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Superior Slips

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# Memo

**Subject:** Task 5C, Data Usability Assessment Technical Memorandum
Supplemental Investigation of the C Street Slip
Superior Slips, Superior, Wisconsin

AECOM Technical Services, Inc. (AECOM) has prepared this technical memorandum in accordance with the Task 5C, Data Usability Assessment for the Supplemental Investigation of the C Street Slip Wisconsin Department of Natural Resources' (DNR) request for proposal and Scope of Work dated April 5, 2022. This report describes the data usability assessment that was performed to verify the quality of the data generated during the C Street Slip investigation and to evaluate its acceptability for use in site decisions.

## 1. Data Usability

The data quality objectives (DQOs) developed for the Supplemental Investigation of the C Street Slip are presented in the Supplemental Investigation of the C Street Slip QAPP (AECOM 2022). Section A-7.2 of the QAPP presents the Measurement Performance Criteria used to establish the level of data quality that was considered necessary to support the objectives of the study. This report describes the data usability assessment that was performed to verify the quality of the data generated during the C Street Slip investigation and to evaluate its acceptability for use in site decisions.

The data usability assessment is based primarily on the results of the data validation. The validation process consisted of two steps: verification of adherence to program specifications (QAPP, analytical methods, and contractual documents) and an evaluation of the quality of the data in terms of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS). These elements, referred to as data quality indicators (DQIs), were assessed by comparing the sample results generated during the Supplemental Investigation of the C Street Slip program to pre-established standards or criteria documented in the QAPP.

Data validation was performed as described in Section D-1 of the QAPP. Manual data validation was performed by APTIM Federal Services, LLC, in its role with the Quality Assurance Technical Support Program (QATS). The laboratory reported the data in 12 sample delivery groups (SDGs). QATS selected three SDGs for validation to

Great Lakes Legacy Act (GLLA) Tier 2 specifications, and the remainder were validated to GLLA Tier 1 specifications.

During validation, data associated with minor deviations from established criteria were considered acceptable and appropriate for use, and were flagged with a qualifier (for example, with a “J” as estimated), and evaluated for direction of bias where feasible. Major deviations from project criteria resulted in the associated data being qualified with an “R” to indicate that the data were rejected and considered invalid for use in decision-making. Decisions as to the acceptance or rejection of data were based on guidance provided in National Functional Guidelines for Superfund Organics Method Data Review, Office of Superfund Remediation and Technology Innovation (OSRTI), OLEM 9240.0-51, EPA 540-R-20-005 (November 2020) and National Functional Guidelines for Superfund Inorganics Method Data Review, Office of Superfund Remediation and Technology Innovation (OSRTI), OLEM 9240.1-66, EPA 542-R-20-006 (November 2020).

AECOM performed an initial completeness and verification review of all data, reviewed QATS generated data validation reports, and entered final data validation qualifiers into the project database.

In addition to the data validation process, the data usability assessment was based on the results of in-program performance evaluation (PE) sample analytical results. QATS submitted three sediment PE samples of known concentration, one for each of the analytical methods, for the analysis of mercury, volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs). The samples were submitted to the laboratory and evaluated by QATS.

This section of the report is separated into three subsections. Section 1.1 discusses overall data usability of the sediment sample results. Sections 1.2.1 through 1.2.6 presents the DQIs of precision, accuracy, representativeness, comparability, completeness, and sensitivity. Section 1.2.7 summarizes the rejected data. The results of the external PE analyses are discussed in Section 1.3.

Note that the data usability evaluation focuses on the sediment sample, field duplicate, and field replicate results and does not include the trip blanks collected for VOCs. Qualifications of the aqueous QC samples are discussed in the DVRs.

## 1.1 Data Usability

Of the 11,586 reportable sediment data points generated during the C Street Slip investigation, more than 99 percent are valid and acceptable for assessment purposes. Ninety-two percent of the valid data were accepted as reported by the laboratory with no further qualification required; eight percent of the valid data were qualified during the validation process. The most common reason for qualification was low recovery of one or more internal standards in the VOC analysis. Nineteen field samples and two field duplicates (approximately four percent of the data) were qualified during validation solely on this basis.

Following internal standard recoveries, the most common reasons for qualification were surrogate recoveries, field duplicate (or replicate) precision, and matrix spike (MS) recoveries. All VOC results in a single sample were qualified as estimated due to leakage of methanol from the sample collection vial. A small number of results (less than 0.2% of all reported data) were qualified for other nonconformances such as laboratory control sample (LCS) recoveries, matrix spike/matrix spike duplicate (MS/MSD) precision, calibration, or method blank contamination.

## 1.2 Data Quality Indicators

The following sections discuss each of the DQIs.

### 1.2.1 Precision

Precision is the measure of agreement among repeated measurements of the same property under identical or substantially similar conditions and includes both field and analytical components. Overall, more than 98

percent of the data were usable without qualification based on precision criteria described in the QAPP. Data that did not meet the criteria were qualified. Field precision was assessed through the collection and measurement of field duplicates and field replicates and expressed as the relative percent difference (RPD) of the sample and field duplicate results. Field duplicates, except for samples designated for VOCs were collected from the same bowl of homogenized sediment and placed into a duplicate set of storage jars. Field replicate samples were prepared by collecting two samples, one from each side of the split barrel core. Field duplicates and field replicates were collected at a frequency that met or exceeded the program goals established in the QAPP.

Field duplicate and field replicate RPDs resulted in the qualification of 1.1 percent of all reportable sediment results as estimated values.

Laboratory precision was assessed through the RPD results for LCS/laboratory control sample duplicates (LCSD) pairs, and MS/MSD pairs. LCS/LCSD pairs were analyzed only for VOCs and all RPDs were compliant. MS/MSD pairs were analyzed for all parameters. Fewer than one half of one percent of all reportable sediment results were qualified as estimated based on laboratory duplicate RPDs.

Overall, the program precision objectives were achieved. Approximately 1.4 percent of the reportable data points generated were qualified for reasons related to either field or laboratory precision, but these data points are considered valid and acceptable for use.

### 1.2.2 Accuracy

Accuracy is the degree of agreement between an observed value and an accepted reference or true value. Overall, 93 percent of the results were considered acceptable and usable without qualification following comparison to program accuracy criteria. Data that did not meet the criteria defined in QAPP worksheets were qualified. Eight non-detect bromomethane results were rejected based on low recovery in the PE sample. These results are not usable for project objectives and are summarized in Table 1 below.

**Table 1. Rejected Data Points**

| Sample ID | Compound | Unvalidated Result (mg/Kg) |
|---|---|---|
| 2022-SED-32(0-1) | Bromomethane | < 0.0058 |
| 2022-SED-32(1-2) | Bromomethane | < 0.0063 |
| 2022-SED-32(2-3.5) | Bromomethane | < 0.0079 |
| 2022-SED-21 (0-1) DUP | Bromomethane | < 0.0053 |
| 2022-SED-21 (1-2) | Bromomethane | < 0.0057 |
| 2022-SED-20 (0-1) | Bromomethane | < 0.010 |
| 2022-SED-20 (0-1) DUP | Bromomethane | < 0.018 |
| 2022-SED-24 (2.7-3.7) | Bromomethane | < 0.0058 |

Laboratory accuracy was assessed by evaluating calibration data and using the recoveries of positive control samples (i.e., MS/MSD, LCS/LCSD, PE samples, internal standards, and surrogate spikes). MS/MSD, LCS/LCSD, and PE sample recoveries resulted in qualification of 0.82 percent of reported results. Internal standard recoveries, surrogate recoveries, or a combination of the two led to qualification of 5.2 percent of the reported results.

Accuracy also was indirectly addressed via the negative control samples for field activities (i.e., trip blanks), as well as laboratory negative control samples, such as method blanks. Trip blanks were submitted with each shipment of VOC samples. No results were qualified on the basis of trip blank results. The percentage of results that were qualified due to associated laboratory blank contamination was 0.05 percent, and was limited to

mercury results, four of which that were qualified as estimated with potential high bias (J+), and two that were negated (qualified U) at the reporting limit.

The sample container for one VOC sample was observed to have leaked some of methanol solvent upon arrival at the laboratory. This could lead to either negative or positive bias depending on when the loss occurred. All VOC results in sample 2022-SED-39(1-2) were qualified as estimated on this basis.

Overall, the program accuracy objectives were achieved. All data are valid and acceptable for use, except for the eight bromomethane results previously noted.

### 1.2.3 Representativeness

Representativeness is a qualitative and quantitative measure of the degree to which data suitably represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Aspects of representativeness addressed during validation included the review of sample collection information in the chain of custody documentation, conformity of laboratory analyses to the QAPP, adherence of the documented laboratory procedures to method requirements, and completeness of the laboratory data packages.

Representativeness of field sampling conditions was also measured through the collection and evaluation of field replicate samples. Field replicate samples were prepared by collecting two samples, one from each side of the split barrel core. These results have also been incorporated into the precision evaluation in Section 1.2.1 above.

### 1.2.4 Comparability

Comparability is a qualitative expression of the measure of confidence that two or more data sets may contribute to a common analysis and interpretation. Comparability of data within the investigation was maximized by using standard methods for sampling and analysis, reporting of data, and data validation.

### 1.2.5 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system, expressed as a percentage of the number of valid measurements that were or should have been collected. Valid data are defined as all data points judged to be usable (i.e., not rejected as a result of the validation process).

Field completeness is defined as the percentage of samples actually collected for analysis versus those intended to be collected. Table 3 of the QAPP presented the proposed number of samples for each analysis, which differs from the actual number of samples collected. AECOM received direction from WI DNR during sampling which included modification of sample locations, depths, and analytical parameters, including additional focused sampling in the Head of the Slip. In addition, several proposed depths could not be achieved due to refusal, resulting in fewer samples for mercury and PAH analyses. Table 2, below, details the differences between the proposed and actual number of sediment samples collected.

**Table 2. Proposed vs. Actual Samples**

| Analysis | Number of Samples | | Number of Field Duplicates | | Number of Field Replicates | |
|---|---|---|---|---|---|---|
| | Proposed | Collected | Proposed | Collected | Proposed | Collected |
| Mercury | 242 | 201 | 13 | 21 | 7 | 7 |
| PAHs | 242 | 201 | 13 | 21 | 7 | 7 |
| VOCs | 48 | 100 | 3 | 10 | 3 | 3 |

All changes were made under the direction or approval of WI DNR. Therefore, field completeness is deemed acceptable.

Laboratory completeness is defined as the percentage of valid data points versus the total expected from the laboratory analyses. Valid data points are those that have not been rejected during the validation process and accounts for any analyses not completed due to insufficient sample volume, breakage, or other laboratory error. The objective for this project was greater than 95 percent laboratory completeness. Overall laboratory completeness was greater than 99 percent (11,578 valid and acceptable results out of 11,586 total reportable sediment results).

### 1.2.6 Sensitivity

Sensitivity is the ability of a method or instrument to discriminate between measurement responses representing varying levels of the analyte of interest; in particular, the capability of measuring a constituent at low levels. For the USEPA methods employed in this project, sensitivity was measured by the Method Detection Limit (MDL) and Quantitation Limit (QL). Both nominal MDLs and QLs were provided by the analytical laboratories in their analytical report and were verified during validation. All RLs, both MDL and QL, were corrected by the laboratory for sample-specific factors, such as exact aliquot size, dry weight for soils, and dilutions. The laboratories were instructed to report estimated (J) results if concentrations were above the MDL but below the QL. Non-detect results were reported to the MDL.

The methods selected were sufficiently sensitive to meet the project data quality levels (DQLs). During validation, the actual laboratory MDLs also were compared to the achievable laboratory limits shown in the QAPP. Results for selected analytes in some samples did not meet the QL goals listed in the due to sample-specific matrix issues. Table 3 summarizes the analytes not meeting the specified goals and the number of occurrences relative to each standard. Fewer than two percent of the reported data points represent non-detect results with MDLs greater than an applicable standard. Note that naphthalene was analyzed as both a VOC and as a PAH. One non-detect VOC naphthalene MDL failed to meet ecological screening levels, but all MDLs met screening criteria when analyzed as a PAH.

### 1.2.7 Rejected Data

Of the 11,586 individual data points generated during the C Street Slip Investigation, 11,578, greater than 99 percent, are valid and usable. Eight bromomethane results were rejected due to low recovery in the PE sample submitted and evaluated by QATS. No other data points were rejected.

## 1.3 PE Analytical Results

One sediment performance evaluation sample for each analytical method was submitted to Pace Analytical Services, LLC, in Green Bay, Wisconsin by QATS. Upon completion by the laboratory, QATS evaluated the results and provided the results to AECOM. There are 3 classifications for PES analyte results evaluation, “Pass – Within Limits”, “Pass – Warning Low or High”, and “Fail – Action Low or High”. “Pass – Within Limits” indicates that the analytical result was within the established 95% confidence interval. “Pass – Warning Low or High” indicates that the analytical result was outside the established 95% confidence interval, but within the established 99% confidence interval. “Fail – Action Low or High” indicates that the result was outside the 99% confidence interval.

All PE results for PAHs and the result for mercury received scores of “Pass – Within Limits.” For the volatiles PE sample, 27 analyte results were evaluated. Twenty-five results were classified as “Pass – Within Limits”, one result (trans-1,3-dichloropropene) was classified as “Pass – Warning Low”, and one result (bromomethane) was classified as “Fail – Action Low”. The results are provided as Attachment A to this report. PE results were treated as LCS samples when applying qualifiers and assigning reason codes. Eight non-detect trans-1,3-dichloropropene results were qualified as estimated (UJ) and are considered usable for project decisions; and eight non-detect bromomethane results were rejected (R) and are not considered usable.

## Table 3. Sensitivity Summary

### Non-Detect MDLs Exceeding Project Screening Controls

| Analytical Method | Analyte | WDNR RCLs (DC) Non-Industrial (mg/Kg) | | TEC (mg/Kg) | | MEC (mg/Kg) | | PEC (mg/Kg) | | 2X PEC (mg/Kg) | | 5X PEC (mg/Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | # Exceeds | Value | # Exceeds | Value | # Exceeds | Value | # Exceeds | Value | # Exceeds | Value | # Exceeds |
| SW8260 | 1,2,3-Trichloropropane | 0.0051 | 108 | -- | NA | -- | | -- | | -- | | -- | NA |
| SW8260 | 1,2,4-Trichlorobenzene | 24 | 0 | 0.008 | 36 | 0.013 | 8 | 0.018 | 5 | 0.036 | 4 | 0.09 | 4 |
| SW8260 | 1,2-Dibromo3-chloropropane | 0.0075 | 17 | -- | NA | -- | NA | -- | NA | -- | NA | -- | NA |
| SW8260 | 1,2-Dibromoethane | 0.05 | 4 | -- | NA | -- | NA | -- | NA | -- | NA | -- | NA |
| SW8260 | 1,2-Dichlorobenzene | 376 | 0 | 0.023 | 4 | -- | NA | 0.023 | 4 | 0.046 | 3 | 0.115 | 3 |
| SW8260 | 1,4-Dichlorobenzene | 3.74 | 0 | 0.031 | 2 | 0.0605 | 2 | 0.09 | 2 | 0.18 | 2 | 0.45 | 0 |
| SW8260 | Benzene | 1.6 | 0 | 0.057 | 1 | 0.0835 | 1 | 0.11 | 1 | 0.22 | 0 | 0.55 | 0 |
| SW8260 | Hexachlorobutadiene | 1.63 | 2 | -- | NA | -- | NA | | NA | -- | NA | -- | NA |
| SW8260 | Naphthalene[2] | 5.52 | 0 | 0.176 | 1 | 0.369 | 1 | 0.561 | 1 | 1.122 | 1 | 2.805 | 0 |
| SW8260 | Vinyl Chloride | 0.0668 | 3 | -- | NA | -- | NA | -- | NA | -- | NA | -- | NA |
| SW8260 | Xylenes (total) | 260 | 0 | 0.025 | 2 | 0.0375 | 2 | 0.05 | 2 | 0.1 | 1 | 0.25 | 1 |
| SW8270E-SIM | 2-Methylnaphthalene | 239 | 0 | 0.0202 | 1 | 0.111 | 0 | 0.201 | 0 | 0.402 | 0 | 1.005 | 0 |
| SW8270E-SIM | Acenaphthene | 3590 | 0 | 0.0067 | 1 | 0.048 | 0 | 0.089 | 0 | 0.178 | 0 | 0.445 | 0 |
| SW8270E-SIM | Acenaphthylene | -- | NA | 0.0059 | 9 | 0.067 | 8 | 0.128 | 3 | 0.256 | 2 | 0.64 | 0 |
| | TOTAL | | 134 | | 57 | | 22 | | 18 | | 13 | | 8 |

Footnotes:

-- Standard not established.

WDNR -Consensus-Based Sediment Quality Guidelines. Interim Guidance. December 2003. (TEC-threshold effect concentration; MEC-midpoint effect concentration; PEC-probable effect concentration).

NA – Not applicable

DC = Direct Contact [pathway]

[1]Generic Regional Screening Levels (RCLs) per WDNR PUB-RR-890, December 2018.

[2]Napthalene was also measured by 8270E-SIM and all MDLs met all screening limits.

# Attachment A  Performance Evaluation Sample Results

# PES Scoring Evaluation Report



Laboratory Name: Pace Analytical Services, LLC - Green Bay
Lab Code: PAS-GB
Contract: N/A
Case No.: 40249173
MA No.: N/A
SDG No.: NR
Analytical Method: CVAA
Matrix: Soil
Lab Sample ID: 40249173001
Date Received: 07/26/2022
Percent Solids: 100.0
Units: mg/Kg
Analysis Method: Non-CLP Score by SFAM01.x Metals Analysis ICP
Scoring Method: SFAM01.x
Comments: Scored by APTIM Federal Services, LLC personnel.

| CASNo | Analyte | Laboratory Results | | PES Evaluation | |
|---|---|---|---|---|---|
| | | Concentration | Q | | |
| 7429-90-5 | Aluminum | 0 | | N.E. | Scorer Request |
| 7440-36-0 | Antimony | 0 | | N.E. | Scorer Request |
| 7440-38-2 | Arsenic | 0 | | N.E. | Scorer Request |
| 7440-39-3 | Barium | 0 | | N.E. | Scorer Request |
| 7440-41-7 | Beryllium | 0 | | N.E. | Scorer Request |
| 7440-43-9 | Cadmium | 0 | | N.E. | Scorer Request |
| 7440-70-2 | Calcium | 0 | | N.E. | Scorer Request |
| 7440-47-3 | Chromium | 0 | | N.E. | Scorer Request |
| 7440-48-4 | Cobalt | 0 | | N.E. | Scorer Request |
| 7440-50-8 | Copper | 0 | | N.E. | Scorer Request |
| 7439-89-6 | Iron | 0 | | N.E. | Scorer Request |
| 7439-92-1 | Lead | 0 | | N.E. | Scorer Request |
| 7439-95-4 | Magnesium | 0 | | N.E. | Scorer Request |
| 7439-96-5 | Manganese | 0 | | N.E. | Scorer Request |
| 7439-97-6 | Mercury | 2.8 | | PASS | Within Limits |
| 7440-02-0 | Nickel | 0 | | N.E. | Scorer Request |
| 7440-09-7 | Potassium | 0 | | N.E. | Scorer Request |
| 7782-49-2 | Selenium | 0 | | N.E. | Scorer Request |
| 7440-22-4 | Silver | 0 | | N.E. | Scorer Request |
| 7440-23-5 | Sodium | 0 | | N.E. | Scorer Request |
| 7440-28-0 | Thallium | 0 | | N.E. | Scorer Request |
| 7440-62-2 | Vanadium | 0 | | N.E. | Scorer Request |
| 7440-66-6 | Zinc | 0 | | N.E. | Scorer Request |
| **** | END Main Analytes | **** | **** | **** | **** |
| **** | END All Analytes | **** | **** | **** | **** |

# PES Scoring Evaluation Report



| | | | | | |
|---|---|---|---|---|---|
| Laboratory Name: | Pace Analytical Services, LLC - Green Bay | | | Lab Code: | PAS-GB |
| Contract: | N/A | Case No.: | 40249173 | MA No.: | N/A |
| SDG No.: | NR | Analytical Method: | VOA | Level: | Low |
| Matrix: | Soil | Lab Sample ID: | 40249173003 | Lab File ID: | NR |
| Date Received: | 07/26/2022 | Date Extracted: | 08/08/2022 | Date Analyzed: | 08/08/2022 |
| GC Column: | NR | ID (mm): | NR | GC Column: | NR |
| ID (mm): | NR | Soil Aliquot (VOA, uL): | N/A | Sample Wt./Vol. (g/mL): | 5.0 g / 5.0 mL |
| Percent Solids: | 100.0 | Heated Purge: (Y/N): | Yes | Extract Volume (uL): | N/A |
| Extract Conc: (Y/N): | N/A | Extraction Type: | PT | Purge Volume (mL): | 5 mL |
| Injection Vol. (uL): | N/A | Cleanup Types: | N/A | Cleanup Factor: | N/A |
| Dilution Factor: | 1.0 | pH: | N/A | | |
| Units: | ug/Kg | | | | |
| Analysis Method: | Non-CLP Score by SFAM01.x | | | | |
| Scoring Method: | SFAM01.x | | | | |
| Comments: | Scored by APTIM Federal Services, LLC personnel. | | | | |

| | | Laboratory Results | | PES Evaluation | |
|---|---|---|---|---|---|
| CASNo | Analyte | Concentration | Q | | |
| 74-87-3 | Chloromethane | 44 | | PASS | Within Limits |
| 74-83-9 | Bromomethane | 5.1 | | FAIL | Action Low |
| 75-69-4 | Trichlorofluoromethane | 37 | | PASS | Within Limits |
| 75-35-4 | 1,1-Dichloroethene | 47 | | PASS | Within Limits |
| 67-64-1 | Acetone | 5.0 | U | N.E. | Scorer Request |
| 79-20-9 | Methyl Acetate | 5.0 | U | N.E. | Scorer Request |
| 75-09-2 | Methylene Chloride | 23 | | PASS | Within Limits |
| 156-60-5 | trans-1,2-Dichloroethene | 22 | | PASS | Within Limits |
| 1634-04-4 | Methyl tert-Butyl Ether | 69 | | PASS | Within Limits |
| 156-59-2 | cis-1,2-Dichloroethene | 52 | | PASS | Within Limits |
| 74-97-5 | Bromochloromethane | 32 | | PASS | Within Limits |
| 71-55-6 | 1,1,1-Trichloroethane | 20 | | PASS | Within Limits |
| 110-82-7 | Cyclohexane | 5.0 | U | N.E. | Scorer Request |
| 56-23-5 | Carbon Tetrachloride | 25 | | PASS | Within Limits |
| 107-06-2 | 1,2-Dichloroethane | 21 | | PASS | Within Limits |
| 79-01-6 | Trichloroethene | 84 | | PASS | Within Limits |
| 108-87-2 | Methylcyclohexane | 5.0 | U | N.E. | Scorer Request |
| 78-87-5 | 1,2-Dichloropropane | 26 | | PASS | Within Limits |
| 75-27-4 | Bromodichloromethane | 39 | | PASS | Within Limits |
| 10061-01-5 | cis-1,3-Dichloropropene | 31 | | PASS | Within Limits |
| 108-88-3 | Toluene | 38 | | PASS | Within Limits |
| 10061-02-6 | trans-1,3-Dichloropropene | 13 | | PASS | Warning Low |
| 127-18-4 | Tetrachloroethene | 81 | | PASS | Within Limits |
| 591-78-6 | 2-Hexanone | 5.0 | U | N.E. | Scorer Request |

# PES Scoring Evaluation Report



| CASNo | Analyte | Laboratory Results | | PES Evaluation | |
|---|---|---|---|---|---|
| | | Concentration | Q | | |
| 124-48-1 | Dibromochloromethane | 37 | | PASS | Within Limits |
| 100-41-4 | Ethylbenzene | 29 | | PASS | Within Limits |
| 98-82-8 | Isopropylbenzene | 24 | | PASS | Within Limits |
| 541-73-1 | 1,3-Dichlorobenzene | 40 | | PASS | Within Limits |
| 95-50-1 | 1,2-Dichlorobenzene | 20 | | PASS | Within Limits |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 34 | | PASS | Within Limits |
| 95-47-6 | o-Xylene | 24 | | PASS | Within Limits |
| 179601-23-1 | m,p-Xylene | 20 | | PASS | Within Limits |
| 108-70-3 | 1,3,5-Trichlorobenzene | 5.0 | U | N.E. | Scorer Request |
| 108-86-1 | Bromobenzene | 51 | | PASS | TIC Found |
| **** | END Main Analytes | **** | **** | **** | **** |
| **** | END All Analytes | **** | **** | **** | **** |

# PES Scoring Evaluation Report



| | | | | | |
|---|---|---|---|---|---|
| Laboratory Name: | Pace Analytical Services, LLC - Green Bay | | | Lab Code: | PAS-GB |
| Contract: | N/A | Case No.: | 40249173 | MA No.: | N/A |
| SDG No.: | NR | Analytical Method: | SVOA SIM | Level: | Low |
| Matrix: | Soil | Lab Sample ID: | 40249173002 | Lab File ID: | NR |
| Date Received: | 07/26/2022 | Date Extracted: | 08/04/2022 | Date Analyzed: | 08/04/2022 |
| GC Column: | NR | ID (mm): | NR | GC Column: | NR |
| ID (mm): | NR | Soil Aliquot (VOA, uL): | N/A | Sample Wt./Vol. (g/mL): | 30.0 g |
| Percent Solids: | 100.0 | Heated Purge: (Y/N): | N/A | Extract Volume (uL): | 1000 uL |
| Extract Conc: (Y/N): | Yes | Extraction Type: | SONC | Purge Volume (mL): | N/A |
| Injection Vol. (uL): | NR | Cleanup Types: | Not Given | Cleanup Factor: | 1.0 |
| Dilution Factor: | 1.0 | pH: | NR | | |
| Units: | ug/Kg | | | | |
| Analysis Method: | Non-CLP Score by SFAM01.x SIM | | | | |
| Scoring Method: | SFAM01.x | | | | |
| Comments: | Scored by APTIM Federal Services, LLC personnel. | | | | |

| | | Laboratory Results | | | |
|---|---|---|---|---|---|
| CASNo | Analyte | Concentration | Q | PES Evaluation | |
| 91-20-3 | Naphthalene | 7.7 | J | PASS | Within Limits |
| 91-57-6 | 2-Methylnaphthalene | 16 | J | PASS | Within Limits |
| 208-96-8 | Acenaphthylene | 6.8 | J | N.E. | Not Evaluated |
| 83-32-9 | Acenaphthene | 11 | J | PASS | Within Limits |
| 86-73-7 | Fluorene | 14 | J | PASS | Within Limits |
| 87-86-5 | Pentachlorophenol | 0.17 | U | N.E. | Scorer Request |
| 85-01-8 | Phenanthrene | 11 | J | PASS | Within Limits |
| 120-12-7 | Anthracene | 15 | J | N.E. | Not Evaluated |
| 206-44-0 | Fluoranthene | 11 | J | PASS | Within Limits |
| 129-00-0 | Pyrene | 10 | J | PASS | Within Limits |
| 56-55-3 | Benzo(a)anthracene | 13 | J | PASS | Within Limits |
| 218-01-9 | Chrysene | 16 | J | PASS | Within Limits |
| 205-99-2 | Benzo(b)fluoranthene | 15 | J | PASS | Within Limits |
| 207-08-9 | Benzo(k)fluoranthene | 11 | J | PASS | Within Limits |
| 50-32-8 | Benzo(a)pyrene | 4.9 | J | N.E. | Not Evaluated |
| 53-70-3 | Dibenzo(a,h)anthracene | 19 | J | PASS | Within Limits |
| 191-24-2 | Benzo(g,h,i)perylene | 8.1 | J | PASS | Within Limits |
| **** | END Main Analytes | **** | **** | **** | **** |
| **** | END All Analytes | **** | **** | **** | **** |