2021 14:30

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:19, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	307	1.0		mg/kg	1195	7440-38-2	J

**Lab Sample ID: S23017.11**

Sample Tag: SB-A2-PA65_0-1(040721)

Collected Date/Time: 04/07/2021 14:45

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:21, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	14.2	0.20		mg/kg	241	7440-38-2	J

**Lab Sample ID: S23017.12**

Sample Tag: SB-A2-OX65_0-1(040721)

Collected Date/Time: 04/07/2021 15:00

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	79	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:22, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	3.92	0.20		mg/kg	269	7440-38-2	J

**Lab Sample ID: S23017.13**

Sample Tag: SB-A2-OX65_1-2(040721)

Collected Date/Time: 04/07/2021 15:05

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	78	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:32, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	4.30	0.20		mg/kg	257	7440-38-2	J

**Lab Sample ID: S23017.14**

Sample Tag: SB-A2-PD62_0-1(040721)

Collected Date/Time: 04/07/2021 15:40

Matrix: Soil

COC Reference: 142592

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:34, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	5.91	0.20		mg/kg	262	7440-38-2	J

**Lab Sample ID: S23017.15**

Sample Tag: SB-A2-PD62_1-2(040721)

Collected Date/Time: 04/07/2021 15:45

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:35, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	3.53	0.20		mg/kg	247	7440-38-2	J

**Lab Sample ID: S23017.16**

Sample Tag: SB-A2-PA62_0-1(040721)

Collected Date/Time: 04/07/2021 15:55

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:36, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	6.75	0.20		mg/kg	258	7440-38-2	J

**Lab Sample ID: S23017.17**

Sample Tag: SB-A2-PA62_1-2(040721)

Collected Date/Time: 04/07/2021 16:00

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:38, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.94	0.20		mg/kg	247	7440-38-2	J

**Lab Sample ID: S23017.18**

Sample Tag: SB-A2-OX62_0-1(040721)

Collected Date/Time: 04/07/2021 16:05

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	79	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:39, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	9.02	0.20		mg/kg	266	7440-38-2	J

**Lab Sample ID: S23017.19**

Sample Tag: SB-A2-OX62_1-2(040721)

Collected Date/Time: 04/07/2021 16:10

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:41, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	5.90	0.20		mg/kg	244	7440-38-2	J

**Lab Sample ID: S23017.20**

Sample Tag: DUP-01(040721)

Collected Date/Time: 04/07/2021 00:01

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Metals**Method: SW6020A, Run Date: 04/14/21 11:43, Analyst: CCM**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	2.81	0.20		mg/kg	231	7440-38-2	J



Lab Sample ID: S23017.21

Sample Tag: DUP-02(040721)

Collected Date/Time: 04/07/2021 00:01

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Metal Digestion	Completed	SW3050B	04/14/21 09:45	CCM	

Inorganics

Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Metals

Method: SW6020A, Run Date: 04/14/21 11:44, Analyst: CCM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Arsenic	5.21	0.20		mg/kg	247	7440-38-2	J

**Lab Sample ID: S23017.22**

Sample Tag: SB-A5.2-OG161_0-1(040821)

Collected Date/Time: 04/08/2021 09:40

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	77	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 21:56, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	29,700	300		ug/kg	10	50-32-8	I J

Method: SW8270D, Run Date: 04/16/21 17:18, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	25,100	300		ug/kg	10		I

I-Matrix interference with internal standard



Lab Sample ID: S23017.23

Sample Tag: SB-A5.2-OG161_1-2(040821)

Collected Date/Time: 04/08/2021 09:45

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics

Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

~~Organics - Semi-Volatiles~~~~Method: SW8270D, Run Date: 04/15/21 21:01, Analyst: PL~~

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	6,200	300		ug/kg	10	~~50-32-8~~	~~I~~

Method: SW8270D, Run Date: 04/16/21 15:27, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	5,700	300		ug/kg	10		

I-Matrix interference with internal standard

**Lab Sample ID: S23017.24**

Sample Tag: SB-A5.2-OF162_0-1(040821)

Collected Date/Time: 04/08/2021 10:00

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 21:38, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	18,300	300		ug/kg	10	50-32-8	~~I~~ J

Method: SW8270D, Run Date: 04/16/21 17:40, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	15,800	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.25**

Sample Tag: SB-A5.2-OF162_1-2(040821)

Collected Date/Time: 04/08/2021 10:05

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 19:11, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	5,500	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.26**

Sample Tag: SB-A5.2-OG163_0-1(040821)

Collected Date/Time: 04/08/2021 10:15

Matrix: Soil

COC Reference: 142593

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 22:14, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	39,000	300		ug/kg	10	50-32-8	I J

Method: SW8270D, Run Date: 04/16/21 18:02, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	34,500	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.27**

Sample Tag: SB-A5.2-OG163_1-2(040821)

Collected Date/Time: 04/08/2021 10:20

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/09/21 16:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 20:06, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	11,500	300		ug/kg	10	50-32-8	I J

Method: SW8270D, Run Date: 04/16/21 15:49, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	11,000	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.30**

Sample Tag: SB-A5.3-OY123_1-2(040821)

Collected Date/Time: 04/08/2021 10:45

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 19:30, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	21,500	300		ug/kg	10	50-32-8	J

**Lab Sample ID: S23017.31**

Sample Tag: SB-A5.3-OY123_2-3(040821)

Collected Date/Time: 04/08/2021 10:50

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	81	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 16:45, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,600	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.32**

Sample Tag: SB-A5.3-OX122_1-2(040821)

Collected Date/Time: 04/08/2021 11:05

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 21:20, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	15,300	300		ug/kg	10	50-32-8	I J

Method: SW8270D, Run Date: 04/16/21 16:56, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	13,300	300		ug/kg	10		I

I-Matrix interference with internal standard

**Lab Sample ID: S23017.33**

Sample Tag: SB-A5.3-OX122_2-3(040821)

Collected Date/Time: 04/08/2021 11:10

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 19:48, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,400	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.34**

Sample Tag: SB-A5.3-OW123_1-2(040821)

Collected Date/Time: 04/08/2021 11:30

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 17:03, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	5,300	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.35**

Sample Tag: SB-A5.3-OW123_2-3(040821)

Collected Date/Time: 04/08/2021 11:35

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 14:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 17:22, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	4,700	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.38**

Sample Tag: SB-A18-CJ150_1-2(040821)

Collected Date/Time: 04/08/2021 13:10

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 18:16, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	7,600	300		ug/kg	10	50-32-8	J

**Lab Sample ID: S23017.39**

Sample Tag: SB-A18-CJ150_2-3(040821)

Collected Date/Time: 04/08/2021 13:15

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 18:35, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	21,900	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.40**

Sample Tag: SB-A18-CJ149_1-2(040821)

Collected Date/Time: 04/08/2021 13:25

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/13/21 17:00	TTV	

Inorganics**Method: SM2540B, Run Date: 04/12/21 20:57, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/15/21 18:53, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	15,000	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.41**

Sample Tag: SB-A18-CJ149_2-3(040821)

Collected Date/Time: 04/08/2021 13:30

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 02:52, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,300	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.42**

Sample Tag: SB-A18-CI150_1-2(040821)

Collected Date/Time: 04/08/2021 13:35

Matrix: Soil

COC Reference: 142595

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 03:14, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,500	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.43**

Sample Tag: SB-A18-CI150_2-3(040821)

Collected Date/Time: 04/08/2021 13:40

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 03:36, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	4,400	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.44**

Sample Tag: SB-A18-CJ151_1-2(040821)

Collected Date/Time: 04/08/2021 13:50

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	90	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 03:58, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	6,200	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.45**

Sample Tag: SB-A18-CJ151_2-3(040821)

Collected Date/Time: 04/08/2021 13:55

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 04:20, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	3,000	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.46**

Sample Tag: SB-A18-CK150_1.5-2(040821)

Collected Date/Time: 04/08/2021 14:20

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	91	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 00:40, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	

**Lab Sample ID: S23017.47**

Sample Tag: SB-A18-CK150_2-3(040821)

Collected Date/Time: 04/08/2021 14:25

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics**Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 04/17/21 01:02, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	



Lab Sample ID: S23017.48

Sample Tag: DUP-03(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics

Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	83	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 04/17/21 05:26, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	10,600	300		ug/kg	10	50-32-8	J



Lab Sample ID: S23017.49

Sample Tag: DUP-04(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics

Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	84	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 04/17/21 04:42, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	10,200	300		ug/kg	10	50-32-8	J



Lab Sample ID: S23017.50

Sample Tag: DUP-05(040821)

Collected Date/Time: 04/08/2021 00:01

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	04/15/21 13:00	CM	

Inorganics

Method: SM2540B, Run Date: 04/12/21 21:20, Analyst: ELR

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 04/17/21 05:04, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	16,300	300		ug/kg	10	50-32-8	J



Lab Sample ID: S23017.51

Sample Tag: SB-A5.2-OG160_0-1(040821)

Collected Date/Time: 04/08/2021 15:05

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics

Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	76	1		%	1		

Organics - Semi-Volatiles

Method: SW8270D, Run Date: 05/04/21 03:27, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,000	300		ug/kg	10	50-32-8	IG J

Method: SW8270D, Run Date: 05/05/21 01:55, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene (Replicate 01)	2,700	300		ug/kg	10		IG

F-Analysis run outside of holding time

I-Matrix interference with internal standard G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.52**

Sample Tag: SB-A5.2-OG160_1-2(040821)

Collected Date/Time: 04/08/2021 15:10

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/04/21 03:10, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	2,900	300		ug/kg	10	50-32-8	~~C~~ J

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.53**

Sample Tag: SB-A5.2-OH160_0.5-1(040821)

Collected Date/Time: 04/08/2021 15:25

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 20:50, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.54**

Sample Tag: SB-A5.2-OH160_2-3(040821)

Collected Date/Time: 04/08/2021 15:30

Matrix: Soil

COC Reference: 142596

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:08, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	~~G~~

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.55**

Sample Tag: SB-A5.2-OG165_2-3(040821)

Collected Date/Time: 04/08/2021 16:30

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	80	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:25, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.56**

Sample Tag: SB-A5.3-OV123_1-2(040921)

Collected Date/Time: 04/09/2021 09:25

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/04/21 02:36, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	8,100	300		ug/kg	10	50-32-8	~~G~~ J

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.57**

Sample Tag: SB-A5.3-OV123_2-3(040921)

Collected Date/Time: 04/09/2021 09:30

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/04/21 02:53, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	1,200	300		ug/kg	10	50-32-8	~~G~~ J

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.58**

Sample Tag: SB-A5.3-OV122_1-2(040921)

Collected Date/Time: 04/09/2021 10:15

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	88	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:42, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	300	300		ug/kg	10	50-32-8	G J

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.59**

Sample Tag: SB-A5.3-OV122_2-3(040921)

Collected Date/Time: 04/09/2021 10:20

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 21:59, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	~~G~~ UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.60**

Sample Tag: SB-A5.3-OX121_1-2(040921)

Collected Date/Time: 04/09/2021 10:30

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	82	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 22:17, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	~~G~~

UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.61**

Sample Tag: SB-A5.3-OX121_2-3(040921)

Collected Date/Time: 04/09/2021 10:35

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 22:34, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	~~G~~ UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.62**

Sample Tag: SB-A5.3-OZ123_1-2(040921)

Collected Date/Time: 04/09/2021 10:45

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 22:51, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.63**

Sample Tag: SB-A5.3-OZ123_2-3(040921)

Collected Date/Time: 04/09/2021 10:50

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 23:08, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	~~G~~ UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.64**

Sample Tag: SB-A5.2-OF162A_1-2(040921)

Collected Date/Time: 04/09/2021 11:05

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	86	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 23:26, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	~~C~~ UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

**Lab Sample ID: S23017.65**

Sample Tag: SB-A5.2-OF162A_2-3(040921)

Collected Date/Time: 04/09/2021 11:10

Matrix: Soil

COC Reference: 14297

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	4oz Glass	None	Yes	3.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
PNA Extraction*	Completed	SW3546	05/01/21 13:46	PTW	F

Inorganics**Method: SM2540B, Run Date: 04/29/21 18:20, Analyst: REJ**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	85	1		%	1		

Organics - Semi-Volatiles**Method: SW8270D, Run Date: 05/03/21 23:43, Analyst: PL**

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Benzo(a)pyrene	Not detected	300		ug/kg	10	50-32-8	G

UJ

F-Analysis run outside of holding time

G-Estimated result due to extraction run outside of holding time

Appendix G

Exposure Barrier Inspection Checklist

MAINTENANCE OF EXPOSURE BARRIERS
INSPECTION LOG SHEET
RACER Trust Plants 2 and 3 – Lansing, Michigan

DATE: _____

TIME: _____

Inspection		
Is the Surface Cover Consistent With Existing Conditions?		
Exposure Barrier	Condition Satisfactory (X)	Condition Unsatisfactory (X)
Plant 2 - Area 2	☐	☐
Plant 2 - Area 5-2	☐	☐
Plant 2 - Area 5-3	☐	☐
Plant 3 - Area 14	☐	☐
Plant 3 - Area 18	☐	☐
Plant 3 - Area 19	☐	☐

Comments*:

Print Name (Inspector): _____

Inspector's Signature: _____

*Comments and photos attached

MAINTENANCE OF EXPOSURE BARRIERS
INSPECTION LOG SHEET
RACER Trust Plants 2 and 3 – Lansing, Michigan

Exposure Barrier	Groundcover Condition (Describe weathering, erosion, settling, water ponding, vegetation growth, etc.)	Overall Condition (Good / Fair / Poor)	Photo Notes (Attach labelled photographs)
Plant 2 Area 2 Exposure Barrier			1. 2. 3. 4.
Plant 2 Area 5-2 Exposure Barrier			1. 2. 3. 4.
Plant 2 Area 5-3 Exposure Barrier			1. 2. 3. 4.

MAINTENANCE OF EXPOSURE BARRIERS
INSPECTION LOG SHEET
RACER Trust Plants 2 and 3 – Lansing, Michigan

Exposure Barrier	Groundcover Condition (Describe weathering, erosion, settling, water ponding, vegetation growth, etc.)	Overall Condition (Good / Fair / Poor)	Photo Notes (Attach labelled photographs)
Plant 3 Area 14 Exposure Barrier			1. 2. 3. 4.
Plant 3 Area 18 Exposure Barrier			1. 2. 3. 4.
Plant 3 Area 19 Exposure Barrier			1. 2. 3. 4.

Based on the above observations, are any corrective actions (i.e., repairs) required? _____

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