

ORGANIC/INORGANIC DATA VALIDATION REPORT

To: U.S. EPA Region 10
Validated by: Gloria J. Switalski, Weston Solutions, Inc.
Report Date: December 17, 2021
Project/Site: EPA Region 10 - Sitka Sound Science Center Oil Spill
Laboratory No: 1217737

This memo presents the organic and inorganic data validation report for the data obtained during the field activities for the above referenced work assignment. The purpose of this review is to provide a Stage 2A validation of the following samples collected on 30 November 2021 and 1 December 2021 and analyzed by SGS North America, Inc. located in Anchorage, AK:

| Field Sample Numbers | Laboratory ID | Analyses/Methods |
|----------------------|---------------|--|
| SSSC-PR-02 | 1217737001 | Metals by ICP/MS by SW-846 Method 6020B |
| SSSC-PR-01 | 1217737002 | Polychlorinated Biphenyl Compounds (PCBs) by SW-846 Method 8082A Volatile Organic Compounds (VOCs) by SW-846 Method 8260D Diesel Range Organics (DRO) by Alaska DEC Method AK102 Residual Range Organics (RRO) by Alaska DEC Method AK103 Gasoline Range Organics (GRO) by Alaska DEC Method AK101 |

Data validation was conducted in accordance with the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review, November 2020, USEPA NFGs for Inorganic Superfund Data Review, November, 2020, Test Methods for Evaluating Solid Wastes, SW-846, 3rd Edition and Updates, and/or appropriate methods.

Stage 2A validation was performed on the sample results. The data were evaluated based on the following parameters:

- Data Completeness
- * Holding Times, Sample Preservation and Receipt
- Laboratory Blanks
- NA Field Blanks
- Surrogate Compounds
- NA Matrix Spike/Matrix Spike Duplicates
- NA Laboratory Duplicate Samples
- * Laboratory Control Samples (Blank Spikes)/Laboratory Control
- Sample Duplicates (Blank Spike Duplicates)
- NA Field Duplicates
- Sample Dilutions and Detection Limits
-
- * **All criteria were met for this parameter**
- NA **Not applicable**

Data Completeness

The Level 2 data package was complete and included a case narrative, sample results, batch QC results, QC association summary, Chain-of-Custody (CoC) forms, and a sample receipt condition form. Raw data is not included in a Level 2 data package.

The DRO/RRO case narrative included a statement that surrogate compounds were not added to oil samples.

The case narrative also included a statement that both oil samples hydrocarbon patterns were consistent with a middle distillate and lube oil.

Holding Times, Sample Preservation and Receipt

All holding times were met.

The samples were received within the recommended $\leq 6^{\circ}\text{C}$ NFG QC limit. No shipping or receiving problems were noted.

Laboratory Blanks

The method blanks (MB) were analyzed at the required frequency. No contaminants were found in these blanks with the following exception:

Chromium (0.434 J mg/kg) was detected at a concentration $< \text{LOQ}$ in method blank MB 1649210 (metals).

- The detected chromium result was reported as estimated with a high bias (J+) in the following sample: SSSC-PR-01

No other contaminants were found in the method blanks associated with these samples.

Field Blanks

Field blank samples were not collected with this data delivery group.

Surrogate Compounds

Surrogate compounds were added to the VOCs and GRO samples and QC samples. The surrogate percent recoveries were within laboratory control limits with following exceptions:

GRO surrogate, 4-bromofluorobenzene (463% & 8640%), was recovered above the laboratory control limits (50-150%) in samples SSSC-PR-02 and SSSC-PR-01.

- The detected GRO result was reported as estimated with a high bias (J+) in the following samples: SSSC-PR-02 and SSSC-PR-01

VOCs surrogate, 4-bromofluorobenzene (162%), was recovered above laboratory control limits (55-151%) in sample SSSC-PR-01.

- Detected VOCs results were reported as estimated with a high bias (J+) in the following sample: SSSC-PR-01

Matrix Spike/Matrix Spike Duplicates

No sample from this data delivery group underwent matrix spike/matrix spike duplicate (MS/MSD) analyses since these were oil samples. Refer to the LCS/LCSD section below for accuracy evaluation.

Laboratory Duplicate Samples

Laboratory duplicates were not provided for any analyses. No action was taken. Refer to the LCS/LCSD section below for precision evaluation.

Laboratory Control Samples/Laboratory Control Sample Duplicate

At least one laboratory control sample (LCS) or laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analysis was analyzed per QC batch for ICP Metals, PCBs, and VOCs. All LCS and/or LCSD analyte recoveries were within the laboratory control limits. All LCS/LCSD RPD values were within laboratory control limits.

Field Duplicates

Field duplicate samples were not collected with this data delivery group.

Sample Dilution and Detection Limits

The laboratory correctly “J” flagged results less than the reporting limits. The data validator retained the J qualifier unless the analyte was qualified as non-detected for blank contamination.

ICP metals in both samples were analyzed at a 10 or 50-fold dilution. VOCs in both samples were analyzed at a 5-fold dilution. GRO in one sample was analyzed at a 20-fold dilution. Raw data were not provided or evaluated for this Level 2 package to verify results and analytical dilution.

4-Bromofluorobenzene (surrogate) results in both GRO samples and in one VOCs sample were qualified with the laboratory qualifier (*) which indicated that the recoveries were outside the laboratory control limits. The laboratory qualifier (*) was retained on the Form 1 and EDD.

5a Androstane (surrogate) and n-Triacontane-d62 (surrogate) results in both DRO and RRO samples were qualified with the laboratory qualifier (*) which indicated that surrogate was not added prior to analysis since these were oil samples. The laboratory qualifier (*) was retained on the Form 1 and EDD.

DATA QUALIFIER DEFINITIONS

For the purpose of Data Validation, the following validation qualifiers and associated definitions are provided for use by the data validator to summarize the data quality.

- U The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J+ The result is an estimated quantity, but the result may be biased high.
- J- The result is an estimated quantity, but the result may be biased low.
- UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
- R Reported value is “rejected.” The sample results are rejected due to serious deficiencies in meeting QC criteria. The data are unusable. The analyte may or may not be present in the sample.

**Results of SSSC-PR-02**Client Sample ID: **SSSC-PR-02**Client Project ID: **10ZZ 10ZZ**

Lab Sample ID: 1217737001

Lab Project ID: 1217737

Collection Date: 12/01/21 11:04

Received Date: 12/02/21 11:17

Matrix: Oil/Xylene Miscible Liquid

Solids (%):

Location:

Results by Metals by ICP/MS

| <u>Parameter</u> | <u>Result Qual</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> | <u>DF</u> | <u>Allowable Limits</u> | <u>Date Analyzed</u> |
|------------------|--------------------|---------------|-----------|--------------|-----------|-------------------------|----------------------|
| Aluminum | 170 | 19.2 | 5.96 | mg/kg | 10 | | 12/09/21 17:22 |
| Antimony | 0.519 J | 0.961 | 0.298 | mg/kg | 10 | | 12/09/21 17:22 |
| Arsenic | 0.926 J | 0.961 | 0.298 | mg/kg | 10 | | 12/09/21 17:22 |
| Barium | 49.3 | 0.288 | 0.0903 | mg/kg | 10 | | 12/09/21 17:22 |
| Beryllium | 0.0481 U | 0.0961 | 0.0298 | mg/kg | 10 | | 12/09/21 17:22 |
| Boron | 9.60 U | 19.2 | 5.96 | mg/kg | 10 | | 12/09/21 17:22 |
| Cadmium | 1.69 | 0.192 | 0.0596 | mg/kg | 10 | | 12/09/21 17:22 |
| Calcium | 703 | 96.1 | 28.8 | mg/kg | 10 | | 12/09/21 17:22 |
| Chromium | 53.3 | 0.961 | 0.298 | mg/kg | 10 | | 12/09/21 17:22 |
| Cobalt | 0.611 | 0.480 | 0.144 | mg/kg | 10 | | 12/09/21 17:22 |
| Copper | 51.4 | 0.576 | 0.173 | mg/kg | 10 | | 12/09/21 17:22 |
| Iron | 1370 | 48.0 | 14.4 | mg/kg | 10 | | 12/09/21 17:22 |
| Lead | 216 | 0.192 | 0.0596 | mg/kg | 10 | | 12/09/21 17:22 |
| Magnesium | 123 | 48.0 | 14.4 | mg/kg | 10 | | 12/09/21 17:22 |
| Manganese | 9.42 | 0.192 | 0.0596 | mg/kg | 10 | | 12/09/21 17:22 |
| Molybdenum | 13.1 | 0.961 | 0.298 | mg/kg | 10 | | 12/09/21 17:22 |
| Nickel | 4.60 | 0.192 | 0.0596 | mg/kg | 10 | | 12/09/21 17:22 |
| Potassium | 38.5 J | 96.1 | 29.8 | mg/kg | 10 | | 12/09/21 17:22 |
| Selenium | 0.706 J | 0.961 | 0.298 | mg/kg | 10 | | 12/09/21 17:22 |
| Silver | 0.240 U | 0.480 | 0.144 | mg/kg | 10 | | 12/09/21 17:22 |
| Sodium | 188 | 96.1 | 29.8 | mg/kg | 10 | | 12/09/21 17:22 |
| Thallium | 0.0960 U | 0.192 | 0.0596 | mg/kg | 10 | | 12/09/21 17:22 |
| Vanadium | 3.51 | 2.88 | 0.903 | mg/kg | 10 | | 12/09/21 17:22 |
| Zinc | 1030 | 12.0 | 3.75 | mg/kg | 50 | | 12/09/21 17:36 |

Batch Information

Analytical Batch: MMS11412

Analytical Method: SW6020B

Analyst: ACF

Analytical Date/Time: 12/09/21 17:22

Container ID: 1217737001-A

Prep Batch: MXX34871

Prep Method: SW3050B

Prep Date/Time: 12/07/21 10:48

Prep Initial Wt./Vol.: 1.0409 g

Prep Extract Vol: 50 mL

Analytical Batch: MMS11412

Analytical Method: SW6020B

Analyst: ACF

Analytical Date/Time: 12/09/21 17:36

Container ID: 1217737001-A

Prep Batch: MXX34871

Prep Method: SW3050B

Prep Date/Time: 12/07/21 10:48

Prep Initial Wt./Vol.: 1.0409 g

Prep Extract Vol: 50 mL

Print Date: 12/15/2021 3:50:31PM

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Results of SSSC-PR-02

Client Sample ID: **SSSC-PR-02**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737001
Lab Project ID: 1217737

Collection Date: 12/01/21 11:04
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Polychlorinated Biphenyls

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---------------------------|-------------|--------|-------|-------|----|------------------|----------------|
| Aroclor-1016 | 0.995 U | 1.99 | 0.616 | mg/kg | 1 | | 12/08/21 16:57 |
| Aroclor-1221 | 0.995 U | 1.99 | 0.616 | mg/kg | 1 | | 12/08/21 16:57 |
| Aroclor-1232 | 0.995 U | 1.99 | 0.616 | mg/kg | 1 | | 12/08/21 16:57 |
| Aroclor-1242 | 0.995 U | 1.99 | 0.616 | mg/kg | 1 | | 12/08/21 16:57 |
| Aroclor-1248 | 0.995 U | 1.99 | 0.616 | mg/kg | 1 | | 12/08/21 16:57 |
| Aroclor-1254 | 0.995 U | 1.99 | 0.616 | mg/kg | 1 | | 12/08/21 16:57 |
| Aroclor-1260 | 0.995 U | 1.99 | 0.616 | mg/kg | 1 | | 12/08/21 16:57 |
| Surrogates | | | | | | | |
| Decachlorobiphenyl (surr) | 65 | | | % | 1 | | 12/08/21 16:57 |

Batch Information

Analytical Batch: XGC11035
Analytical Method: SW8082A
Analyst: LAW
Analytical Date/Time: 12/08/21 16:57
Container ID: 1217737001-A

Prep Batch: XXX45915
Prep Method: SW3580A
Prep Date/Time: 12/08/21 12:00
Prep Initial Wt./Vol.: 0.503 g
Prep Extract Vol: 10 mL

Print Date: 12/15/2021 3:50:31PM

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Results of SSSC-PR-02

Client Sample ID: **SSSC-PR-02**

Client Project ID: **10ZZ 10ZZ**

Lab Sample ID: 1217737001

Lab Project ID: 1217737

Collection Date: 12/01/21 11:04

Received Date: 12/02/21 11:17

Matrix: Oil/Xylene Miscible Liquid

Solids (%):

Location:

Results by Semivolatile Organic Fuels

| <u>Parameter</u> | <u>Result</u> | <u>Qual</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> | <u>DF</u> | <u>Allowable</u> <u>Limits</u> | <u>Date Analyzed</u> |
|-----------------------|---------------|-------------|---------------|-----------|--------------|-----------|-----------------------------------|----------------------|
| Diesel Range Organics | 225000 | | 58800 | 18500 | mg/kg | 1 | | 12/07/21 15:55 |
| Surrogates | | | | | | | | |
| 5a Androstane (surr) | 0 | * | 50-150 | | % | 1 | | 12/07/21 15:55 |

Batch Information

Analytical Batch: XFC16157

Analytical Method: AK102

Analyst: IVM

Analytical Date/Time: 12/07/21 15:55

Container ID: 1217737001-A

Prep Batch: XXX45914

Prep Method: SW3580A

Prep Date/Time: 12/07/21 08:15

Prep Initial Wt./Vol.: 0.1021 g

Prep Extract Vol: 10 mL

| <u>Parameter</u> | <u>Result</u> | <u>Qual</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> | <u>DF</u> | <u>Allowable</u> <u>Limits</u> | <u>Date Analyzed</u> |
|--------------------------|---------------|-------------|---------------|-----------|--------------|-----------|-----------------------------------|----------------------|
| Residual Range Organics | 468000 | | 49000 | 15700 | mg/kg | 1 | | 12/07/21 15:55 |
| Surrogates | | | | | | | | |
| n-Triacontane-d62 (surr) | 0 | * | 50-150 | | % | 1 | | 12/07/21 15:55 |

Batch Information

Analytical Batch: XFC16157

Analytical Method: AK103

Analyst: IVM

Analytical Date/Time: 12/07/21 15:55

Container ID: 1217737001-A

Prep Batch: XXX45914

Prep Method: SW3580A

Prep Date/Time: 12/07/21 08:15

Prep Initial Wt./Vol.: 0.1021 g

Prep Extract Vol: 10 mL

Print Date: 12/15/2021 3:50:31PM

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Signature



Results of SSSC-PR-02

Client Sample ID: **SSSC-PR-02**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737001
Lab Project ID: 1217737

Collection Date: 12/01/21 11:04
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Volatile Fuels

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------------|--------|------|--------|------|-------|----|---------------------|----------------|
| Gasoline Range Organics | 62.0 | JT | 97.8 | 9.78 | mg/kg | 1 | | 12/08/21 13:03 |
| Surrogates | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 463 | * | 50-150 | | % | 1 | | 12/08/21 13:03 |

Batch Information

Analytical Batch: VFC15974
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 12/08/21 13:03
Container ID: 1217737001-A

Prep Batch: VXX38257
Prep Method: SW5035 Mod
Prep Date/Time: 12/06/21 13:26
Prep Initial Wt./Vol.: 1.023 g
Prep Extract Vol: 5 mL

Print Date: 12/15/2021 3:50:31PM

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**Results of SSSC-PR-02**

Client Sample ID: **SSSC-PR-02**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737001
Lab Project ID: 1217737

Collection Date: 12/01/21 11:04
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------------|-------------|--------|-------|-------|----|------------------|----------------|
| 1,1,1,2-Tetrachloroethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,1,1-Trichloroethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,1,2,2-Tetrachloroethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,1,2-Trichloroethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,1-Dichloroethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,1-Dichloroethene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,1-Dichloropropene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2,3-Trichlorobenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2,3-Trichloropropane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2,4-Trichlorobenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2,4-Trimethylbenzene | 6.83 | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2-Dibromo-3-chloropropane | 4.89 U | 9.78 | 3.03 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2-Dibromoethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2-Dichlorobenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2-Dichloroethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,2-Dichloropropane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,3,5-Trimethylbenzene | 1.62 J | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,3-Dichlorobenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,3-Dichloropropane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 1,4-Dichlorobenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 2,2-Dichloropropane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 2-Butanone (MEK) | 12.2 U | 24.4 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 2-Chlorotoluene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 2-Hexanone | 12.2 U | 24.4 | 7.62 | mg/kg | 5 | | 12/08/21 21:34 |
| 4-Chlorotoluene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 4-Isopropyltoluene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| 4-Methyl-2-pentanone (MIBK) | 12.2 U | 24.4 | 7.62 | mg/kg | 5 | | 12/08/21 21:34 |
| Benzene | 0.635 U | 1.27 | 0.381 | mg/kg | 5 | | 12/08/21 21:34 |
| Bromobenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Bromochloromethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Bromodichloromethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Bromoform | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Bromomethane | 9.80 U | 19.6 | 6.06 | mg/kg | 5 | | 12/08/21 21:34 |
| Carbon disulfide | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Carbon tetrachloride | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Chlorobenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Chloroethane | 9.80 U | 19.6 | 6.06 | mg/kg | 5 | | 12/08/21 21:34 |

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**Results of SSSC-PR-02**

Client Sample ID: **SSSC-PR-02**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737001
Lab Project ID: 1217737

Collection Date: 12/01/21 11:04
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Volatile GC/MS

| <u>Parameter</u> | <u>Result Qual</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> | <u>DF</u> | <u>Allowable Limits</u> | <u>Date Analyzed</u> |
|------------------------------|--------------------|---------------|-----------|--------------|-----------|-------------------------|----------------------|
| Chloroform | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Chloromethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| cis-1,2-Dichloroethene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| cis-1,3-Dichloropropene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Dibromochloromethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Dibromomethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Dichlorodifluoromethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Ethylbenzene | 1.20 J | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Freon-113 | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Hexachlorobutadiene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Isopropylbenzene (Cumene) | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Methylene chloride | 4.89 U | 9.78 | 3.03 | mg/kg | 5 | | 12/08/21 21:34 |
| Methyl-t-butyl ether | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Naphthalene | 14.0 | 4.89 | 1.47 | mg/kg | 5 | | 12/08/21 21:34 |
| n-Butylbenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| n-Propylbenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| o-Xylene | 2.35 J | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| P & M -Xylene | 5.16 | 4.89 | 1.47 | mg/kg | 5 | | 12/08/21 21:34 |
| sec-Butylbenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Styrene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| tert-Butylbenzene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Tetrachloroethene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Toluene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| trans-1,2-Dichloroethene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| trans-1,3-Dichloropropene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Trichloroethene | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Trichlorofluoromethane | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Vinyl acetate | 4.89 U | 9.78 | 3.03 | mg/kg | 5 | | 12/08/21 21:34 |
| Vinyl chloride | 1.22 U | 2.44 | 0.762 | mg/kg | 5 | | 12/08/21 21:34 |
| Xylenes (total) | 7.50 | 7.33 | 2.23 | mg/kg | 5 | | 12/08/21 21:34 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 106 | 71-136 | | % | 5 | | 12/08/21 21:34 |
| 4-Bromofluorobenzene (surr) | 100 | 55-151 | | % | 5 | | 12/08/21 21:34 |
| Toluene-d8 (surr) | 99.7 | 85-116 | | % | 5 | | 12/08/21 21:34 |

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Results of SSSC-PR-02

Client Sample ID: **SSSC-PR-02**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737001
Lab Project ID: 1217737

Collection Date: 12/01/21 11:04
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS21412
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 12/08/21 21:34
Container ID: 1217737001-A

Prep Batch: VXX38252
Prep Method: SW5035 Mod
Prep Date/Time: 12/06/21 13:26
Prep Initial Wt./Vol.: 1.023 g
Prep Extract Vol: 5 mL

Print Date: 12/15/2021 3:50:31PM

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Results of SSSC-PR-01

Client Sample ID: SSSC-PR-01
Client Project ID: 10ZZ 10ZZ
Lab Sample ID: 1217737002
Lab Project ID: 1217737

Collection Date: 11/30/21 16:17
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Metals by ICP/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|------------|----------------------|--------|--------|-------|----|------------------|----------------|
| Aluminum | 28.3 | 18.6 | 5.76 | mg/kg | 10 | | 12/09/21 17:26 |
| Antimony | 0.465 U | 0.929 | 0.288 | mg/kg | 10 | | 12/09/21 17:26 |
| Arsenic | 4.88 | 0.929 | 0.288 | mg/kg | 10 | | 12/09/21 17:26 |
| Barium | 0.0954 J | 0.279 | 0.0874 | mg/kg | 10 | | 12/09/21 17:26 |
| Beryllium | 0.0464 U | 0.0929 | 0.0288 | mg/kg | 10 | | 12/09/21 17:26 |
| Boron | 9.30 U | 18.6 | 5.76 | mg/kg | 10 | | 12/09/21 17:26 |
| Cadmium | 0.0930 U | 0.186 | 0.0576 | mg/kg | 10 | | 12/09/21 17:26 |
| Calcium | 46.5 U | 92.9 | 27.9 | mg/kg | 10 | | 12/09/21 17:26 |
| Chromium | 0.979 J ⁺ | 0.929 | 0.288 | mg/kg | 10 | | 12/09/21 17:26 |
| Cobalt | 0.434 J | 0.465 | 0.139 | mg/kg | 10 | | 12/09/21 17:26 |
| Copper | 38.4 | 0.558 | 0.167 | mg/kg | 10 | | 12/09/21 17:26 |
| Iron | 42.1 J | 46.5 | 13.9 | mg/kg | 10 | | 12/09/21 17:26 |
| Lead | 5.61 | 0.186 | 0.0576 | mg/kg | 10 | | 12/09/21 17:26 |
| Magnesium | 23.3 U | 46.5 | 13.9 | mg/kg | 10 | | 12/09/21 17:26 |
| Manganese | 0.111 J | 0.186 | 0.0576 | mg/kg | 10 | | 12/09/21 17:26 |
| Molybdenum | 1.49 | 0.929 | 0.288 | mg/kg | 10 | | 12/09/21 17:26 |
| Nickel | 32.7 | 0.186 | 0.0576 | mg/kg | 10 | | 12/09/21 17:26 |
| Potassium | 46.5 U | 92.9 | 28.8 | mg/kg | 10 | | 12/09/21 17:26 |
| Selenium | 0.448 J | 0.929 | 0.288 | mg/kg | 10 | | 12/09/21 17:26 |
| Silver | 0.233 U | 0.465 | 0.139 | mg/kg | 10 | | 12/09/21 17:26 |
| Sodium | 46.5 U | 92.9 | 28.8 | mg/kg | 10 | | 12/09/21 17:26 |
| Thallium | 0.0930 U | 0.186 | 0.0576 | mg/kg | 10 | | 12/09/21 17:26 |
| Vanadium | 68.3 | 2.79 | 0.874 | mg/kg | 10 | | 12/09/21 17:26 |
| Zinc | 6.01 | 2.32 | 0.725 | mg/kg | 10 | | 12/09/21 17:26 |

Batch Information

Analytical Batch: MMS11412
Analytical Method: SW6020B
Analyst: ACF
Analytical Date/Time: 12/09/21 17:26
Container ID: 1217737002-A

Prep Batch: MX34871
Prep Method: SW3050B
Prep Date/Time: 12/07/21 10:48
Prep Initial Wt./Vol.: 1.076 g
Prep Extract Vol: 50 mL

Print Date: 12/15/2021 3:50:31PM

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Results of SSSC-PR-01

Client Sample ID: SSSC-PR-01
Client Project ID: 10ZZ 10ZZ
Lab Sample ID: 1217737002
Lab Project ID: 1217737

Collection Date: 11/30/21 16:17
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Polychlorinated Biphenyls

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|--------------|-------------|--------|-------|-------|----|------------------|----------------|
| Aroclor-1016 | 0.975 U | 1.95 | 0.605 | mg/kg | 1 | | 12/08/21 18:20 |
| Aroclor-1221 | 0.975 U | 1.95 | 0.605 | mg/kg | 1 | | 12/08/21 18:20 |
| Aroclor-1232 | 0.975 U | 1.95 | 0.605 | mg/kg | 1 | | 12/08/21 18:20 |
| Aroclor-1242 | 0.975 U | 1.95 | 0.605 | mg/kg | 1 | | 12/08/21 18:20 |
| Aroclor-1248 | 0.975 U | 1.95 | 0.605 | mg/kg | 1 | | 12/08/21 18:20 |
| Aroclor-1254 | 0.975 U | 1.95 | 0.605 | mg/kg | 1 | | 12/08/21 18:20 |
| Aroclor-1260 | 0.975 U | 1.95 | 0.605 | mg/kg | 1 | | 12/08/21 18:20 |

Surrogates

| | | | | | | | |
|---------------------------|----|--|--|---|---|--|----------------|
| Decachlorobiphenyl (surr) | 65 | | | % | 1 | | 12/08/21 18:20 |
|---------------------------|----|--|--|---|---|--|----------------|

Batch Information

Analytical Batch: XGC11035
Analytical Method: SW8082A
Analyst: LAW
Analytical Date/Time: 12/08/21 18:20
Container ID: 1217737002-A

Prep Batch: XXX45915
Prep Method: SW3580A
Prep Date/Time: 12/08/21 12:00
Prep Initial Wt./Vol.: 0.5125 g
Prep Extract Vol: 10 mL

Print Date: 12/15/2021 3:50:31PM

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**Results of SSSC-PR-01**

Client Sample ID: **SSSC-PR-01**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737002
Lab Project ID: 1217737

Collection Date: 11/30/21 16:17
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Semivolatile Organic Fuels

| <u>Parameter</u> | <u>Result Qual</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> | <u>DF</u> | <u>Allowable Limits</u> | <u>Date Analyzed</u> |
|-----------------------|--------------------|---------------|-----------|--------------|-----------|-------------------------|----------------------|
| Diesel Range Organics | 677000 | 46900 | 14700 | mg/kg | 1 | | 12/07/21 16:16 |

Surrogates

| | | | | | | | |
|----------------------|-----|--------|--|---|---|--|----------------|
| 5a Androstane (surr) | 0 * | 50-150 | | % | 1 | | 12/07/21 16:16 |
|----------------------|-----|--------|--|---|---|--|----------------|

Batch Information

Analytical Batch: XFC16157
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 12/07/21 16:16
Container ID: 1217737002-A

Prep Batch: XXX45914
Prep Method: SW3580A
Prep Date/Time: 12/07/21 08:15
Prep Initial Wt./Vol.: 0.1278 g
Prep Extract Vol: 10 mL

| <u>Parameter</u> | <u>Result Qual</u> | <u>LOQ/CL</u> | <u>DL</u> | <u>Units</u> | <u>DF</u> | <u>Allowable Limits</u> | <u>Date Analyzed</u> |
|-------------------------|--------------------|---------------|-----------|--------------|-----------|-------------------------|----------------------|
| Residual Range Organics | 308000 | 39100 | 12500 | mg/kg | 1 | | 12/07/21 16:16 |

Surrogates

| | | | | | | | |
|--------------------------|-----|--------|--|---|---|--|----------------|
| n-Triacontane-d62 (surr) | 0 * | 50-150 | | % | 1 | | 12/07/21 16:16 |
|--------------------------|-----|--------|--|---|---|--|----------------|

Batch Information

Analytical Batch: XFC16157
Analytical Method: AK103
Analyst: IVM
Analytical Date/Time: 12/07/21 16:16
Container ID: 1217737002-A

Prep Batch: XXX45914
Prep Method: SW3580A
Prep Date/Time: 12/07/21 08:15
Prep Initial Wt./Vol.: 0.1278 g
Prep Extract Vol: 10 mL

Print Date: 12/15/2021 3:50:31PM

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Results of SSSC-PR-01

Client Sample ID: SSSC-PR-01
Client Project ID: 10ZZ 10ZZ
Lab Sample ID: 1217737002
Lab Project ID: 1217737

Collection Date: 11/30/21 16:17
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Volatile Fuels

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------------|--------|------|--------|-----|-------|----|------------------|----------------|
| Gasoline Range Organics | 4520 | J+ | 1990 | 199 | mg/kg | 20 | | 12/08/21 13:21 |
| Surrogates | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 8640 | * | 50-150 | | % | 20 | | 12/08/21 13:21 |

Batch Information

Analytical Batch: VFC15974
Analytical Method: AK101
Analyst: IJV
Analytical Date/Time: 12/08/21 13:21
Container ID: 1217737002-A

Prep Batch: VXX38257
Prep Method: SW5035 Mod
Prep Date/Time: 12/06/21 13:26
Prep Initial Wt./Vol.: 1.006 g
Prep Extract Vol: 5 mL

Print Date: 12/15/2021 3:50:31PM

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Results of SSSC-PR-01

Client Sample ID: **SSSC-PR-01**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737002
Lab Project ID: 1217737

Collection Date: 11/30/21 16:17
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|-----------------------------|-----------------|--------|-------|-------|----|------------------|----------------|
| 1,1,1,2-Tetrachloroethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,1,1-Trichloroethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,1,2,2-Tetrachloroethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,1,2-Trichloroethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,1-Dichloroethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,1-Dichloroethene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,1-Dichloropropene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2,3-Trichlorobenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2,3-Trichloropropane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2,4-Trichlorobenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2,4-Trimethylbenzene | 18.6 <i>JA</i> | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2-Dibromo-3-chloropropane | 4.97 U | 9.94 | 3.08 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2-Dibromoethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2-Dichlorobenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2-Dichloroethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,2-Dichloropropane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,3,5-Trimethylbenzene | 0.942 <i>JA</i> | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,3-Dichlorobenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,3-Dichloropropane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 1,4-Dichlorobenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 2,2-Dichloropropane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 2-Butanone (MEK) | 12.4 U | 24.9 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 2-Chlorotoluene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 2-Hexanone | 12.4 U | 24.9 | 7.75 | mg/kg | 5 | | 12/08/21 20:45 |
| 4-Chlorotoluene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 4-Isopropyltoluene | 12.2 <i>JA</i> | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| 4-Methyl-2-pentanone (MIBK) | 12.4 U | 24.9 | 7.75 | mg/kg | 5 | | 12/08/21 20:45 |
| Benzene | 0.645 U | 1.29 | 0.388 | mg/kg | 5 | | 12/08/21 20:45 |
| Bromobenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Bromochloromethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Bromodichloromethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Bromoform | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Bromomethane | 9.95 U | 19.9 | 6.16 | mg/kg | 5 | | 12/08/21 20:45 |
| Carbon disulfide | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Carbon tetrachloride | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Chlorobenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Chloroethane | 9.95 U | 19.9 | 6.16 | mg/kg | 5 | | 12/08/21 20:45 |

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**Results of SSSC-PR-01**

Client Sample ID: **SSSC-PR-01**
Client Project ID: **10ZZ 10ZZ**
Lab Sample ID: 1217737002
Lab Project ID: 1217737

Collection Date: 11/30/21 16:17
Received Date: 12/02/21 11:17
Matrix: Oil/Xylene Miscible Liquid
Solids (%):
Location:

Results by Volatile GC/MS

| Parameter | Result Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|------------------------------|-------------|--------|-------|-------|----|------------------|----------------|
| Chloroform | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Chloromethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| cis-1,2-Dichloroethene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| cis-1,3-Dichloropropene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Dibromochloromethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Dibromomethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Dichlorodifluoromethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Ethylbenzene | 5.05 J4 | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Freon-113 | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Hexachlorobutadiene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Isopropylbenzene (Cumene) | 5.30 J4 | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Methylene chloride | 4.97 U | 9.94 | 3.08 | mg/kg | 5 | | 12/08/21 20:45 |
| Methyl-t-butyl ether | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Naphthalene | 39.2 J4 | 4.97 | 1.49 | mg/kg | 5 | | 12/08/21 20:45 |
| n-Butylbenzene | 18.5 | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| n-Propylbenzene | 10.3 | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| o-Xylene | 3.02 | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| P & M -Xylene | 1.96 J4 | 4.97 | 1.49 | mg/kg | 5 | | 12/08/21 20:45 |
| sec-Butylbenzene | 13.0 J4 | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Styrene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| tert-Butylbenzene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Tetrachloroethene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Toluene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| trans-1,2-Dichloroethene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| trans-1,3-Dichloropropene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Trichloroethene | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Trichlorofluoromethane | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Vinyl acetate | 4.97 U | 9.94 | 3.08 | mg/kg | 5 | | 12/08/21 20:45 |
| Vinyl chloride | 1.25 U | 2.49 | 0.775 | mg/kg | 5 | | 12/08/21 20:45 |
| Xylenes (total) | 4.98 J4 | 7.46 | 2.27 | mg/kg | 5 | | 12/08/21 20:45 |
| Surrogates | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 101 | 71-136 | | % | 5 | | 12/08/21 20:45 |
| 4-Bromofluorobenzene (surr) | 162 * | 55-151 | | % | 5 | | 12/08/21 20:45 |
| Toluene-d8 (surr) | 99.3 | 85-116 | | % | 5 | | 12/08/21 20:45 |

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