

ANALYTICAL REPORT

Job Number: 580-87761-2

Job Description: Portland Harbor

For:

Haley & Aldrich, Inc.

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San Diego, CA 92108

Attention: Dr. Laura McWilliams

Approved for release.
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08/15/2019

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This report shall not be reproduced except in full, without prior express written approval by the laboratory. The results relate only to the item(s) tested and the sample(s) as received by the laboratory.

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan and meet all requirements of NELAC. All data have been found to be compliant with laboratory protocol, with the exception of any items noted in the case narrative.

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Definitions/Glossary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Qualifiers

GC/MS Semi VOA

| Qualifier | Qualifier Description |
|-----------|--|
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

Metals

| Qualifier | Qualifier Description |
|-----------|--|
| B | Compound was found in the blank and sample. |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |

Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|----------------|---|
| ▫ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CFL | Contains Free Liquid |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

CASE NARRATIVE
Client: Haley & Aldrich, Inc.
Project: Portland Harbor
Report Number: 580-87761-2

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 07/18/2019; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 7 coolers at receipt time were 1.2° C, 1.7° C, 2.1° C, 4.1° C, 4.6° C, 4.9° C and 5.3° C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

Samples 22T-VB-01-RB-BRL_20190718 (580-87761-28) and 22T-SG-01-RB-CR_20190718 (580-87761-29) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with 8270D SIM. The samples were prepared on 07/25/2019 and analyzed on 08/01/2019.

C2-Fluorenes was detected in method blank MB 140-32029/1-A at a level exceeding the reporting limit. None of the samples associated with this method blank contained the target compound; therefore, re-extraction and/or re-analysis of samples were not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL RECOVERABLE METALS (ICPMS)

Samples 22T-VB-01-RB-BRL_20190718 (580-87761-28) and 22T-SG-01-RB-CR_20190718 (580-87761-29) were analyzed for total recoverable metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 07/25/2019 and analyzed on 07/26/2019.

Samples 22T-VB-01-RB-BRL_20190718 (580-87761-28)[5X] and 22T-SG-01-RB-CR_20190718 (580-87761-29)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Arsenic was detected in method blank MB 580-306640/22-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TOTAL MERCURY

Samples 22T-VB-01-RB-BRL_20190718 (580-87761-28) and 22T-SG-01-RB-CR_20190718 (580-87761-29) were analyzed for total mercury in accordance with EPA SW-846 Methods 7470A. The samples were prepared and analyzed on 07/24/2019.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Client Sample ID: 22T-VB-01-RB-BRL_20190718

Lab Sample ID: 580-87761-28

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|----------------|--------|-----------|--------|--------|------|---------|---|-----------|-------------------|
| Acenaphthene | 22 | | 9.5 | 3.8 | ng/L | 1 | | 8270D SIM | Total/NA |
| Acenaphthylene | 1.3 | J | 9.5 | 1.1 | ng/L | 1 | | 8270D SIM | Total/NA |
| Fluorene | 5.0 | J | 9.5 | 3.9 | ng/L | 1 | | 8270D SIM | Total/NA |
| Naphthalene | 14 | J | 48 | 9.7 | ng/L | 1 | | 8270D SIM | Total/NA |
| Arsenic | 0.0042 | J B | 0.0050 | 0.0010 | mg/L | 5 | | 6020A | Total Recoverable |

Client Sample ID: 22T-SG-01-RB-CR_20190718

Lab Sample ID: 580-87761-29

| Analyte | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method | Prep Type |
|---------------------|--------|-----------|--------|--------|------|---------|---|-----------|-------------------|
| Acenaphthene | 19 | | 11 | 4.5 | ng/L | 1 | | 8270D SIM | Total/NA |
| Acenaphthylene | 1.5 | J | 11 | 1.3 | ng/L | 1 | | 8270D SIM | Total/NA |
| C1-Naphthalenes | 7.8 | J | 11 | 6.4 | ng/L | 1 | | 8270D SIM | Total/NA |
| C2-Naphthalenes | 6.8 | J | 11 | 5.7 | ng/L | 1 | | 8270D SIM | Total/NA |
| C3-Naphthalenes | 10 | J | 11 | 7.3 | ng/L | 1 | | 8270D SIM | Total/NA |
| Fluorene | 7.9 | J | 11 | 4.7 | ng/L | 1 | | 8270D SIM | Total/NA |
| 1-Methylnaphthalene | 4.7 | J | 11 | 4.1 | ng/L | 1 | | 8270D SIM | Total/NA |
| 2-Methylnaphthalene | 7.5 | J | 23 | 6.5 | ng/L | 1 | | 8270D SIM | Total/NA |
| Naphthalene | 19 | J | 57 | 12 | ng/L | 1 | | 8270D SIM | Total/NA |
| Arsenic | 0.0047 | J B | 0.0050 | 0.0010 | mg/L | 5 | | 6020A | Total Recoverable |

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Seattle

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Client Sample ID: 22T-VB-01-RB-BRL_20190718

Lab Sample ID: 580-87761-28

Date Collected: 07/18/19 07:30

Matrix: Water

Date Received: 07/18/19 13:00

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|--------|-----------|-----|-----|------|---|----------------|----------------|---------|
| Acenaphthene | 22 | | 9.5 | 3.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Acenaphthylene | 1.3 | J | 9.5 | 1.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Anthracene | ND | | 9.5 | 6.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Benzo[a]anthracene | ND | | 9.5 | 2.2 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Benzo[a]pyrene | ND | | 9.5 | 1.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Benzo[b]fluoranthene | ND | | 9.5 | 4.2 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Benzo[e]pyrene | ND | | 9.5 | 2.0 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Benzo[g,h,i]perylene | ND | | 9.5 | 2.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Benzo[k]fluoranthene | ND | | 9.5 | 1.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C1-Chrysenes | ND | | 9.5 | 2.9 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C2-Chrysenes | ND | | 9.5 | 4.6 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C3-Chrysenes | ND | | 9.5 | 3.9 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C4-Chrysenes | ND | | 9.5 | 3.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C1-Dibenzothiophenes | ND | | 9.5 | 3.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C2-Dibenzothiophenes | ND | | 9.5 | 6.6 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C3-Dibenzothiophenes | ND | | 19 | 12 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C4-Dibenzothiophenes | ND | | 19 | 10 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C1-Fluoranthenes/pyrene | ND | | 9.5 | 5.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C2-Fluoranthenes/Pyrene | ND | | 9.5 | 7.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C3-Fluoranthenes/Pyrene | ND | | 9.5 | 7.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C4-Fluoranthenes/Pyrene | ND | | 9.5 | 6.0 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C1-Fluorenes | ND | | 19 | 8.6 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C2-Fluorenes | ND | | 9.5 | 8.0 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C3-Fluorenes | ND | | 9.5 | 7.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Chrysene | ND | | 9.5 | 2.3 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C1-Naphthalenes | ND | | 9.5 | 5.3 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C2-Naphthalenes | ND | | 9.5 | 4.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C3-Naphthalenes | ND | | 9.5 | 6.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C4-Naphthalenes | ND | | 38 | 19 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C1-Phenanthrenes/Anthracenes | ND | | 19 | 9.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C2-Phenanthrenes/Anthracenes | ND | | 19 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C3-Phenanthrenes/Anthracenes | ND | | 19 | 15 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| C4-Phenanthrenes/Anthracenes | ND | | 19 | 17 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Dibenz(a,h)anthracene | ND | | 9.5 | 3.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Dibenzothiophene | ND | | 9.5 | 6.2 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Fluoranthene | ND | | 19 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Fluorene | 5.0 | J | 9.5 | 3.9 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 9.5 | 3.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| 1-Methylnaphthalene | ND | | 9.5 | 3.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| 2-Methylnaphthalene | ND | | 19 | 5.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Naphthalene | 14 | J | 48 | 9.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Perylene | ND | | 19 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Phenanthrene | ND | | 38 | 19 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Pyrene | ND | | 9.5 | 7.0 | ng/L | | 07/25/19 11:50 | 08/01/19 22:01 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|-------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2-Fluorobiphenyl (Surr) | 83 | | 48 - 145 | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Nitrobenzene-d5 | 110 | | 20 - 116 | 07/25/19 11:50 | 08/01/19 22:01 | 1 |
| Terphenyl-d14 | 97 | | 55 - 150 | 07/25/19 11:50 | 08/01/19 22:01 | 1 |

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Client Sample ID: 22T-VB-01-RB-BRL_20190718

Lab Sample ID: 580-87761-28

Date Collected: 07/18/19 07:30

Matrix: Water

Date Received: 07/18/19 13:00

Method: 6020A - Metals (ICP/MS) - Total Recoverable

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|---------------|------------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic | 0.0042 | J B | 0.0050 | 0.0010 | mg/L | | 07/25/19 14:40 | 07/26/19 10:58 | 5 |
| Cadmium | ND | | 0.0020 | 0.00050 | mg/L | | 07/25/19 14:40 | 07/26/19 10:58 | 5 |
| Copper | ND | | 0.010 | 0.0030 | mg/L | | 07/25/19 14:40 | 07/26/19 10:58 | 5 |
| Lead | ND | | 0.0040 | 0.0010 | mg/L | | 07/25/19 14:40 | 07/26/19 10:58 | 5 |
| Zinc | ND | | 0.035 | 0.0095 | mg/L | | 07/25/19 14:40 | 07/26/19 10:58 | 5 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.00030 | 0.00015 | mg/L | | 07/24/19 09:16 | 07/24/19 14:20 | 1 |

Client Sample ID: 22T-SG-01-RB-CR_20190718

Lab Sample ID: 580-87761-29

Date Collected: 07/18/19 12:00

Matrix: Water

Date Received: 07/18/19 13:00

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|------------|-----------|----|-----|------|---|----------------|----------------|---------|
| Acenaphthene | 19 | | 11 | 4.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Acenaphthylene | 1.5 | J | 11 | 1.3 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Anthracene | ND | | 11 | 7.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Benzo[a]anthracene | ND | | 11 | 2.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Benzo[a]pyrene | ND | | 11 | 2.2 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Benzo[b]fluoranthene | ND | | 11 | 5.0 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Benzo[e]pyrene | ND | | 11 | 2.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Benzo[g,h,i]perylene | ND | | 11 | 3.3 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Benzo[k]fluoranthene | ND | | 11 | 2.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C1-Chrysenes | ND | | 11 | 3.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C2-Chrysenes | ND | | 11 | 5.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C3-Chrysenes | ND | | 11 | 4.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C4-Chrysenes | ND | | 11 | 4.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C1-Dibenzothiophenes | ND | | 11 | 3.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C2-Dibenzothiophenes | ND | | 11 | 7.8 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C3-Dibenzothiophenes | ND | | 23 | 15 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C4-Dibenzothiophenes | ND | | 23 | 12 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C1-Fluoranthenes/pyrene | ND | | 11 | 6.0 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C2-Fluoranthenes/Pyrene | ND | | 11 | 8.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C3-Fluoranthenes/Pyrene | ND | | 11 | 9.3 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C4-Fluoranthenes/Pyrene | ND | | 11 | 7.2 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C1-Fluorenes | ND | | 23 | 10 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C2-Fluorenes | ND | | 11 | 9.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C3-Fluorenes | ND | | 11 | 9.0 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Chrysene | ND | | 11 | 2.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C1-Naphthalenes | 7.8 | J | 11 | 6.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C2-Naphthalenes | 6.8 | J | 11 | 5.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C3-Naphthalenes | 10 | J | 11 | 7.3 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C4-Naphthalenes | ND | | 46 | 23 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C1-Phenanthrenes/Anthracenes | ND | | 23 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C2-Phenanthrenes/Anthracenes | ND | | 23 | 13 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C3-Phenanthrenes/Anthracenes | ND | | 23 | 18 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| C4-Phenanthrenes/Anthracenes | ND | | 23 | 20 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Dibenz(a,h)anthracene | ND | | 11 | 4.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |

Client Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Client Sample ID: 22T-SG-01-RB-CR_20190718

Lab Sample ID: 580-87761-29

Date Collected: 07/18/19 12:00

Matrix: Water

Date Received: 07/18/19 13:00

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------------------|------------|-----------|----|-----|------|---|----------------|----------------|---------|
| Dibenzothiophene | ND | | 11 | 7.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Fluoranthene | ND | | 23 | 13 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Fluorene | 7.9 | J | 11 | 4.7 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 11 | 4.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| 1-Methylnaphthalene | 4.7 | J | 11 | 4.1 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| 2-Methylnaphthalene | 7.5 | J | 23 | 6.5 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Naphthalene | 19 | J | 57 | 12 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Perylene | ND | | 23 | 13 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Phenanthrene | ND | | 46 | 23 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Pyrene | ND | | 11 | 8.4 | ng/L | | 07/25/19 11:50 | 08/01/19 22:26 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|-------------------------|-----------|-----------|----------|----------------|----------------|---------|
| 2-Fluorobiphenyl (Surr) | 81 | | 48 - 145 | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Nitrobenzene-d5 | 109 | | 20 - 116 | 07/25/19 11:50 | 08/01/19 22:26 | 1 |
| Terphenyl-d14 | 94 | | 55 - 150 | 07/25/19 11:50 | 08/01/19 22:26 | 1 |

Method: 6020A - Metals (ICP/MS) - Total Recoverable

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|----------------|---------------|------------|--------|---------|------|---|----------------|----------------|---------|
| Arsenic | 0.0047 | J B | 0.0050 | 0.0010 | mg/L | | 07/25/19 14:40 | 07/26/19 11:02 | 5 |
| Cadmium | ND | | 0.0020 | 0.00050 | mg/L | | 07/25/19 14:40 | 07/26/19 11:02 | 5 |
| Copper | ND | | 0.010 | 0.0030 | mg/L | | 07/25/19 14:40 | 07/26/19 11:02 | 5 |
| Lead | ND | | 0.0040 | 0.0010 | mg/L | | 07/25/19 14:40 | 07/26/19 11:02 | 5 |
| Zinc | ND | | 0.035 | 0.0095 | mg/L | | 07/25/19 14:40 | 07/26/19 11:02 | 5 |

Method: 7470A - Mercury (CVAA)

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|--------|-----------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.00030 | 0.00015 | mg/L | | 07/24/19 09:16 | 07/24/19 14:06 | 1 |

Default Detection Limits

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Prep: 3520C

| Analyte | RL | MDL | Units |
|------------------------------|----|-----|-------|
| 1-Methylnaphthalene | 10 | 3.6 | ng/L |
| 2-Methylnaphthalene | 20 | 5.7 | ng/L |
| Acenaphthene | 10 | 4.0 | ng/L |
| Acenaphthylene | 10 | 1.2 | ng/L |
| Anthracene | 10 | 6.9 | ng/L |
| Benzo[a]anthracene | 10 | 2.4 | ng/L |
| Benzo[a]pyrene | 10 | 1.9 | ng/L |
| Benzo[b]fluoranthene | 10 | 4.4 | ng/L |
| Benzo[e]pyrene | 10 | 2.1 | ng/L |
| Benzo[g,h,i]perylene | 10 | 2.9 | ng/L |
| Benzo[k]fluoranthene | 10 | 1.9 | ng/L |
| C1-Chrysenes | 10 | 3.1 | ng/L |
| C1-Dibenzothiophenes | 10 | 3.3 | ng/L |
| C1-Fluoranthenes/pyrene | 10 | 5.3 | ng/L |
| C1-Fluorenes | 20 | 9.0 | ng/L |
| C1-Naphthalenes | 10 | 5.6 | ng/L |
| C1-Phenanthrenes/Anthracenes | 20 | 10 | ng/L |
| C2-Chrysenes | 10 | 4.8 | ng/L |
| C2-Dibenzothiophenes | 10 | 6.9 | ng/L |
| C2-Fluoranthenes/Pyrene | 10 | 7.4 | ng/L |
| C2-Fluorenes | 10 | 8.4 | ng/L |
| C2-Naphthalenes | 10 | 5.0 | ng/L |
| C2-Phenanthrenes/Anthracenes | 20 | 11 | ng/L |
| C3-Chrysenes | 10 | 4.1 | ng/L |
| C3-Dibenzothiophenes | 20 | 13 | ng/L |
| C3-Fluoranthenes/Pyrene | 10 | 8.1 | ng/L |
| C3-Fluorenes | 10 | 7.9 | ng/L |
| C3-Naphthalenes | 10 | 6.4 | ng/L |
| C3-Phenanthrenes/Anthracenes | 20 | 16 | ng/L |
| C4-Chrysenes | 10 | 3.8 | ng/L |
| C4-Dibenzothiophenes | 20 | 11 | ng/L |
| C4-Fluoranthenes/Pyrene | 10 | 6.3 | ng/L |
| C4-Naphthalenes | 40 | 20 | ng/L |
| C4-Phenanthrenes/Anthracenes | 20 | 18 | ng/L |
| Chrysene | 10 | 2.4 | ng/L |
| Dibenz(a,h)anthracene | 10 | 3.6 | ng/L |
| Dibenzothiophene | 10 | 6.5 | ng/L |
| Fluoranthene | 20 | 11 | ng/L |
| Fluorene | 10 | 4.1 | ng/L |
| Indeno[1,2,3-cd]pyrene | 10 | 4.0 | ng/L |
| Naphthalene | 50 | 10 | ng/L |
| Perylene | 20 | 11 | ng/L |
| Phenanthrene | 40 | 20 | ng/L |
| Pyrene | 10 | 7.4 | ng/L |

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Prep: 3005A

| Analyte | RL | MDL | Units |
|---------|--------|---------|-------|
| Arsenic | 0.0050 | 0.0010 | mg/L |
| Cadmium | 0.0020 | 0.00050 | mg/L |
| Copper | 0.010 | 0.0030 | mg/L |

Default Detection Limits

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Method: 6020A - Metals (ICP/MS) - Total Recoverable (Continued)

Prep: 3005A

| Analyte | RL | MDL | Units |
|---------|--------|--------|-------|
| Lead | 0.0040 | 0.0010 | mg/L |
| Zinc | 0.035 | 0.0095 | mg/L |

Method: 7470A - Mercury (CVAA)

Prep: 7470A

| Analyte | RL | MDL | Units |
|---------|---------|---------|-------|
| Mercury | 0.00030 | 0.00015 | mg/L |

Surrogate Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Water

Prep Type: Total/NA

| Lab Sample ID | Client Sample ID | Percent Surrogate Recovery (Acceptance Limits) | | |
|--------------------|---------------------------|--|-----------------|------------------|
| | | FBP (48-145) | NBZ (20-116) | TPHL (55-150) |
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | 83 | 110 | 97 |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | 81 | 109 | 94 |
| LCS 140-32029/2-A | Lab Control Sample | 82 | 109 | 98 |
| LCSD 140-32029/3-A | Lab Control Sample Dup | 75 | 101 | 94 |
| MB 140-32029/1-A | Method Blank | 73 | 92 | 91 |

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)

NBZ = Nitrobenzene-d5

TPHL = Terphenyl-d14

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 140-32029/1-A

Matrix: Water

Analysis Batch: 32296

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 32029

| Analyte | MB | MB | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|------------------------------|--------|-----------|----|-----|------|---|----------------|----------------|---------|
| | Result | Qualifier | | | | | | | |
| Acenaphthene | ND | | 10 | 4.0 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Acenaphthylene | ND | | 10 | 1.2 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Anthracene | ND | | 10 | 6.9 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Benzo[a]anthracene | ND | | 10 | 2.4 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Benzo[a]pyrene | ND | | 10 | 1.9 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Benzo[b]fluoranthene | ND | | 10 | 4.4 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Benzo[e]pyrene | ND | | 10 | 2.1 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Benzo[g,h,i]perylene | ND | | 10 | 2.9 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Benzo[k]fluoranthene | ND | | 10 | 1.9 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C1-Chrysenes | ND | | 10 | 3.1 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C2-Chrysenes | ND | | 10 | 4.8 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C3-Chrysenes | ND | | 10 | 4.1 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C4-Chrysenes | ND | | 10 | 3.8 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C1-Dibenzothiophenes | ND | | 10 | 3.3 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C2-Dibenzothiophenes | ND | | 10 | 6.9 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C3-Dibenzothiophenes | ND | | 20 | 13 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C4-Dibenzothiophenes | ND | | 20 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C1-Fluoranthenes/pyrene | ND | | 10 | 5.3 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C2-Fluoranthenes/Pyrene | ND | | 10 | 7.4 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C3-Fluoranthenes/Pyrene | ND | | 10 | 8.1 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C4-Fluoranthenes/Pyrene | ND | | 10 | 6.3 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C1-Fluorenes | ND | | 20 | 9.0 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C2-Fluorenes | 10.8 | | 10 | 8.4 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C3-Fluorenes | ND | | 10 | 7.9 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Chrysene | ND | | 10 | 2.4 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C1-Naphthalenes | ND | | 10 | 5.6 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C2-Naphthalenes | ND | | 10 | 5.0 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C3-Naphthalenes | ND | | 10 | 6.4 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C4-Naphthalenes | ND | | 40 | 20 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C1-Phenanthrenes/Anthracenes | ND | | 20 | 10 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C2-Phenanthrenes/Anthracenes | ND | | 20 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C3-Phenanthrenes/Anthracenes | ND | | 20 | 16 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| C4-Phenanthrenes/Anthracenes | ND | | 20 | 18 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Dibenz(a,h)anthracene | ND | | 10 | 3.6 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Dibenzothiophene | ND | | 10 | 6.5 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Fluoranthene | ND | | 20 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Fluorene | ND | | 10 | 4.1 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 10 | 4.0 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| 1-Methylnaphthalene | ND | | 10 | 3.6 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| 2-Methylnaphthalene | ND | | 20 | 5.7 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Naphthalene | ND | | 50 | 10 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Perylene | ND | | 20 | 11 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Phenanthrene | ND | | 40 | 20 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Pyrene | ND | | 10 | 7.4 | ng/L | | 07/25/19 11:50 | 08/01/19 20:20 | 1 |

| Surrogate | MB | MB | Limits | Prepared | Analyzed | Dil Fac |
|-------------------------|-----------|-----------|----------|----------------|----------------|---------|
| | %Recovery | Qualifier | | | | |
| 2-Fluorobiphenyl (Surr) | 73 | | 48 - 145 | 07/25/19 11:50 | 08/01/19 20:20 | 1 |
| Nitrobenzene-d5 | 92 | | 20 - 116 | 07/25/19 11:50 | 08/01/19 20:20 | 1 |

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QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 140-32029/1-A
Matrix: Water
Analysis Batch: 32296

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 32029

| Surrogate | MB MB | Limits | Prepared | Analyzed | Dil Fac |
|---------------|---------------------|----------|----------------|----------------|---------|
| | %Recovery Qualifier | | | | |
| Terphenyl-d14 | 91 | 55 - 150 | 07/25/19 11:50 | 08/01/19 20:20 | 1 |

Lab Sample ID: LCS 140-32029/2-A
Matrix: Water
Analysis Batch: 32296

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 32029

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|------------------------|-------------|------------|---------------|------|---|------|--------------|
| Acenaphthene | 500 | 430 | | ng/L | | 86 | 50 - 150 |
| Acenaphthylene | 500 | 505 | | ng/L | | 101 | 50 - 150 |
| Anthracene | 500 | 501 | | ng/L | | 100 | 50 - 150 |
| Benzo[a]anthracene | 500 | 559 | | ng/L | | 112 | 50 - 150 |
| Benzo[a]pyrene | 500 | 497 | | ng/L | | 99 | 50 - 150 |
| Benzo[b]fluoranthene | 500 | 514 | | ng/L | | 103 | 50 - 150 |
| Benzo[e]pyrene | 500 | 453 | | ng/L | | 91 | 50 - 150 |
| Benzo[g,h,i]perylene | 500 | 451 | | ng/L | | 90 | 50 - 150 |
| Benzo[k]fluoranthene | 500 | 415 | | ng/L | | 83 | 50 - 150 |
| Chrysene | 500 | 436 | | ng/L | | 87 | 50 - 150 |
| Dibenz(a,h)anthracene | 500 | 463 | | ng/L | | 93 | 50 - 150 |
| Dibenzothiophene | 500 | 438 | | ng/L | | 88 | 50 - 150 |
| Fluoranthene | 500 | 499 | | ng/L | | 100 | 50 - 150 |
| Fluorene | 500 | 443 | | ng/L | | 89 | 50 - 150 |
| Indeno[1,2,3-cd]pyrene | 500 | 478 | | ng/L | | 96 | 50 - 150 |
| 1-Methylnaphthalene | 500 | 447 | | ng/L | | 89 | 50 - 150 |
| 2-Methylnaphthalene | 500 | 452 | | ng/L | | 90 | 50 - 150 |
| Naphthalene | 500 | 440 | | ng/L | | 88 | 50 - 150 |
| Perylene | 500 | 422 | | ng/L | | 84 | 50 - 150 |
| Phenanthrene | 500 | 441 | | ng/L | | 88 | 50 - 150 |
| Pyrene | 500 | 492 | | ng/L | | 98 | 50 - 150 |

| Surrogate | LCS LCS | Limits |
|-------------------------|---------------------|----------|
| | %Recovery Qualifier | |
| 2-Fluorobiphenyl (Surr) | 82 | 48 - 145 |
| Nitrobenzene-d5 | 109 | 20 - 116 |
| Terphenyl-d14 | 98 | 55 - 150 |

Lab Sample ID: LCSD 140-32029/3-A
Matrix: Water
Analysis Batch: 32296

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32029

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|----------------------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Acenaphthene | 500 | 406 | | ng/L | | 81 | 50 - 150 | 6 | 35 |
| Acenaphthylene | 500 | 472 | | ng/L | | 94 | 50 - 150 | 7 | 35 |
| Anthracene | 500 | 484 | | ng/L | | 97 | 50 - 150 | 3 | 35 |
| Benzo[a]anthracene | 500 | 533 | | ng/L | | 107 | 50 - 150 | 5 | 35 |
| Benzo[a]pyrene | 500 | 479 | | ng/L | | 96 | 50 - 150 | 4 | 35 |
| Benzo[b]fluoranthene | 500 | 499 | | ng/L | | 100 | 50 - 150 | 3 | 35 |
| Benzo[e]pyrene | 500 | 441 | | ng/L | | 88 | 50 - 150 | 3 | 35 |
| Benzo[g,h,i]perylene | 500 | 438 | | ng/L | | 88 | 50 - 150 | 3 | 35 |
| Benzo[k]fluoranthene | 500 | 403 | | ng/L | | 81 | 50 - 150 | 3 | 35 |

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 140-32029/3-A
Matrix: Water
Analysis Batch: 32296

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 32029

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. | | RPD |
|------------------------|-------------|-------------|----------------|------|---|------|----------|-----|-----|
| | | | | | | | Limits | RPD | |
| Chrysene | 500 | 418 | | ng/L | | 84 | 50 - 150 | 4 | 35 |
| Dibenz(a,h)anthracene | 500 | 449 | | ng/L | | 90 | 50 - 150 | 3 | 35 |
| Dibenzothiophene | 500 | 425 | | ng/L | | 85 | 50 - 150 | 3 | 35 |
| Fluoranthene | 500 | 485 | | ng/L | | 97 | 50 - 150 | 3 | 35 |
| Fluorene | 500 | 429 | | ng/L | | 86 | 50 - 150 | 3 | 35 |
| Indeno[1,2,3-cd]pyrene | 500 | 463 | | ng/L | | 93 | 50 - 150 | 3 | 35 |
| 1-Methylnaphthalene | 500 | 419 | | ng/L | | 84 | 50 - 150 | 7 | 35 |
| 2-Methylnaphthalene | 500 | 420 | | ng/L | | 84 | 50 - 150 | 7 | 35 |
| Naphthalene | 500 | 403 | | ng/L | | 81 | 50 - 150 | 9 | 35 |
| Perylene | 500 | 403 | | ng/L | | 81 | 50 - 150 | 4 | 35 |
| Phenanthrene | 500 | 427 | | ng/L | | 85 | 50 - 150 | 3 | 35 |
| Pyrene | 500 | 473 | | ng/L | | 95 | 50 - 150 | 4 | 35 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|-------------------------|----------------|----------------|----------|
| 2-Fluorobiphenyl (Surr) | 75 | | 48 - 145 |
| Nitrobenzene-d5 | 101 | | 20 - 116 |
| Terphenyl-d14 | 94 | | 55 - 150 |

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 580-306640/22-A
Matrix: Water
Analysis Batch: 306788

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 306640

| Analyte | MB MB | | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|----------|-----------|---------|---------|------|---|----------------|----------------|---------|
| | Result | Qualifier | | | | | | | |
| Arsenic | 0.000853 | J | 0.0010 | 0.00020 | mg/L | | 07/25/19 14:41 | 07/26/19 09:45 | 1 |
| Cadmium | ND | | 0.00040 | 0.00010 | mg/L | | 07/25/19 14:41 | 07/26/19 09:45 | 1 |
| Copper | ND | | 0.0020 | 0.00060 | mg/L | | 07/25/19 14:41 | 07/26/19 09:45 | 1 |
| Lead | ND | | 0.00080 | 0.00020 | mg/L | | 07/25/19 14:41 | 07/26/19 09:45 | 1 |
| Zinc | ND | | 0.0070 | 0.0019 | mg/L | | 07/25/19 14:41 | 07/26/19 09:45 | 1 |

Lab Sample ID: LCS 580-306640/23-A
Matrix: Water
Analysis Batch: 306788

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 306640

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. | |
|---------|-------------|------------|---------------|------|---|------|----------|-----|
| | | | | | | | Limits | RPD |
| Arsenic | 1.00 | 1.02 | | mg/L | | 102 | 80 - 120 | |
| Cadmium | 1.00 | 1.03 | | mg/L | | 103 | 80 - 120 | |
| Copper | 1.00 | 1.02 | | mg/L | | 102 | 80 - 120 | |
| Lead | 1.00 | 1.01 | | mg/L | | 101 | 80 - 120 | |
| Zinc | 1.00 | 1.01 | | mg/L | | 101 | 80 - 120 | |

Lab Sample ID: LCSD 580-306640/24-A
Matrix: Water
Analysis Batch: 306788

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 306640

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. | | RPD |
|---------|-------------|-------------|----------------|------|---|------|----------|-----|-----|
| | | | | | | | Limits | RPD | |
| Arsenic | 1.00 | 1.00 | | mg/L | | 100 | 80 - 120 | 2 | 20 |
| Cadmium | 1.00 | 1.03 | | mg/L | | 103 | 80 - 120 | 0 | 20 |

Eurofins TestAmerica, Seattle

QC Sample Results

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-306640/24-A
Matrix: Water
Analysis Batch: 306788

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 306640

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Copper | 1.00 | 0.997 | | mg/L | | 100 | 80 - 120 | 2 | 20 |
| Lead | 1.00 | 1.01 | | mg/L | | 101 | 80 - 120 | 0 | 20 |
| Zinc | 1.00 | 0.961 | | mg/L | | 96 | 80 - 120 | 5 | 20 |

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 580-306478/11-A
Matrix: Water
Analysis Batch: 306570

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 306478

| Analyte | MB Result | MB Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---------|-----------|--------------|---------|---------|------|---|----------------|----------------|---------|
| Mercury | ND | | 0.00030 | 0.00015 | mg/L | | 07/24/19 09:16 | 07/24/19 13:54 | 1 |

Lab Sample ID: LCS 580-306478/12-A
Matrix: Water
Analysis Batch: 306570

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 306478

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|-------------|------------|---------------|------|---|------|--------------|
| Mercury | 0.00200 | 0.00207 | | mg/L | | 103 | 80 - 120 |

Lab Sample ID: LCSD 580-306478/13-A
Matrix: Water
Analysis Batch: 306570

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 306478

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---------|-------------|-------------|----------------|------|---|------|--------------|-----|-----------|
| Mercury | 0.00200 | 0.00203 | | mg/L | | 102 | 80 - 120 | 2 | 20 |

Lab Sample ID: 580-87761-29 MS
Matrix: Water
Analysis Batch: 306570

Client Sample ID: 22T-SG-01-RB-CR_20190718
Prep Type: Total/NA
Prep Batch: 306478

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---------|---------------|------------------|-------------|-----------|--------------|------|---|------|--------------|
| Mercury | ND | | 0.00200 | 0.00193 | | mg/L | | 96 | 80 - 120 |

Lab Sample ID: 580-87761-29 MSD
Matrix: Water
Analysis Batch: 306570

Client Sample ID: 22T-SG-01-RB-CR_20190718
Prep Type: Total/NA
Prep Batch: 306478

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---------|---------------|------------------|-------------|------------|---------------|------|---|------|--------------|-----|-----------|
| Mercury | ND | | 0.00200 | 0.00184 | | mg/L | | 92 | 80 - 120 | 5 | 20 |

Lab Sample ID: 580-87761-29 DU
Matrix: Water
Analysis Batch: 306570

Client Sample ID: 22T-SG-01-RB-CR_20190718
Prep Type: Total/NA
Prep Batch: 306478

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---------|---------------|------------------|-----------|--------------|------|---|-----|-----------|
| Mercury | ND | | ND | | mg/L | | NC | 20 |

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

GC/MS Semi VOA

Prep Batch: 32029

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|---------------------------|-----------|--------|--------|------------|
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | Total/NA | Water | 3520C | |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 3520C | |
| MB 140-32029/1-A | Method Blank | Total/NA | Water | 3520C | |
| LCS 140-32029/2-A | Lab Control Sample | Total/NA | Water | 3520C | |
| LCSD 140-32029/3-A | Lab Control Sample Dup | Total/NA | Water | 3520C | |

Analysis Batch: 32296

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|---------------------------|-----------|--------|-----------|------------|
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | Total/NA | Water | 8270D SIM | 32029 |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 8270D SIM | 32029 |
| MB 140-32029/1-A | Method Blank | Total/NA | Water | 8270D SIM | 32029 |
| LCS 140-32029/2-A | Lab Control Sample | Total/NA | Water | 8270D SIM | 32029 |
| LCSD 140-32029/3-A | Lab Control Sample Dup | Total/NA | Water | 8270D SIM | 32029 |

Metals

Prep Batch: 306478

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|----------------------|---------------------------|-----------|--------|--------|------------|
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | Total/NA | Water | 7470A | |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | |
| MB 580-306478/11-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 580-306478/12-A | Lab Control Sample | Total/NA | Water | 7470A | |
| LCSD 580-306478/13-A | Lab Control Sample Dup | Total/NA | Water | 7470A | |
| 580-87761-29 MS | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | |
| 580-87761-29 MSD | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | |
| 580-87761-29 DU | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | |

Analysis Batch: 306570

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|----------------------|---------------------------|-----------|--------|--------|------------|
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | Total/NA | Water | 7470A | 306478 |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | 306478 |
| MB 580-306478/11-A | Method Blank | Total/NA | Water | 7470A | 306478 |
| LCS 580-306478/12-A | Lab Control Sample | Total/NA | Water | 7470A | 306478 |
| LCSD 580-306478/13-A | Lab Control Sample Dup | Total/NA | Water | 7470A | 306478 |
| 580-87761-29 MS | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | 306478 |
| 580-87761-29 MSD | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | 306478 |
| 580-87761-29 DU | 22T-SG-01-RB-CR_20190718 | Total/NA | Water | 7470A | 306478 |

Prep Batch: 306640

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|----------------------|---------------------------|-------------------|--------|--------|------------|
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | Total Recoverable | Water | 3005A | |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | Total Recoverable | Water | 3005A | |
| MB 580-306640/22-A | Method Blank | Total Recoverable | Water | 3005A | |
| LCS 580-306640/23-A | Lab Control Sample | Total Recoverable | Water | 3005A | |
| LCSD 580-306640/24-A | Lab Control Sample Dup | Total Recoverable | Water | 3005A | |

Analysis Batch: 306788

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|---------------------------|-------------------|--------|--------|------------|
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | Total Recoverable | Water | 6020A | 306640 |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | Total Recoverable | Water | 6020A | 306640 |
| MB 580-306640/22-A | Method Blank | Total Recoverable | Water | 6020A | 306640 |

Eurofins TestAmerica, Seattle

QC Association Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Metals (Continued)

Analysis Batch: 306788 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|----------------------|------------------------|-------------------|--------|--------|------------|
| LCS 580-306640/23-A | Lab Control Sample | Total Recoverable | Water | 6020A | 306640 |
| LCSD 580-306640/24-A | Lab Control Sample Dup | Total Recoverable | Water | 6020A | 306640 |

Lab Chronicle

Client: Haley & Aldrich, Inc.
 Project/Site: Portland Harbor

Job ID: 580-87761-2

Client Sample ID: 22T-VB-01-RB-BRL_20190718

Lab Sample ID: 580-87761-28

Date Collected: 07/18/19 07:30

Matrix: Water

Date Received: 07/18/19 13:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-------------------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3520C | | | 32029 | 07/25/19 11:50 | CLI | TAL KNX |
| Total/NA | Analysis | 8270D SIM | | 1 | 32296 | 08/01/19 22:01 | MSP | TAL KNX |
| Total Recoverable | Prep | 3005A | | | 306640 | 07/25/19 14:40 | JCP | TAL SEA |
| Total Recoverable | Analysis | 6020A | | 5 | 306788 | 07/26/19 10:58 | FCW | TAL SEA |
| Total/NA | Prep | 7470A | | | 306478 | 07/24/19 09:16 | ART | TAL SEA |
| Total/NA | Analysis | 7470A | | 1 | 306570 | 07/24/19 14:20 | T1H | TAL SEA |

Client Sample ID: 22T-SG-01-RB-CR_20190718

Lab Sample ID: 580-87761-29

Date Collected: 07/18/19 12:00

Matrix: Water

Date Received: 07/18/19 13:00

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|-------------------|------------|--------------|-----|-----------------|--------------|----------------------|---------|---------|
| Total/NA | Prep | 3520C | | | 32029 | 07/25/19 11:50 | CLI | TAL KNX |
| Total/NA | Analysis | 8270D SIM | | 1 | 32296 | 08/01/19 22:26 | MSP | TAL KNX |
| Total Recoverable | Prep | 3005A | | | 306640 | 07/25/19 14:40 | JCP | TAL SEA |
| Total Recoverable | Analysis | 6020A | | 5 | 306788 | 07/26/19 11:02 | FCW | TAL SEA |
| Total/NA | Prep | 7470A | | | 306478 | 07/24/19 09:16 | ART | TAL SEA |
| Total/NA | Analysis | 7470A | | 1 | 306570 | 07/24/19 14:06 | T1H | TAL SEA |

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Laboratory: Eurofins TestAmerica, Seattle

The accreditations/certifications listed below are applicable to this report.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------|---------|------------|-----------------------|-----------------|
| Oregon | NELAP | 10 | WA100007 | 11-05-19 |

Laboratory: Eurofins TestAmerica, Knoxville

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------|---------|------------|-----------------------|-----------------|
| Oregon | NELAP | 10 | TNI0189 | 01-01-20 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|-----------------|-------------|--------|------------------------------|
| 8270D SIM | 3520C | Water | 1-Methylnaphthalene |
| 8270D SIM | 3520C | Water | 2-Methylnaphthalene |
| 8270D SIM | 3520C | Water | Acenaphthene |
| 8270D SIM | 3520C | Water | Acenaphthylene |
| 8270D SIM | 3520C | Water | Anthracene |
| 8270D SIM | 3520C | Water | Benzo[a]anthracene |
| 8270D SIM | 3520C | Water | Benzo[a]pyrene |
| 8270D SIM | 3520C | Water | Benzo[b]fluoranthene |
| 8270D SIM | 3520C | Water | Benzo[e]pyrene |
| 8270D SIM | 3520C | Water | Benzo[g,h,i]perylene |
| 8270D SIM | 3520C | Water | Benzo[k]fluoranthene |
| 8270D SIM | 3520C | Water | C1-Chrysenes |
| 8270D SIM | 3520C | Water | C1-Dibenzothiophenes |
| 8270D SIM | 3520C | Water | C1-Fluoranthenes/pyrene |
| 8270D SIM | 3520C | Water | C1-Fluorenes |
| 8270D SIM | 3520C | Water | C1-Naphthalenes |
| 8270D SIM | 3520C | Water | C1-Phenanthrenes/Anthracenes |
| 8270D SIM | 3520C | Water | C2-Chrysenes |
| 8270D SIM | 3520C | Water | C2-Dibenzothiophenes |
| 8270D SIM | 3520C | Water | C2-Fluoranthenes/Pyrene |
| 8270D SIM | 3520C | Water | C2-Fluorenes |
| 8270D SIM | 3520C | Water | C2-Naphthalenes |
| 8270D SIM | 3520C | Water | C2-Phenanthrenes/Anthracenes |
| 8270D SIM | 3520C | Water | C3-Chrysenes |
| 8270D SIM | 3520C | Water | C3-Dibenzothiophenes |
| 8270D SIM | 3520C | Water | C3-Fluoranthenes/Pyrene |
| 8270D SIM | 3520C | Water | C3-Fluorenes |
| 8270D SIM | 3520C | Water | C3-Naphthalenes |
| 8270D SIM | 3520C | Water | C3-Phenanthrenes/Anthracenes |
| 8270D SIM | 3520C | Water | C4-Chrysenes |
| 8270D SIM | 3520C | Water | C4-Dibenzothiophenes |
| 8270D SIM | 3520C | Water | C4-Fluoranthenes/Pyrene |
| 8270D SIM | 3520C | Water | C4-Naphthalenes |
| 8270D SIM | 3520C | Water | C4-Phenanthrenes/Anthracenes |
| 8270D SIM | 3520C | Water | Chrysene |
| 8270D SIM | 3520C | Water | Dibenz(a,h)anthracene |
| 8270D SIM | 3520C | Water | Dibenzothiophene |
| 8270D SIM | 3520C | Water | Fluoranthene |
| 8270D SIM | 3520C | Water | Fluorene |
| 8270D SIM | 3520C | Water | Indeno[1,2,3-cd]pyrene |

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

Laboratory: Eurofins TestAmerica, Knoxville (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | EPA Region | Identification Number | Expiration Date |
|-----------|---------|------------|-----------------------|-----------------|
| Oregon | NELAP | 10 | TNI0189 | 01-01-20 |
| 8270D SIM | 3520C | Water | Naphthalene | |
| 8270D SIM | 3520C | Water | Perylene | |
| 8270D SIM | 3520C | Water | Phenanthrene | |
| 8270D SIM | 3520C | Water | Pyrene | |

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

| Method | Method Description | Protocol | Laboratory |
|---------------|--|-----------------|-------------------|
| 8270D SIM | Semivolatile Organic Compounds (GC/MS SIM) | SW846 | TAL KNX |
| 6020A | Metals (ICP/MS) | SW846 | TAL SEA |
| 7470A | Mercury (CVAA) | SW846 | TAL SEA |
| 3005A | Preparation, Total Recoverable or Dissolved Metals | SW846 | TAL SEA |
| 3520C | Liquid-Liquid Extraction (Continuous) | SW846 | TAL KNX |
| 7470A | Preparation, Mercury | SW846 | TAL SEA |

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL KNX = Eurofins TestAmerica, Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Portland Harbor

Job ID: 580-87761-2

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received | Asset ID |
|---------------|---------------------------|--------|----------------|----------------|----------|
| 580-87761-28 | 22T-VB-01-RB-BRL_20190718 | Water | 07/18/19 07:30 | 07/18/19 13:00 | |
| 580-87761-29 | 22T-SG-01-RB-CR_20190718 | Water | 07/18/19 12:00 | 07/18/19 13:00 | |

GC/MS SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Instrument ID: MP Analysis Batch Number: 32163

Lab Sample ID: IC 140-32163/2 Client Sample ID: _____

Date Analyzed: 07/21/19 11:55 Lab File ID: ic 1XC.D GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|---------------|----------------|--------------------|----------|----------------|
| | | REASON | ANALYST | DATE |
| Chrysene | 10.17 | Baseline | cochranj | 07/29/19 14:32 |

GC/MS SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Instrument ID: MP Analysis Batch Number: 32296Lab Sample ID: MB 140-32029/1-A Client Sample ID: _____Date Analyzed: 08/01/19 20:20 Lab File ID: MB 140-32029-1-A.D GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Dibenzothiophene | 7.50 | Peak assignment corrected | pattym | 08/02/19 07:20 |
| C1-Dibenzothiophenes | | Other | pattym | 08/02/19 08:11 |
| C3-Fluorenes | | Other | pattym | 08/02/19 08:11 |
| C3-Phenanthrenes/Anthracenes | | Other | pattym | 08/02/19 08:13 |
| C4-Fluoranthenes/Pyrene | | Other | pattym | 08/02/19 08:13 |
| Benzo[k]fluoranthene | 11.32 | Peak assignment corrected | pattym | 08/02/19 07:20 |
| Perylene | 11.78 | Peak assignment corrected | pattym | 08/02/19 07:20 |
| Indeno[1,2,3-cd]pyrene | 13.17 | Peak assignment corrected | pattym | 08/02/19 07:20 |
| Dibenz(a,h)anthracene | 13.18 | Peak assignment corrected | pattym | 08/02/19 07:21 |

Lab Sample ID: 580-87761-28 Client Sample ID: 22T-VB-01-RB-BRL_20190718Date Analyzed: 08/01/19 22:01 Lab File ID: 580-87761-D-28-A.D GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|------------------------------|----------------|---------------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| Dibenzothiophene | 7.50 | Peak assignment corrected | pattym | 08/02/19 08:22 |
| Anthracene | 7.65 | Peak assignment corrected | pattym | 08/02/19 08:22 |
| C2-Dibenzothiophenes | | Other | pattym | 08/02/19 08:28 |
| C2-Fluorenes | | Other | pattym | 08/02/19 08:26 |
| C2-Phenanthrenes/Anthracenes | | Other | pattym | 08/02/19 08:28 |
| C3-Fluorenes | | Other | pattym | 08/02/19 08:27 |
| C3-Phenanthrenes/Anthracenes | | Other | pattym | 08/02/19 08:29 |
| C4-Fluoranthenes/Pyrene | | Invalid Compound ID | pattym | 08/02/19 08:29 |
| Benzo[b]fluoranthene | 11.29 | Peak assignment corrected | pattym | 08/02/19 08:22 |
| Benzo[k]fluoranthene | 11.32 | Peak assignment corrected | pattym | 08/02/19 08:22 |
| Benzo[a]pyrene | 11.68 | Peak assignment corrected | pattym | 08/02/19 08:22 |
| Perylene | 11.78 | Other | pattym | 08/02/19 08:22 |

GC/MS SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Instrument ID: MP Analysis Batch Number: 32296Lab Sample ID: 580-87761-29 Client Sample ID: 22T-SG-01-RB-CR_20190718Date Analyzed: 08/01/19 22:26 Lab File ID: 580-87761-D-29-A.D GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)

| COMPOUND NAME | RETENTION TIME | MANUAL INTEGRATION | | |
|------------------------------|----------------|---------------------|---------|----------------|
| | | REASON | ANALYST | DATE |
| 2-Methylnaphthalene | 5.47 | Baseline | pattym | 08/02/19 08:31 |
| 1-Methylnaphthalene | 5.55 | Baseline | pattym | 08/02/19 08:31 |
| Dibenzothiophene | 7.50 | Baseline | pattym | 08/02/19 08:31 |
| Pyrene | 8.92 | Baseline | pattym | 08/02/19 08:32 |
| C2-Dibenzothiophenes | | Baseline | pattym | 08/02/19 08:45 |
| C2-Fluorenes | | Baseline | pattym | 08/02/19 08:45 |
| C3-Fluorenes | | Baseline | pattym | 08/02/19 08:45 |
| C3-Phenanthrenes/Anthracenes | | Invalid Compound ID | pattym | 08/02/19 08:46 |
| Perylene | 11.78 | Baseline | pattym | 08/02/19 08:32 |
| Dibenz (a, h) anthracene | 13.18 | Baseline | pattym | 08/02/19 08:32 |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---------------------|-----------|-----------------------------|---------------------|----------------------|---------------------|--------------|--------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| Hg_CAL_WORK_00043 | 10/24/19 | 07/24/19 | H2O, Lot standard | 1000 mg/L | Hg_CAL_STOCK_00003 | 1 mL | Mercury | 0.1 mg/L |
| .Hg CAL STOCK 00003 | 11/29/20 | AccuStandard, Lot 213115080 | | | (Purchased Reagent) | | Mercury | 100 mg/L |
| Hg_ICV_WORK_00049 | 10/24/19 | 07/24/19 | H2O, Lot standard | 1000 mg/L | Hg-1000_00003 | 0.1 mL | Mercury | 0.1 mg/L |
| .Hg-1000_00003 | 11/30/20 | AccuStandard, Lot 215105125 | | | (Purchased Reagent) | | Mercury | 1000 mg/L |
| Hg_SPK_WORK_00043 | 10/24/19 | 07/24/19 | H2O, Lot standard | 1000 mg/L | Hg_CAL_STOCK_00003 | 1 mL | Mercury | 0.1 mg/L |
| .Hg CAL STOCK 00003 | 11/29/20 | AccuStandard, Lot 213115080 | | | (Purchased Reagent) | | Mercury | 100 mg/L |
| ICP CAL 1_00003 | 09/22/20 | CPI, Lot 982731-1 | | | (Purchased Reagent) | | Arsenic | 100 mg/L |
| | | | | | | | As (Bioaccessible) | 100 mg/L |
| | | | | | | | As (Fine) | 100 mg/L |
| | | | | | | | Ba | 100 mg/L |
| | | | | | | | Be | 100 mg/L |
| | | | | | | | Cadmium | 100 mg/L |
| | | | | | | | Co | 100 mg/L |
| | | | | | | | Copper | 100 mg/L |
| | | | | | | | Cr | 100 mg/L |
| | | | | | | | Lead | 100 mg/L |
| | | | | | | | Li | 100 mg/L |
| | | | | | | | Mn | 100 mg/L |
| | | | | | | | Mo | 100 mg/L |
| | | | | | | | Ni | 100 mg/L |
| | | | | | | | Pb (Bioaccessible) | 100 mg/L |
| | | | | | | | Pb [Fine] | 100 mg/L |
| | | | | | | | Sb | 100 mg/L |
| | | | | | | | Se | 100 mg/L |
| | | | | | | | Si | 1000 mg/L |
| | | | | | | | SiO2 | 2140 mg/L |
| Sn | 100 mg/L | | | | | | | |
| Sr | 100 mg/L | | | | | | | |
| Ti | 100 mg/L | | | | | | | |
| Tl | 100 mg/L | | | | | | | |
| V | 100 mg/L | | | | | | | |
| ICP CAL 2_00003 | 09/21/20 | CPI, Lot 982734-1 | | | (Purchased Reagent) | | Al | 2000 mg/L |
| | | | | | | | Ca | 2000 mg/L |
| | | | | | | | Fe | 2000 mg/L |
| | | | | | | | K | 2000 mg/L |
| | | | | | | | Mg | 2000 mg/L |
| Na | 2000 mg/L | | | | | | | |
| ICP-MS CCVL_00004 | 07/28/19 | 03/28/19 | H2O, Lot 062018 | 1000 mL | CCVL STOCK_00001 | 1 mL | Arsenic | 0.001 ug/mL |
| | | | | | | | Cadmium | 0.0004 ug/mL |
| | | | | | | | Copper | 0.002 ug/mL |
| | | | | | | | Lead | 0.0008 ug/mL |
| | | | | | | | Zinc | 0.007 ug/mL |
| .CCVL STOCK_00001 | 01/31/20 | 06/19/18 | H2O, Lot 06/20/2018 | 1000 mL | As-1000_00004 | 1 mL | Arsenic | 1 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---------------------------|----------|-----------|-----------------------------|----------------------|---------------------|--------------|---------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | Cd-1000_00003 | 0.4 mL | Cadmium | 0.4 ug/mL |
| | | | | | Cu-1000_00004 | 2 mL | Copper | 2 ug/mL |
| | | | | | Pb-1000_00005 | 0.8 mL | Lead | 0.8 ug/mL |
| | | | | | Zn-1000_00003 | 7 mL | Zinc | 7 ug/mL |
| ..As-1000_00004 | 11/30/20 | | AccuStandard, Lot 215105135 | | (Purchased Reagent) | | Arsenic | 1000 mg/L |
| ..Cd-1000_00003 | 01/31/21 | | AccuStandard, Lot 215125117 | | (Purchased Reagent) | | Cadmium | 1000 mg/L |
| ..Cu-1000_00004 | 10/04/21 | | AccuStandard, Lot 216095132 | | (Purchased Reagent) | | Copper | 1000 mg/L |
| ..Pb-1000_00005 | 04/30/20 | | AccuStandard, Lot 215045013 | | (Purchased Reagent) | | Lead | 1000 mg/L |
| ..Zn-1000_00003 | 03/31/21 | | AccuStandard, Lot 216035069 | | (Purchased Reagent) | | Zinc | 1000 mg/L |
| ICPMS CAL #4_00028 | 07/28/19 | 03/28/19 | H2O, Lot 020713 | 1000 mL | ICPMS-CAL_00006 | 5 mL | Arsenic | 50 ug/L |
| | | | | | | | Cadmium | 50 ug/L |
| | | | | | | | Copper | 50 ug/L |
| | | | | | | | Lead | 50 ug/L |
| | | | | | | | Zinc | 50 ug/L |
| .ICPMS-CAL_00006 | 09/30/19 | | SPEX, Lot 41-160CR | | (Purchased Reagent) | | Arsenic | 10 mg/L |
| | | | | | | | Cadmium | 10 mg/L |
| | | | | | | | Copper | 10 mg/L |
| | | | | | | | Lead | 10 mg/L |
| | | | | | | | Zinc | 10 mg/L |
| ICPMS ICV_00037 | 07/28/19 | 03/28/19 | H2O, Lot 122713 | 1000 mL | ICPMS-ICV1_00006 | 4 mL | Arsenic | 40 ug/L |
| | | | | | | | Cadmium | 40 ug/L |
| | | | | | | | Copper | 40 ug/L |
| | | | | | | | Lead | 40 ug/L |
| | | | | | | | Zinc | 40 ug/L |
| .ICPMS-ICV1_00006 | 08/31/19 | | CPI, Lot 10074933-1 | | (Purchased Reagent) | | Arsenic | 10 mg/L |
| | | | | | | | Cadmium | 10 mg/L |
| | | | | | | | Copper | 10 mg/L |
| | | | | | | | Lead | 10 mg/L |
| | | | | | | | Zinc | 10 mg/L |
| ICPMS- ICSA_00015 | 08/21/20 | | CPI, Lot 992328-1 | | (Purchased Reagent) | | Al | 1000 ug/mL |
| | | | | | | | Ca | 1000 ug/mL |
| | | | | | | | Fe | 1000 ug/mL |
| | | | | | | | K | 1000 ug/mL |
| | | | | | | | Mg | 1000 ug/mL |
| | | | | | | | Mo | 20 ug/mL |
| | | | | | | | Na | 1000 ug/mL |
| | | | | | | | P | 1000 ug/mL |
| | | | | | | | Ti | 20 ug/mL |
| ICPMS-ICSB_00014 | 08/21/20 | | CPI, Lot 992327-1 | | (Purchased Reagent) | | Arsenic | 10 ug/mL |
| | | | | | | | Ba | 10 ug/mL |
| | | | | | | | Be | 10 ug/mL |
| | | | | | | | Cadmium | 10 ug/mL |
| | | | | | | | Co | 10 ug/mL |
| | | | | | | | Copper | 10 ug/mL |
| | | | | | | | Cr | 10 ug/mL |
| | | | | | | | Lead | 10 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---------------------------|----------|-----------|-----------------------------|----------------------|---------------------|--------------|---------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Mn | 10 ug/mL |
| | | | | | | | Ni | 10 ug/mL |
| | | | | | | | Sb | 5 ug/mL |
| | | | | | | | Se | 10 ug/mL |
| | | | | | | | Sn | 10 ug/mL |
| | | | | | | | Sr | 10 ug/mL |
| | | | | | | | Tl | 5 ug/mL |
| | | | | | | | V | 10 ug/mL |
| ICPMS-ICSC_00001 | 08/25/20 | 07/25/19 | H2O, Lot standard | 100 mg/L | Ag-1000 2nd_00001 | 0.5 mL | Ag | 5 mg/L |
| .Ag-1000 2nd_00001 | 08/25/20 | | CPI, Lot 975475-12 | | Zn-1000 2nd_00001 | 1 mL | Zinc | 10 mg/L |
| .Zn-1000 2nd_00001 | 08/25/20 | | CPI, Lot 984272-23 | | (Purchased Reagent) | | Ag | 1000 mg/L |
| | | | | | (Purchased Reagent) | | Zinc | 1000 mg/L |
| MET Spike 3C_00010 | 08/14/19 | 07/08/19 | DI, Lot DI | 500 mL | Ag-1000 00004 | 50 mL | Ag | 100 mg/L |
| | | | | | B-10000 00003 | 50 mL | B | 1000 mg/L |
| | | | | | ICP CAL 3_00001 | 250 mL | P | 500 mg/L |
| | | | | | | | Sulfur | 500 mg/L |
| | | | | | | | U | 50 mg/L |
| | | | | | | | W | 50 mg/L |
| | | | | | Zn-1000 00005 | 50 mL | Zinc | 100 mg/L |
| .Ag-1000 00004 | 06/20/20 | | AccuStandard, Lot 214035115 | | (Purchased Reagent) | | Ag | 1000 mg/L |
| .B-10000 00003 | 10/31/22 | | AccuStandard, Lot 212095015 | | (Purchased Reagent) | | B | 10000 mg/L |
| .ICP CAL 3_00001 | 03/28/20 | | CPI, Lot 982737-1 | | (Purchased Reagent) | | P | 1000 mg/L |
| | | | | | | | Sulfur | 1000 mg/L |
| | | | | | | | U | 100 mg/L |
| | | | | | | | W | 100 mg/L |
| .Zn-1000 00005 | 06/05/20 | | CPI, Lot 166918-115 | | (Purchased Reagent) | | Zinc | 1000 mg/L |
| MS-HgSpk_00021 | 11/30/20 | 11/18/16 | H2O, Lot standard | 1000 mg/L | Hg-1000_00003 | 2.5 mL | Mercury | 2.5 mg/L |
| .Hg-1000_00003 | 11/30/20 | | AccuStandard, Lot 215105125 | | (Purchased Reagent) | | Mercury | 1000 mg/L |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|-----------|-----------|----------------------|----------------------|---------------------|--------------|-------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| 608270simccv_00005 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60xx8270simis_00003 | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| | | | | | | | Naphthalene-d8 | 0.5 ug/mL |
| | | | | | | | Perylene-d12 | 0.5 ug/mL |
| | | | | | | | Phenanthrene-d10 | 0.5 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | | (Purchased Reagent) | |
| | | | | | | | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| 608270simccv_00005 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 25 uL | 1-Methylnaphthalene | 0.5 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 0.5 ug/mL |
| | | | | | | | Acenaphthene | 0.5 ug/mL |
| | | | | | | | Acenaphthylene | 0.5 ug/mL |
| | | | | | | | Anthracene | 0.5 ug/mL |
| | | | | | | | Benzo[a]anthracene | 0.5 ug/mL |
| | | | | | | | Benzo[a]pyrene | 0.5 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 0.5 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 0.5 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 0.5 ug/mL |
| | | | | | | | Chrysene | 0.5 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 0.5 ug/mL |
| | | | | | | | Fluoranthene | 0.5 ug/mL |
| | | | | | | | Fluorene | 0.5 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 0.5 ug/mL |
| | | | | | Naphthalene | 0.5 ug/mL | | |
| | | | | | Phenanthrene | 0.5 ug/mL | | |
| | | | | | Pyrene | 0.5 ug/mL | | |
| | | | | | Benzo[e]pyrene | 0.5 ug/mL | | |
| | | | | | Dibenzothiophene | 0.5 ug/mL | | |
| Perylene | 0.5 ug/mL | | | | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60XX8270CLMX5_00003 | 100 uL | 2-Fluorobiphenyl (Surr) | 0.5 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 0.5 ug/mL |
| | | | | | | | Terphenyl-d14 | 0.5 ug/mL |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60XX8270CLMX5_00003 | 100 uL | 1-Methylnaphthalene | 20 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL |
| | | | | | | | Acenaphthene | 20 ug/mL |
| | | | | | | | Acenaphthylene | 20 ug/mL |
| | | | | | | | Anthracene | 20 ug/mL |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL |
| Benzo[b]fluoranthene | 20 ug/mL | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|---------------------------|----------|-----------|----------------------|----------------------|---------------------|---------------------|-------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL |
| | | | | | | | Chrysene | 20 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL |
| | | | | | | | Fluoranthene | 20 ug/mL |
| | | | | | | | Fluorene | 20 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL |
| | | | | | | | Naphthalene | 20 ug/mL |
| | | | | | | | Phenanthrene | 20 ug/mL |
| | | | | | | | Pyrene | 20 ug/mL |
| | | | | | 60MXNATSACPAH_00008 | 100 uL | Benzo[e]pyrene | 20 ug/mL |
| | | | | | | | Dibenzothiophene | 20 ug/mL |
| | | | | | | | Perylene | 20 ug/mL |
| ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | | (Purchased Reagent) | 1-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | Acenaphthene | 2000 ug/mL |
| | | | | | | | Acenaphthylene | 2000 ug/mL |
| | | | | | | | Anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL |
| | | | | | | | Chrysene | 2000 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 2000 ug/mL |
| | | | | | | | Fluoranthene | 2000 ug/mL |
| | | | | | | | Fluorene | 2000 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | Phenanthrene | 2000 ug/mL |
| | | | | | | | Pyrene | 2000 ug/mL |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | | (Purchased Reagent) | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | | (Purchased Reagent) | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| 60ICV8270SIM_00010 | 11/30/19 | 07/15/19 | Hexane, Lot 221330 | 1 mL | 60xx8270simis_00003 | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| | | | | | | | Naphthalene-d8 | 0.5 ug/mL |
| | | | | | | | Perylene-d12 | 0.5 ug/mL |
| | | | | | | | Phenanthrene-d10 | 0.5 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|----------|-----------|----------------------|----------------------|---------------------|---------------------|-------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | (Purchased Reagent) | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| 60ICV8270SIM_00010 | 11/30/19 | 07/15/19 | Hexane, Lot 221330 | 1 mL | 60xx8270simsr_00005 | 25 uL | 2-Fluorobiphenyl (Surr) | 0.5 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 0.5 ug/mL |
| | | | | | | | Terphenyl-d14 | 0.5 ug/mL |
| | | | | | 60XXICVPAH2_00003 | 25 uL | 1-Methylnaphthalene | 0.5 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 0.5 ug/mL |
| | | | | | | | Acenaphthene | 0.5 ug/mL |
| | | | | | | | Acenaphthylene | 0.5 ug/mL |
| | | | | | | | Anthracene | 0.5 ug/mL |
| | | | | | | | Benzo[a]anthracene | 0.5 ug/mL |
| | | | | | | | Benzo[a]pyrene | 0.5 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 0.5 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 0.5 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 0.5 ug/mL |
| | | | | | | | Chrysene | 0.5 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 0.5 ug/mL |
| | | | | | | | Fluoranthene | 0.5 ug/mL |
| | | | | | | | Fluorene | 0.5 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 0.5 ug/mL |
| | | | | | | | Naphthalene | 0.5 ug/mL |
| | | | | | | | Phenanthrene | 0.5 ug/mL |
| | | | | | | | Pyrene | 0.5 ug/mL |
| | | | | | 60XXSACPAHICV_00007 | 25 uL | Benzo[e]pyrene | 0.5 ug/mL |
| | | | | | | | Dibenzothiophene | 0.5 ug/mL |
| | | | | | | | Perylene | 0.5 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | | (Purchased Reagent) | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60XXICVPAH2_00003 | 03/06/21 | 03/05/19 | Hexane, Lot 203464 | 5 mL | 60MXSSCLMX5_00001 | 0.05 mL | 1-Methylnaphthalene | 20 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL |
| | | | | | | | Acenaphthene | 20 ug/mL |
| | | | | | | | Acenaphthylene | 20 ug/mL |
| | | | | | | | Anthracene | 20 ug/mL |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|----------|-----------|---------------------------------|----------------------|---------------------|--------------|------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Chrysene | 20 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL |
| | | | | | | | Fluoranthene | 20 ug/mL |
| | | | | | | | Fluorene | 20 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL |
| | | | | | | | Naphthalene | 20 ug/mL |
| | | | | | | | Phenanthrene | 20 ug/mL |
| | | | | | | | Pyrene | 20 ug/mL |
| ..60MXSSCLMX5_00001 | 03/06/21 | | Restek, Lot A0115109 | | (Purchased Reagent) | | 1-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | Acenaphthene | 2000 ug/mL |
| | | | | | | | Acenaphthylene | 2000 ug/mL |
| | | | | | | | Anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL |
| | | | | | | | Chrysene | 2000 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 2000 ug/mL |
| | | | | | | | Fluoranthene | 2000 ug/mL |
| | | | | | | | Fluorene | 2000 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | Phenanthrene | 2000 ug/mL |
| | | | | | | | Pyrene | 2000 ug/mL |
| .60XXSACPAHICV_00007 | 04/19/20 | 07/15/19 | Hexane, Lot 221330 | 10 mL | 60MXSSBENZEP 00005 | 1000 uL | Benzo[e]pyrene | 20 ug/mL |
| | | | | | 60MXSSDBTHP 00004 | 200 uL | Dibenzothiophene | 20 ug/mL |
| | | | | | 60MXSSPERYLN 00003 | 200 uL | Perylene | 20 ug/mL |
| ..60MXSSBENZEP 00005 | 07/15/21 | | CIL, Lot SDGL-018 | | (Purchased Reagent) | | Benzo[e]pyrene | 200 ug/mL |
| ..60MXSSDBTHP 00004 | 05/02/21 | | SPEX CertiPrep, Lot EN180502014 | | (Purchased Reagent) | | Dibenzothiophene | 1000 ug/mL |
| ..60MXSSPERYLN 00003 | 05/02/20 | | SPEX CertiPrep, Lot EN170502007 | | (Purchased Reagent) | | Perylene | 1000 ug/mL |
| 60L18270SIM_00005 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 1 uL | 1-Methylnaphthalene | 0.02 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 0.02 ug/mL |
| | | | | | | | Acenaphthene | 0.02 ug/mL |
| | | | | | | | Acenaphthylene | 0.02 ug/mL |
| | | | | | | | Anthracene | 0.02 ug/mL |
| | | | | | | | Benzo[a]anthracene | 0.02 ug/mL |
| | | | | | | | Benzo[a]pyrene | 0.02 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 0.02 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 0.02 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 0.02 ug/mL |
| | | | | | | | Chrysene | 0.02 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 0.02 ug/mL |
| | | | | | | | Fluoranthene | 0.02 ug/mL |
| | | | | | | | Fluorene | 0.02 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 0.02 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | |
|----------------------|----------|------------------|--------------------|----------------------|---------------------|--------------|----------------------------|---------------|----------------------------|------------|
| | | | | | Reagent ID | Volume Added | | | | |
| | | | | | | | Naphthalene | 0.02 ug/mL | | |
| | | | | | | | Phenanthrene | 0.02 ug/mL | | |
| | | | | | | | Pyrene | 0.02 ug/mL | | |
| | | | | | | | 1-Methylphenanthrene | 0.02 ug/mL | | |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 0.02 ug/mL | | |
| | | | | | | | 2,6-Dimethylnaphthalene | 0.02 ug/mL | | |
| | | | | | | | Benzo[e]pyrene | 0.02 ug/mL | | |
| | | | | | | | Dibenzothiophene | 0.02 ug/mL | | |
| | | | | | | | Perylene | 0.02 ug/mL | | |
| | | | | | | | 1,1'-Biphenyl | 0.02 ug/mL | | |
| | | | | | | | Dibenzofuran | 0.02 ug/mL | | |
| | | | | | | | 60xx8270simis_00003 | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| | | | | | | | | | Naphthalene-d8 | 0.5 ug/mL |
| | | | | | | | | | Perylene-d12 | 0.5 ug/mL |
| | | Phenanthrene-d10 | 0.5 ug/mL | | | | | | | |
| | | | | | | | 2-Fluorobiphenyl (Surr) | 0.02 ug/mL | | |
| | | | | | | | 60xx8270simsr_00005 | 1 uL | Nitrobenzene-d5 | 0.02 ug/mL |
| | | | | | | | | | Terphenyl-d14 | 0.02 ug/mL |
| | | | | | | | 60xx8270smspc_00003 | 1 uL | Benzo(b)thiophene | 0.02 ug/mL |
| | | | | | | | | | cis-Decalin | 0.02 ug/mL |
| | | | | | | | | | Naphthobenzothiophene | 0.02 ug/mL |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | 1-Methylnaphthalene | 20 ug/mL | | |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL | | |
| | | | | | | | Acenaphthene | 20 ug/mL | | |
| | | | | | | | Acenaphthylene | 20 ug/mL | | |
| | | | | | | | Anthracene | 20 ug/mL | | |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL | | |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL | | |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL | | |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL | | |
| | | | | | | | Chrysene | 20 ug/mL | | |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL | | |
| | | | | | | | Fluoranthene | 20 ug/mL | | |
| | | | | | | | Fluorene | 20 ug/mL | | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL | | |
| | | | | | | | Naphthalene | 20 ug/mL | | |
| | | | | | | | Phenanthrene | 20 ug/mL | | |
| | | | | | | | Pyrene | 20 ug/mL | | |
| | | | | | | | 60MXNATSACPAH_00008 | 100 uL | 1-Methylphenanthrene | 20 ug/mL |
| | | | | | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL |
| | | | | | | | | | 2,6-Dimethylnaphthalene | 20 ug/mL |
| | | | | | | | | | Benzo[e]pyrene | 20 ug/mL |
| | | | | | | | | | Dibenzothiophene | 20 ug/mL |
| | | | | | | | | | Perylene | 20 ug/mL |
| | | | | | | | 60MXSVOCAD_00004 | 100 uL | 1,1'-Biphenyl | 20 ug/mL |
| | | | | | | | | | Dibenzofuran | 20 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|------------|-----------|----------------------|----------------------|-------------------|---------------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | | (Purchased Reagent) | 1-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | Acenaphthene | 2000 ug/mL |
| | | | | | | | Acenaphthylene | 2000 ug/mL |
| | | | | | | | Anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL |
| | | | | | | | Chrysene | 2000 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 2000 ug/mL |
| | | | | | | | Fluoranthene | 2000 ug/mL |
| | | | | | | | Fluorene | 2000 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL |
| Naphthalene | 2000 ug/mL | | | | | | | |
| Phenanthrene | 2000 ug/mL | | | | | | | |
| Pyrene | 2000 ug/mL | | | | | | | |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | | (Purchased Reagent) | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2000 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | | (Purchased Reagent) | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | (Purchased Reagent) | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | | (Purchased Reagent) | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60xx8270smspc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | | (Purchased Reagent) | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | | (Purchased Reagent) | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | | (Purchased Reagent) | Naphthobenzothiophene | 1000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | | | |
|----------------------|-----------|-----------|--------------------|----------------------|----------------------------|-------------------------|------------------------|---------------|--|-------|------------------|-----------|
| | | | | | Reagent ID | Volume Added | | | | | | |
| 60L28270SIM_00006 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 5 uL | 1-Methylnaphthalene | 0.1 ug/mL | | | | |
| | | | | | | | 2-Methylnaphthalene | 0.1 ug/mL | | | | |
| | | | | | | | Acenaphthene | 0.1 ug/mL | | | | |
| | | | | | | | Acenaphthylene | 0.1 ug/mL | | | | |
| | | | | | | | Anthracene | 0.1 ug/mL | | | | |
| | | | | | | | Benzo[a]anthracene | 0.1 ug/mL | | | | |
| | | | | | | | Benzo[a]pyrene | 0.1 ug/mL | | | | |
| | | | | | | | Benzo[b]fluoranthene | 0.1 ug/mL | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 0.1 ug/mL | | | | |
| | | | | | | | Benzo[k]fluoranthene | 0.1 ug/mL | | | | |
| | | | | | | | Chrysene | 0.1 ug/mL | | | | |
| | | | | | | | Dibenz(a,h)anthracene | 0.1 ug/mL | | | | |
| | | | | | | | Fluoranthene | 0.1 ug/mL | | | | |
| | | | | | | | Fluorene | 0.1 ug/mL | | | | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 0.1 ug/mL | | | | |
| | | | | | | | Naphthalene | 0.1 ug/mL | | | | |
| | | | | | | | Phenanthrene | 0.1 ug/mL | | | | |
| | | | | | | | Pyrene | 0.1 ug/mL | | | | |
| | | | | | 1-Methylphenanthrene | 0.1 ug/mL | | | | | | |
| | | | | | 2,3,5-Trimethylnaphthalene | 0.1 ug/mL | | | | | | |
| | | | | | 2,6-Dimethylnaphthalene | 0.1 ug/mL | | | | | | |
| | | | | | Benzo[e]pyrene | 0.1 ug/mL | | | | | | |
| | | | | | Dibenzothiophene | 0.1 ug/mL | | | | | | |
| | | | | | Perylene | 0.1 ug/mL | | | | | | |
| | | | | | 1,1'-Biphenyl | 0.1 ug/mL | | | | | | |
| | | | | | Dibenzofuran | 0.1 ug/mL | | | | | | |
| | | | | | 60xx8270simis_00003 | | | | | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| Naphthalene-d8 | 0.5 ug/mL | | | | | | | | | | | |
| Perylene-d12 | 0.5 ug/mL | | | | | | | | | | | |
| 60xx8270simsr_00005 | | | | | 5 uL | Phenanthrene-d10 | 0.5 ug/mL | | | | | |
| | | | | | | 2-Fluorobiphenyl (Surr) | 0.1 ug/mL | | | | | |
| | | | | | | Nitrobenzene-d5 | 0.1 ug/mL | | | | | |
| 60xx8270smcpc_00003 | | | | | 5 uL | Terphenyl-d14 | 0.1 ug/mL | | | | | |
| | | | | | | Benzo(b)thiophene | 0.1 ug/mL | | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | cis-Decalin | 0.1 ug/mL | | | | |
| | | | | | | | Naphthobenzothiophene | 0.1 ug/mL | | | | |
| | | | | | | | 1-Methylnaphthalene | 20 ug/mL | | | | |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL | | | | |
| | | | | | | | Acenaphthene | 20 ug/mL | | | | |
| | | | | | | | Acenaphthylene | 20 ug/mL | | | | |
| | | | | | | | Anthracene | 20 ug/mL | | | | |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL | | | | |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL | | | | |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL | | | | |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL | | | | |
| Chrysene | 20 ug/mL | | | | | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|----------------------|----------------------|---------------------|---------------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Dibenz (a, h) anthracene | 20 ug/mL |
| | | | | | | | Fluoranthene | 20 ug/mL |
| | | | | | | | Fluorene | 20 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL |
| | | | | | | | Naphthalene | 20 ug/mL |
| | | | | | | | Phenanthrene | 20 ug/mL |
| | | | | | | | Pyrene | 20 ug/mL |
| | | | | | 60MXNATSACPAH_00008 | 100 uL | 1-Methylphenanthrene | 20 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 20 ug/mL |
| | | | | | | | Benzo[e]pyrene | 20 ug/mL |
| | | | | | | | Dibenzothiophene | 20 ug/mL |
| | | | | | | | Perylene | 20 ug/mL |
| | | | | | 60MXSVOCAD_00004 | 100 uL | 1,1'-Biphenyl | 20 ug/mL |
| | | | | | | | Dibenzofuran | 20 ug/mL |
| ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | | (Purchased Reagent) | 1-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | Acenaphthene | 2000 ug/mL |
| | | | | | | | Acenaphthylene | 2000 ug/mL |
| | | | | | | | Anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL |
| | | | | | | | Chrysene | 2000 ug/mL |
| | | | | | | | Dibenz (a, h) anthracene | 2000 ug/mL |
| | | | | | | | Fluoranthene | 2000 ug/mL |
| | | | | | | | Fluorene | 2000 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | Phenanthrene | 2000 ug/mL |
| | | | | | | | Pyrene | 2000 ug/mL |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | | (Purchased Reagent) | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2000 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | | (Purchased Reagent) | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | (Purchased Reagent) | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------------|----------|-----------|----------------------|----------------------|---------------------|--------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | (Purchased Reagent) | | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60xx8270smspc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | (Purchased Reagent) | | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | (Purchased Reagent) | | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | (Purchased Reagent) | | Naphthobenzothiophene | 1000 ug/mL |
| 60L38270SIM_00006 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 12.5 uL | 1-Methylnaphthalene | 0.25 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 0.25 ug/mL |
| | | | | | | | Acenaphthene | 0.25 ug/mL |
| | | | | | | | Acenaphthylene | 0.25 ug/mL |
| | | | | | | | Anthracene | 0.25 ug/mL |
| | | | | | | | Benzo[a]anthracene | 0.25 ug/mL |
| | | | | | | | Benzo[a]pyrene | 0.25 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 0.25 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 0.25 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 0.25 ug/mL |
| | | | | | | | Chrysene | 0.25 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 0.25 ug/mL |
| | | | | | | | Fluoranthene | 0.25 ug/mL |
| | | | | | | | Fluorene | 0.25 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 0.25 ug/mL |
| | | | | | | | Naphthalene | 0.25 ug/mL |
| | | | | | | | Phenanthrene | 0.25 ug/mL |
| | | | | | | | Pyrene | 0.25 ug/mL |
| | | | | | | | 1-Methylphenanthrene | 0.25 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 0.25 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 0.25 ug/mL |
| | | | | | | | Benzo[e]pyrene | 0.25 ug/mL |
| | | | | | | | Dibenzothiophene | 0.25 ug/mL |
| | | | | | | | Perylene | 0.25 ug/mL |
| | | | | | | | 1,1'-Biphenyl | 0.25 ug/mL |
| | | | | | | | Dibenzofuran | 0.25 ug/mL |
| | | | | | 60xx8270simis_00003 | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| | | | | | | | Naphthalene-d8 | 0.5 ug/mL |
| | | | | | | | Perylene-d12 | 0.5 ug/mL |
| | | | | | | | Phenanthrene-d10 | 0.5 ug/mL |
| | | | | | 60xx8270simsr_00005 | 12.5 uL | 2-Fluorobiphenyl (Surr) | 0.25 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | | | | | |
|------------------------|------------|-----------|--------------------|----------------------|-----------------------|--------------|----------------------------|----------------------|--|--|--|----------------------|---------------------|------------|
| | | | | | Reagent ID | Volume Added | | | | | | | | |
| | | | | | 60xx8270smspc_00003 | 12.5 uL | Nitrobenzene-d5 | 0.25 ug/mL | | | | | | |
| | | | | | | | Terphenyl-d14 | 0.25 ug/mL | | | | | | |
| | | | | | | | Benzo(b)thiophene | 0.25 ug/mL | | | | | | |
| | | | | | | | cis-Decalin | 0.25 ug/mL | | | | | | |
| | | | | | | | Naphthobenzothiophene | 0.25 ug/mL | | | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | 1-Methylnaphthalene | 20 ug/mL | | | | | | |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL | | | | | | |
| | | | | | | | Acenaphthene | 20 ug/mL | | | | | | |
| | | | | | | | Acenaphthylene | 20 ug/mL | | | | | | |
| | | | | | | | Anthracene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL | | | | | | |
| | | | | | | | Chrysene | 20 ug/mL | | | | | | |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL | | | | | | |
| | | | | | | | Fluoranthene | 20 ug/mL | | | | | | |
| | | | | | | | Fluorene | 20 ug/mL | | | | | | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL | | | | | | |
| | | | | | | | Naphthalene | 20 ug/mL | | | | | | |
| | | | | | | | Phenanthrene | 20 ug/mL | | | | | | |
| | | | | | | | Pyrene | 20 ug/mL | | | | | | |
| | | | | | 60MXNATSACPAH_00008 | 100 uL | 1-Methylphenanthrene | 20 ug/mL | | | | | | |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL | | | | | | |
| | | | | | | | 2,6-Dimethylnaphthalene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[e]pyrene | 20 ug/mL | | | | | | |
| | | | | | | | Dibenzothiophene | 20 ug/mL | | | | | | |
| | | | | | 60MXSVOCAD_00004 | 100 uL | Perylene | 20 ug/mL | | | | | | |
| | | | | | | | 1,1'-Biphenyl | 20 ug/mL | | | | | | |
| | | | | | ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | | | (Purchased Reagent) | 1-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | | | | | | 2-Methylnaphthalene | 2000 ug/mL | |
| | | | | | | | | | | | | Acenaphthene | 2000 ug/mL | |
| | | | | | | | | | | | | Acenaphthylene | 2000 ug/mL | |
| | | | | | | | | | | | | Anthracene | 2000 ug/mL | |
| | | | | | | | | | | | | Benzo[a]anthracene | 2000 ug/mL | |
| | | | | | | | | | | | | Benzo[a]pyrene | 2000 ug/mL | |
| | | | | | | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL | |
| Benzo[g,h,i]perylene | 2000 ug/mL | | | | | | | | | | | | | |
| Benzo[k]fluoranthene | 2000 ug/mL | | | | | | | | | | | | | |
| Chrysene | 2000 ug/mL | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 2000 ug/mL | | | | | | | | | | | | | |
| Fluoranthene | 2000 ug/mL | | | | | | | | | | | | | |
| Fluorene | 2000 ug/mL | | | | | | | | | | | | | |
| Indeno[1,2,3-cd]pyrene | 2000 ug/mL | | | | | | | | | | | | | |
| Naphthalene | 2000 ug/mL | | | | | | | | | | | | | |
| Phenanthrene | 2000 ug/mL | | | | | | | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------------|----------|-----------|----------------------|----------------------|---------------------|---------------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | | (Purchased Reagent) | Pyrene | 2000 ug/mL |
| | | | | | | | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2000 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | | (Purchased Reagent) | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | (Purchased Reagent) | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | | (Purchased Reagent) | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60xx8270smcpc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | | (Purchased Reagent) | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | | (Purchased Reagent) | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | | (Purchased Reagent) | Naphthobenzothiophene | 1000 ug/mL |
| 60L48270SIM_00006 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 25 uL | 1-Methylnaphthalene | 0.5 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 0.5 ug/mL |
| | | | | | | | Acenaphthene | 0.5 ug/mL |
| | | | | | | | Acenaphthylene | 0.5 ug/mL |
| | | | | | | | Anthracene | 0.5 ug/mL |
| | | | | | | | Benzo[a]anthracene | 0.5 ug/mL |
| | | | | | | | Benzo[a]pyrene | 0.5 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 0.5 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 0.5 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 0.5 ug/mL |
| | | | | | | | Chrysene | 0.5 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 0.5 ug/mL |
| | | | | | | | Fluoranthene | 0.5 ug/mL |
| | | | | | | | Fluorene | 0.5 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 0.5 ug/mL |
| | | | | | | | Naphthalene | 0.5 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | | | | |
|----------------------|----------|-------------------|--------------------|----------------------|-----------------------|--------------|----------------------------|----------------------|--|---------------------|--|---------------------|------------|
| | | | | | Reagent ID | Volume Added | | | | | | | |
| | | | | | | | Phenanthrene | 0.5 ug/mL | | | | | |
| | | | | | | | Pyrene | 0.5 ug/mL | | | | | |
| | | | | | | | 1-Methylphenanthrene | 0.5 ug/mL | | | | | |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 0.5 ug/mL | | | | | |
| | | | | | | | 2,6-Dimethylnaphthalene | 0.5 ug/mL | | | | | |
| | | | | | | | Benzo[e]pyrene | 0.5 ug/mL | | | | | |
| | | | | | | | Dibenzothiophene | 0.5 ug/mL | | | | | |
| | | | | | | | Perylene | 0.5 ug/mL | | | | | |
| | | | | | 1,1'-Biphenyl | 0.5 ug/mL | | | | | | | |
| | | | | | 60xx8270simis_00003 | 10 uL | Acenaphthene-d10 | 0.5 ug/mL | | | | | |
| | | | | | | | Chrysene-d12 | 0.5 ug/mL | | | | | |
| | | | | | | | Naphthalene-d8 | 0.5 ug/mL | | | | | |
| | | | | | | | Perylene-d12 | 0.5 ug/mL | | | | | |
| | | | | | 60xx8270simsr_00005 | 25 uL | Phenanthrene-d10 | 0.5 ug/mL | | | | | |
| | | | | | | | 2-Fluorobiphenyl (Surr) | 0.5 ug/mL | | | | | |
| | | | | | | | Nitrobenzene-d5 | 0.5 ug/mL | | | | | |
| 60xx8270smcpc_00003 | 25 uL | Terphenyl-d14 | 0.5 ug/mL | | | | | | | | | | |
| | | Benzo(b)thiophene | 0.5 ug/mL | | | | | | | | | | |
| | | cis-Decalin | 0.5 ug/mL | | | | | | | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | Naphthobenzothiophene | 0.5 ug/mL | | | | | |
| | | | | | | | 1-Methylnaphthalene | 20 ug/mL | | | | | |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL | | | | | |
| | | | | | | | Acenaphthene | 20 ug/mL | | | | | |
| | | | | | | | Acenaphthylene | 20 ug/mL | | | | | |
| | | | | | | | Anthracene | 20 ug/mL | | | | | |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL | | | | | |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL | | | | | |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL | | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL | | | | | |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL | | | | | |
| | | | | | | | Chrysene | 20 ug/mL | | | | | |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL | | | | | |
| | | | | | | | Fluoranthene | 20 ug/mL | | | | | |
| | | | | | | | Fluorene | 20 ug/mL | | | | | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL | | | | | |
| | | | | | | | Naphthalene | 20 ug/mL | | | | | |
| | | | | | | | Phenanthrene | 20 ug/mL | | | | | |
| | | | | | Pyrene | 20 ug/mL | | | | | | | |
| | | | | | 60MXNATSACPAH_00008 | 100 uL | 1-Methylphenanthrene | 20 ug/mL | | | | | |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL | | | | | |
| | | | | | | | 2,6-Dimethylnaphthalene | 20 ug/mL | | | | | |
| | | | | | | | Benzo[e]pyrene | 20 ug/mL | | | | | |
| | | | | | | | Dibenzothiophene | 20 ug/mL | | | | | |
| | | | | | | | Perylene | 20 ug/mL | | | | | |
| | | | | | 60MXSVOCAD_00004 | 100 uL | 1,1'-Biphenyl | 20 ug/mL | | | | | |
| | | | | | | | Dibenzofuran | 20 ug/mL | | | | | |
| | | | | | ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | (Purchased Reagent) | | 1-Methylnaphthalene | 2000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|----------------------|----------------------|-------------------|---------------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | Acenaphthene | 2000 ug/mL |
| | | | | | | | Acenaphthylene | 2000 ug/mL |
| | | | | | | | Anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL |
| | | | | | | | Chrysene | 2000 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 2000 ug/mL |
| | | | | | | | Fluoranthene | 2000 ug/mL |
| | | | | | | | Fluorene | 2000 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | Phenanthrene | 2000 ug/mL |
| | | | | | | | Pyrene | 2000 ug/mL |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | | (Purchased Reagent) | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2000 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | | (Purchased Reagent) | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | (Purchased Reagent) | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | | (Purchased Reagent) | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60xx8270smspc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | | (Purchased Reagent) | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | | (Purchased Reagent) | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | | (Purchased Reagent) | Naphthobenzothiophene | 1000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | | | |
|----------------------|-----------|-----------|--------------------|----------------------|----------------------------|-------------------------|------------------------|---------------|--|-------|------------------|-----------|
| | | | | | Reagent ID | Volume Added | | | | | | |
| 60L58270SIM_00006 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 50 uL | 1-Methylnaphthalene | 1 ug/mL | | | | |
| | | | | | | | 2-Methylnaphthalene | 1 ug/mL | | | | |
| | | | | | | | Acenaphthene | 1 ug/mL | | | | |
| | | | | | | | Acenaphthylene | 1 ug/mL | | | | |
| | | | | | | | Anthracene | 1 ug/mL | | | | |
| | | | | | | | Benzo[a]anthracene | 1 ug/mL | | | | |
| | | | | | | | Benzo[a]pyrene | 1 ug/mL | | | | |
| | | | | | | | Benzo[b]fluoranthene | 1 ug/mL | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 1 ug/mL | | | | |
| | | | | | | | Benzo[k]fluoranthene | 1 ug/mL | | | | |
| | | | | | | | Chrysene | 1 ug/mL | | | | |
| | | | | | | | Dibenz(a,h)anthracene | 1 ug/mL | | | | |
| | | | | | | | Fluoranthene | 1 ug/mL | | | | |
| | | | | | | | Fluorene | 1 ug/mL | | | | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 1 ug/mL | | | | |
| | | | | | | | Naphthalene | 1 ug/mL | | | | |
| | | | | | | | Phenanthrene | 1 ug/mL | | | | |
| | | | | | | | Pyrene | 1 ug/mL | | | | |
| | | | | | 1-Methylphenanthrene | 1 ug/mL | | | | | | |
| | | | | | 2,3,5-Trimethylnaphthalene | 1 ug/mL | | | | | | |
| | | | | | 2,6-Dimethylnaphthalene | 1 ug/mL | | | | | | |
| | | | | | Benzo[e]pyrene | 1 ug/mL | | | | | | |
| | | | | | Dibenzothiophene | 1 ug/mL | | | | | | |
| | | | | | Perylene | 1 ug/mL | | | | | | |
| | | | | | 1,1'-Biphenyl | 1 ug/mL | | | | | | |
| | | | | | Dibenzofuran | 1 ug/mL | | | | | | |
| | | | | | 60xx8270simis_00003 | | | | | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| Naphthalene-d8 | 0.5 ug/mL | | | | | | | | | | | |
| Perylene-d12 | 0.5 ug/mL | | | | | | | | | | | |
| Phenanthrene-d10 | 0.5 ug/mL | | | | | | | | | | | |
| 60xx8270simsr_00005 | | | | | 50 uL | 2-Fluorobiphenyl (Surr) | 1 ug/mL | | | | | |
| | | | | | | Nitrobenzene-d5 | 1 ug/mL | | | | | |
| | | | | | | Terphenyl-d14 | 1 ug/mL | | | | | |
| 60xx8270smcpc_00003 | | | | | 50 uL | Benzo(b)thiophene | 1 ug/mL | | | | | |
| | | | | | | cis-Decalin | 1 ug/mL | | | | | |
| | | | | | | Naphthobenzothiophene | 1 ug/mL | | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | 1-Methylnaphthalene | 20 ug/mL | | | | |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL | | | | |
| | | | | | | | Acenaphthene | 20 ug/mL | | | | |
| | | | | | | | Acenaphthylene | 20 ug/mL | | | | |
| | | | | | | | Anthracene | 20 ug/mL | | | | |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL | | | | |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL | | | | |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL | | | | |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL | | | | |
| | | | | | | | Chrysene | 20 ug/mL | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|----------------------|----------------------|---------------------|---------------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Dibenz (a, h) anthracene | 20 ug/mL |
| | | | | | | | Fluoranthene | 20 ug/mL |
| | | | | | | | Fluorene | 20 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL |
| | | | | | | | Naphthalene | 20 ug/mL |
| | | | | | | | Phenanthrene | 20 ug/mL |
| | | | | | | | Pyrene | 20 ug/mL |
| | | | | | 60MXNATSACPAH_00008 | 100 uL | 1-Methylphenanthrene | 20 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 20 ug/mL |
| | | | | | | | Benzo[e]pyrene | 20 ug/mL |
| | | | | | | | Dibenzothiophene | 20 ug/mL |
| | | | | | | | Perylene | 20 ug/mL |
| | | | | | 60MXSVOCAD_00004 | 100 uL | 1,1'-Biphenyl | 20 ug/mL |
| | | | | | | | Dibenzofuran | 20 ug/mL |
| ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | | (Purchased Reagent) | 1-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | Acenaphthene | 2000 ug/mL |
| | | | | | | | Acenaphthylene | 2000 ug/mL |
| | | | | | | | Anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL |
| | | | | | | | Chrysene | 2000 ug/mL |
| | | | | | | | Dibenz (a, h) anthracene | 2000 ug/mL |
| | | | | | | | Fluoranthene | 2000 ug/mL |
| | | | | | | | Fluorene | 2000 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | Phenanthrene | 2000 ug/mL |
| | | | | | | | Pyrene | 2000 ug/mL |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | | (Purchased Reagent) | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2000 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | | (Purchased Reagent) | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | (Purchased Reagent) | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------------|----------|-----------|----------------------|----------------------|---------------------|--------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | (Purchased Reagent) | | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60xx8270smspc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | (Purchased Reagent) | | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | (Purchased Reagent) | | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | (Purchased Reagent) | | Naphthobenzothiophene | 1000 ug/mL |
| 60L68270SIM_00006 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 125 uL | 1-Methylnaphthalene | 2.5 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 2.5 ug/mL |
| | | | | | | | Acenaphthene | 2.5 ug/mL |
| | | | | | | | Acenaphthylene | 2.5 ug/mL |
| | | | | | | | Anthracene | 2.5 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2.5 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2.5 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2.5 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2.5 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2.5 ug/mL |
| | | | | | | | Chrysene | 2.5 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 2.5 ug/mL |
| | | | | | | | Fluoranthene | 2.5 ug/mL |
| | | | | | | | Fluorene | 2.5 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2.5 ug/mL |
| | | | | | | | Naphthalene | 2.5 ug/mL |
| | | | | | | | Phenanthrene | 2.5 ug/mL |
| | | | | | | | Pyrene | 2.5 ug/mL |
| | | | | | | | 1-Methylphenanthrene | 2.5 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2.5 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2.5 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2.5 ug/mL |
| | | | | | | | Dibenzothiophene | 2.5 ug/mL |
| | | | | | | | Perylene | 2.5 ug/mL |
| | | | | | | | 1,1'-Biphenyl | 2.5 ug/mL |
| | | | | | | | Dibenzofuran | 2.5 ug/mL |
| | | | | | 60xx8270simis_00003 | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| | | | | | | | Naphthalene-d8 | 0.5 ug/mL |
| | | | | | | | Perylene-d12 | 0.5 ug/mL |
| | | | | | | | Phenanthrene-d10 | 0.5 ug/mL |
| | | | | | 60xx8270simsr_00005 | 125 uL | 2-Fluorobiphenyl (Surr) | 2.5 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | | | | | |
|------------------------|------------|-----------|--------------------|----------------------|----------------------------|--------------|------------------------|----------------------|-----------------------|-----------|--|----------------------|---------------------|------------|
| | | | | | Reagent ID | Volume Added | | | | | | | | |
| | | | | | | | Nitrobenzene-d5 | 2.5 ug/mL | | | | | | |
| | | | | | | | Terphenyl-d14 | 2.5 ug/mL | | | | | | |
| | | | | | | | 60xx8270smspc_00003 | 125 uL | Benzo(b)thiophene | 2.5 ug/mL | | | | |
| | | | | | | | | | cis-Decalin | 2.5 ug/mL | | | | |
| | | | | | | | | | Naphthobenzothiophene | 2.5 ug/mL | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | 1-Methylnaphthalene | 20 ug/mL | | | | | | |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL | | | | | | |
| | | | | | | | Acenaphthene | 20 ug/mL | | | | | | |
| | | | | | | | Acenaphthylene | 20 ug/mL | | | | | | |
| | | | | | | | Anthracene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL | | | | | | |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL | | | | | | |
| | | | | | | | Chrysene | 20 ug/mL | | | | | | |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL | | | | | | |
| | | | | | | | Fluoranthene | 20 ug/mL | | | | | | |
| | | | | | | | Fluorene | 20 ug/mL | | | | | | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL | | | | | | |
| | | | | | | | Naphthalene | 20 ug/mL | | | | | | |
| | | | | | | | Phenanthrene | 20 ug/mL | | | | | | |
| | | | | | | | Pyrene | 20 ug/mL | | | | | | |
| | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL | | | | | | | | |
| | | | | | 2,6-Dimethylnaphthalene | 20 ug/mL | | | | | | | | |
| | | | | | Benzo[e]pyrene | 20 ug/mL | | | | | | | | |
| | | | | | Dibenzothiophene | 20 ug/mL | | | | | | | | |
| | | | | | Perylene | 20 ug/mL | | | | | | | | |
| | | | | | Dibenzofuran | 20 ug/mL | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | | | (Purchased Reagent) | 1-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | | | | | | 2-Methylnaphthalene | 2000 ug/mL | |
| | | | | | | | | | | | | Acenaphthene | 2000 ug/mL | |
| | | | | | | | | | | | | Acenaphthylene | 2000 ug/mL | |
| | | | | | | | | | | | | Anthracene | 2000 ug/mL | |
| | | | | | | | | | | | | Benzo[a]anthracene | 2000 ug/mL | |
| | | | | | | | | | | | | Benzo[a]pyrene | 2000 ug/mL | |
| | | | | | | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL | |
| Benzo[g,h,i]perylene | 2000 ug/mL | | | | | | | | | | | | | |
| Benzo[k]fluoranthene | 2000 ug/mL | | | | | | | | | | | | | |
| Chrysene | 2000 ug/mL | | | | | | | | | | | | | |
| Dibenz(a,h)anthracene | 2000 ug/mL | | | | | | | | | | | | | |
| Fluoranthene | 2000 ug/mL | | | | | | | | | | | | | |
| Fluorene | 2000 ug/mL | | | | | | | | | | | | | |
| Indeno[1,2,3-cd]pyrene | 2000 ug/mL | | | | | | | | | | | | | |
| Naphthalene | 2000 ug/mL | | | | | | | | | | | | | |
| Phenanthrene | 2000 ug/mL | | | | | | | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|--------------------------|----------|-----------|----------------------|----------------------|---------------------|--------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | (Purchased Reagent) | | Pyrene | 2000 ug/mL |
| | | | | | | | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2000 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | (Purchased Reagent) | | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | (Purchased Reagent) | | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | (Purchased Reagent) | | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60xx8270smcpc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | (Purchased Reagent) | | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | (Purchased Reagent) | | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | (Purchased Reagent) | | Naphthobenzothiophene | 1000 ug/mL |
| 60L78270SIM_00006 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 1 mL | 60XX8270PAHT1_00003 | 250 uL | 1-Methylnaphthalene | 5 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 5 ug/mL |
| | | | | | | | Acenaphthene | 5 ug/mL |
| | | | | | | | Acenaphthylene | 5 ug/mL |
| | | | | | | | Anthracene | 5 ug/mL |
| | | | | | | | Benzo[a]anthracene | 5 ug/mL |
| | | | | | | | Benzo[a]pyrene | 5 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 5 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 5 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 5 ug/mL |
| | | | | | | | Chrysene | 5 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 5 ug/mL |
| | | | | | | | Fluoranthene | 5 ug/mL |
| | | | | | | | Fluorene | 5 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 5 ug/mL |
| | | | | | | | Naphthalene | 5 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------|-----------------|-------------------|--------------------|----------------------|------------------------|--------------|----------------------------|----------------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Phenanthrene | 5 ug/mL |
| | | | | | | | Pyrene | 5 ug/mL |
| | | | | | | | 1-Methylphenanthrene | 5 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 5 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 5 ug/mL |
| | | | | | | | Benzo[e]pyrene | 5 ug/mL |
| | | | | | | | Dibenzothiophene | 5 ug/mL |
| | | | | | | | Perylene | 5 ug/mL |
| | | | | | 1,1'-Biphenyl | 5 ug/mL | | |
| | | | | | Dibenzofuran | 5 ug/mL | | |
| | | | | | 60xx8270simis_00003 | 10 uL | Acenaphthene-d10 | 0.5 ug/mL |
| | | | | | | | Chrysene-d12 | 0.5 ug/mL |
| | | | | | | | Naphthalene-d8 | 0.5 ug/mL |
| | | | | | | | Perylene-d12 | 0.5 ug/mL |
| | | | | | 60xx8270simsr_00005 | 250 uL | Phenanthrene-d10 | 0.5 ug/mL |
| | | | | | | | 2-Fluorobiphenyl (Surr) | 5 ug/mL |
| | Nitrobenzene-d5 | 5 ug/mL | | | | | | |
| 60xx8270smcpc_00003 | 250 uL | Terphenyl-d14 | 5 ug/mL | | | | | |
| | | Benzo(b)thiophene | 5 ug/mL | | | | | |
| | | cis-Decalin | 5 ug/mL | | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | Naphthobenzothiophene | 5 ug/mL |
| | | | | | | | 1-Methylnaphthalene | 20 ug/mL |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL |
| | | | | | | | Acenaphthene | 20 ug/mL |
| | | | | | | | Acenaphthylene | 20 ug/mL |
| | | | | | | | Anthracene | 20 ug/mL |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL |
| | | | | | | | Chrysene | 20 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL |
| | | | | | | | Fluoranthene | 20 ug/mL |
| | | | | | Fluorene | 20 ug/mL | | |
| | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL | | |
| | | | | | Naphthalene | 20 ug/mL | | |
| | | | | | Phenanthrene | 20 ug/mL | | |
| | | | | | Pyrene | 20 ug/mL | | |
| | | | | | 60MXNATSACPAH_00008 | 100 uL | 1-Methylphenanthrene | 20 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 20 ug/mL |
| | | | | | | | Benzo[e]pyrene | 20 ug/mL |
| | | | | | | | Dibenzothiophene | 20 ug/mL |
| | | | | | 60MXSVOCAD_00004 | 100 uL | Perylene | 20 ug/mL |
| | | | | | | | 1,1'-Biphenyl | 20 ug/mL |
| | | | | | | | Dibenzofuran | 20 ug/mL |
| | | | | | ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-----------------------|----------|-----------|----------------------|----------------------|-------------------|---------------------|----------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL |
| | | | | | | | Acenaphthene | 2000 ug/mL |
| | | | | | | | Acenaphthylene | 2000 ug/mL |
| | | | | | | | Anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL |
| | | | | | | | Chrysene | 2000 ug/mL |
| | | | | | | | Dibenz(a,h)anthracene | 2000 ug/mL |
| | | | | | | | Fluoranthene | 2000 ug/mL |
| | | | | | | | Fluorene | 2000 ug/mL |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL |
| | | | | | | | Naphthalene | 2000 ug/mL |
| | | | | | | | Phenanthrene | 2000 ug/mL |
| | | | | | | | Pyrene | 2000 ug/mL |
| ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | | (Purchased Reagent) | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| | | | | | | | 2,6-Dimethylnaphthalene | 2000 ug/mL |
| | | | | | | | Benzo[e]pyrene | 2000 ug/mL |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | | (Purchased Reagent) | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| ..60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | | (Purchased Reagent) | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |
| .60xx8270simsr_00005 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXSU_00020 | 40 uL | 2-Fluorobiphenyl (Surr) | 20 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL |
| | | | | | | | Terphenyl-d14 | 20 ug/mL |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | | (Purchased Reagent) | 2-Fluorobiphenyl (Surr) | 5000 ug/mL |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL |
| | | | | | | | Terphenyl-d14 | 5000 ug/mL |
| .60xx8270smspc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | | (Purchased Reagent) | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | | (Purchased Reagent) | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | | (Purchased Reagent) | Naphthobenzothiophene | 1000 ug/mL |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | |
|----------------------|----------|-----------|----------------------|----------------------|----------------------------|--------------|-------------------------|----------------------|------------|
| | | | | | Reagent ID | Volume Added | | | |
| 60SP8270SIMSR_00006 | 06/13/20 | 06/14/19 | Methanol, Lot 225737 | 50 mL | 60xx8270simsr_00004 | 2.5 mL | 2,4,6-Tribromophenol | 1 ug/mL | |
| | | | | | | | 2-Fluorobiphenyl (Surr) | 1 ug/mL | |
| | | | | | | | 2-Fluorophenol | 1 ug/mL | |
| | | | | | | | Nitrobenzene-d5 | 1 ug/mL | |
| | | | | | | | Phenol-d5 | 1 ug/mL | |
| .60xx8270simsr_00004 | 06/13/20 | 06/12/19 | Hexane, Lot 211844 | 10 mL | 60MXSU_00020 | 40 uL | 2,4,6-Tribromophenol | 20 ug/mL | |
| | | | | | | | 2-Fluorobiphenyl (Surr) | 20 ug/mL | |
| | | | | | | | 2-Fluorophenol | 20 ug/mL | |
| | | | | | | | Nitrobenzene-d5 | 20 ug/mL | |
| | | | | | | | Phenol-d5 | 20 ug/mL | |
| ..60MXSU_00020 | 06/13/20 | | Restek, Lot A0143524 | | | | (Purchased Reagent) | 2,4,6-Tribromophenol | 5000 ug/mL |
| | | | | | | | 2-Fluorobiphenyl (Surr) | 5000 ug/mL | |
| | | | | | | | 2-Fluorophenol | 5000 ug/mL | |
| | | | | | | | Nitrobenzene-d5 | 5000 ug/mL | |
| | | | | | | | Phenol-d5 | 5000 ug/mL | |
| 60SP8270SIMTA_00009 | 02/08/20 | 07/24/19 | Methanol, Lot 225737 | 25 mL | 60XX8270PAHT1_00003 | 1.25 mL | 1-Methylnaphthalene | 1 ug/mL | |
| | | | | | | | 2-Methylnaphthalene | 1 ug/mL | |
| | | | | | | | Acenaphthene | 1 ug/mL | |
| | | | | | | | Acenaphthylene | 1 ug/mL | |
| | | | | | | | Anthracene | 1 ug/mL | |
| | | | | | | | Benzo[a]anthracene | 1 ug/mL | |
| | | | | | | | Benzo[a]pyrene | 1 ug/mL | |
| | | | | | | | Benzo[b]fluoranthene | 1 ug/mL | |
| | | | | | | | Benzo[g,h,i]perylene | 1 ug/mL | |
| | | | | | | | Benzo[k]fluoranthene | 1 ug/mL | |
| | | | | | | | Chrysene | 1 ug/mL | |
| | | | | | | | Dibenz(a,h)anthracene | 1 ug/mL | |
| | | | | | | | Fluoranthene | 1 ug/mL | |
| | | | | | | | Fluorene | 1 ug/mL | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 1 ug/mL | |
| | | | | | Naphthalene | 1 ug/mL | | | |
| | | | | | Phenanthrene | 1 ug/mL | | | |
| | | | | | Pyrene | 1 ug/mL | | | |
| | | | | | 1-Methylphenanthrene | 1 ug/mL | | | |
| | | | | | 2,3,5-Trimethylnaphthalene | 1 ug/mL | | | |
| | | | | | 2,6-Dimethylnaphthalene | 1 ug/mL | | | |
| | | | | | Benzo[e]pyrene | 1 ug/mL | | | |
| | | | | | Dibenzothiophene | 1 ug/mL | | | |
| | | | | | Perylene | 1 ug/mL | | | |
| | | | | | 1,1'-Biphenyl | 1 ug/mL | | | |
| Dibenzofuran | 1 ug/mL | | | | | | | | |
| 60xx8270smspc_00003 | | | | | | 1.25 mL | Benzo(b)thiophene | 1 ug/mL | |
| | | | | | | | cis-Decalin | 1 ug/mL | |
| | | | | | | | Naphthobenzothiophene | 1 ug/mL | |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.:

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration | | | | | | | |
|-------------------------|------------|---------------|----------------------|----------------------|------------------------|--------------|----------------------------|---------------|--|----------------------|--|---------------------|--|----------------------------|------------|
| | | | | | Reagent ID | Volume Added | | | | | | | | | |
| .60XX8270PAHT1_00003 | 02/08/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MX8270CLMX5_00003 | 100 uL | 1-Methylnaphthalene | 20 ug/mL | | | | | | | |
| | | | | | | | 2-Methylnaphthalene | 20 ug/mL | | | | | | | |
| | | | | | | | Acenaphthene | 20 ug/mL | | | | | | | |
| | | | | | | | Acenaphthylene | 20 ug/mL | | | | | | | |
| | | | | | | | Anthracene | 20 ug/mL | | | | | | | |
| | | | | | | | Benzo[a]anthracene | 20 ug/mL | | | | | | | |
| | | | | | | | Benzo[a]pyrene | 20 ug/mL | | | | | | | |
| | | | | | | | Benzo[b]fluoranthene | 20 ug/mL | | | | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 20 ug/mL | | | | | | | |
| | | | | | | | Benzo[k]fluoranthene | 20 ug/mL | | | | | | | |
| | | | | | | | Chrysene | 20 ug/mL | | | | | | | |
| | | | | | | | Dibenz(a,h)anthracene | 20 ug/mL | | | | | | | |
| | | | | | | | Fluoranthene | 20 ug/mL | | | | | | | |
| | | | | | | | Fluorene | 20 ug/mL | | | | | | | |
| | | | | | Indeno[1,2,3-cd]pyrene | 20 ug/mL | | | | | | | | | |
| | | | | | Naphthalene | 20 ug/mL | | | | | | | | | |
| | | | | | Phenanthrene | 20 ug/mL | | | | | | | | | |
| | | | | | Pyrene | 20 ug/mL | | | | | | | | | |
| | | | | | 60MXNATSACPAH_00008 | 100 uL | 1-Methylphenanthrene | 20 ug/mL | | | | | | | |
| | | | | | | | 2,3,5-Trimethylnaphthalene | 20 ug/mL | | | | | | | |
| 2,6-Dimethylnaphthalene | 20 ug/mL | | | | | | | | | | | | | | |
| Benzo[e]pyrene | 20 ug/mL | | | | | | | | | | | | | | |
| Dibenzothiophene | 20 ug/mL | | | | | | | | | | | | | | |
| 60MXSVOCAD_00004 | 100 uL | Perylene | 20 ug/mL | | | | | | | | | | | | |
| | | 1,1'-Biphenyl | 20 ug/mL | | | | | | | | | | | | |
| ..60MX8270CLMX5_00003 | 03/05/21 | | Restek, Lot A0125411 | | (Purchased Reagent) | | 1-Methylnaphthalene | 2000 ug/mL | | | | | | | |
| | | | | | | | 2-Methylnaphthalene | 2000 ug/mL | | | | | | | |
| | | | | | | | Acenaphthene | 2000 ug/mL | | | | | | | |
| | | | | | | | Acenaphthylene | 2000 ug/mL | | | | | | | |
| | | | | | | | Anthracene | 2000 ug/mL | | | | | | | |
| | | | | | | | Benzo[a]anthracene | 2000 ug/mL | | | | | | | |
| | | | | | | | Benzo[a]pyrene | 2000 ug/mL | | | | | | | |
| | | | | | | | Benzo[b]fluoranthene | 2000 ug/mL | | | | | | | |
| | | | | | | | Benzo[g,h,i]perylene | 2000 ug/mL | | | | | | | |
| | | | | | | | Benzo[k]fluoranthene | 2000 ug/mL | | | | | | | |
| | | | | | | | Chrysene | 2000 ug/mL | | | | | | | |
| | | | | | | | Dibenz(a,h)anthracene | 2000 ug/mL | | | | | | | |
| | | | | | | | Fluoranthene | 2000 ug/mL | | | | | | | |
| | | | | | | | Fluorene | 2000 ug/mL | | | | | | | |
| | | | | | | | Indeno[1,2,3-cd]pyrene | 2000 ug/mL | | | | | | | |
| | | | | | | | Naphthalene | 2000 ug/mL | | | | | | | |
| | | | | | | | Phenanthrene | 2000 ug/mL | | | | | | | |
| | | | | | | | Pyrene | 2000 ug/mL | | | | | | | |
| | | | | | | | ..60MXNATSACPAH_00008 | 09/01/20 | | Restek, Lot A0146343 | | (Purchased Reagent) | | 1-Methylphenanthrene | 2000 ug/mL |
| | | | | | | | | | | | | | | 2,3,5-Trimethylnaphthalene | 2000 ug/mL |
| 2,6-Dimethylnaphthalene | 2000 ug/mL | | | | | | | | | | | | | | |
| Benzo[e]pyrene | 2000 ug/mL | | | | | | | | | | | | | | |
| | 2000 ug/mL | | | | | | | | | | | | | | |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|-------------------------|----------|-----------|--|----------------------|-------------------|---------------------|------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | Dibenzothiophene | 2000 ug/mL |
| | | | | | | | Perylene | 2000 ug/mL |
| ..60MXSVOCAD_00004 | 02/08/21 | | Restek, Lot A0139915 | | | (Purchased Reagent) | 1,1'-Biphenyl | 2000 ug/mL |
| | | | | | | | Dibenzofuran | 2000 ug/mL |
| .60xx8270smcpc_00003 | 06/13/20 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXB(b)Th_00001 | 100 uL | Benzo(b)thiophene | 20 ug/mL |
| | | | | | 60MXDECALIN_00001 | 200 uL | cis-Decalin | 20 ug/mL |
| | | | | | 60MXNBT_00001 | 200 uL | Naphthobenzothiophene | 20 ug/mL |
| ..60MXB(b)Th_00001 | 06/13/20 | | Absolute, Lot 061818 | | | (Purchased Reagent) | Benzo(b)thiophene | 2000 ug/mL |
| ..60MXDECALIN_00001 | 06/13/20 | | Absolute, Lot 071018 | | | (Purchased Reagent) | cis-Decalin | 1000 ug/mL |
| ..60MXNBT_00001 | 06/13/20 | | Absolute, Lot 051118 | | | (Purchased Reagent) | Naphthobenzothiophene | 1000 ug/mL |
| 60WDM8270D_00003 | 11/30/19 | 06/12/19 | Hexane, Lot 211844 | 1 mL | 60SRMWD_00001 | 0.005 mL | C1-Benzothiophenes | 5000 ug/mL |
| | | | | | | | C1-Chrysenes | 5000 ug/mL |
| | | | | | | | C1-Decalins | 5000 ug/mL |
| | | | | | | | C1-Dibenzothiophenes | 5000 ug/mL |
| | | | | | | | C1-Fluoranthenes/pyrene | 5000 ug/mL |
| | | | | | | | C1-Fluorenes | 5000 ug/mL |
| | | | | | | | C1-Naphthalenes | 5000 ug/mL |
| | | | | | | | C1-Naphthobenzothiophenes | 5000 ug/mL |
| | | | | | | | C1-Phenanthrenes/Anthracenes | 5000 ug/mL |
| | | | | | | | C2-Benzothiophenes | 5000 ug/mL |
| | | | | | | | C2-Chrysenes | 5000 ug/mL |
| | | | | | | | C2-Decalins | 5000 ug/mL |
| | | | | | | | C2-Dibenzothiophenes | 5000 ug/mL |
| | | | | | | | C2-Fluoranthenes/Pyrene | 5000 ug/mL |
| | | | | | | | C2-Fluorenes | 5000 ug/mL |
| | | | | | | | C2-Naphthalenes | 5000 ug/mL |
| | | | | | | | C2-Naphthobenzothiophenes | 5000 ug/mL |
| | | | | | | | C2-Phenanthrenes/Anthracenes | 5000 ug/mL |
| | | | | | | | C3-Benzothiophenes | 5000 ug/mL |
| | | | | | | | C3-Chrysenes | 5000 ug/mL |
| | | | | | | | C3-Decalins | 5000 ug/mL |
| | | | | | | | C3-Dibenzothiophenes | 5000 ug/mL |
| | | | | | | | C3-Fluoranthenes/Pyrene | 5000 ug/mL |
| | | | | | | | C3-Fluorenes | 5000 ug/mL |
| | | | | | | | C3-Naphthalenes | 5000 ug/mL |
| | | | | | | | C3-Naphthobenzothiophenes | 5000 ug/mL |
| | | | | | | | C3-Phenanthrenes/Anthracenes | 5000 ug/mL |
| | | | | | | | C4-Benzothiophenes | 5000 ug/mL |
| | | | | | | | C4-Chrysenes | 5000 ug/mL |
| | | | | | | | C4-Decalins | 5000 ug/mL |
| | | | | | | | C4-Dibenzothiophenes | 5000 ug/mL |
| | | | | | | | C4-Fluoranthenes/Pyrene | 5000 ug/mL |
| | | | | | | | C4-Naphthalenes | 5000 ug/mL |
| | | | | | | | C4-Naphthobenzothiophenes | 5000 ug/mL |
| | | | | | | | C4-Phenanthrenes/Anthracenes | 5000 ug/mL |
| .60SRMWD_00001 | 05/30/19 | | National Institute of STDs and Tech., Lot SRM 2779 | | | (Purchased Reagent) | C1-Benzothiophenes | 1 g/g |
| | | | | | | | C1-Chrysenes | 1 g/g |

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

| Reagent ID | Exp Date | Prep Date | Dilutant Used | Reagent Final Volume | Parent Reagent | | Analyte | Concentration |
|----------------------------|----------|-----------|----------------------|----------------------|---------------------|--------------|------------------------------|---------------|
| | | | | | Reagent ID | Volume Added | | |
| | | | | | | | C1-Decalins | 1 g/g |
| | | | | | | | C1-Dibenzothiophenes | 1 g/g |
| | | | | | | | C1-Fluoranthenes/pyrene | 1 g/g |
| | | | | | | | C1-Fluorenes | 1 g/g |
| | | | | | | | C1-Naphthalenes | 1 g/g |
| | | | | | | | C1-Naphthobenzothiophenes | 1 g/g |
| | | | | | | | C1-Phenanthrenes/Anthracenes | 1 g/g |
| | | | | | | | C2-Benzothiophenes | 1 g/g |
| | | | | | | | C2-Chrysenes | 1 g/g |
| | | | | | | | C2-Decalins | 1 g/g |
| | | | | | | | C2-Dibenzothiophenes | 1 g/g |
| | | | | | | | C2-Fluoranthenes/Pyrene | 1 g/g |
| | | | | | | | C2-Fluorenes | 1 g/g |
| | | | | | | | C2-Naphthalenes | 1 g/g |
| | | | | | | | C2-Naphthobenzothiophenes | 1 g/g |
| | | | | | | | C2-Phenanthrenes/Anthracenes | 1 g/g |
| | | | | | | | C3-Benzothiophenes | 1 g/g |
| | | | | | | | C3-Chrysenes | 1 g/g |
| | | | | | | | C3-Decalins | 1 g/g |
| | | | | | | | C3-Dibenzothiophenes | 1 g/g |
| | | | | | | | C3-Fluoranthenes/Pyrene | 1 g/g |
| | | | | | | | C3-Fluorenes | 1 g/g |
| | | | | | | | C3-Naphthalenes | 1 g/g |
| | | | | | | | C3-Naphthobenzothiophenes | 1 g/g |
| | | | | | | | C3-Phenanthrenes/Anthracenes | 1 g/g |
| | | | | | | | C4-Benzothiophenes | 1 g/g |
| | | | | | | | C4-Chrysenes | 1 g/g |
| | | | | | | | C4-Decalins | 1 g/g |
| | | | | | | | C4-Dibenzothiophenes | 1 g/g |
| | | | | | | | C4-Fluoranthenes/Pyrene | 1 g/g |
| | | | | | | | C4-Naphthalenes | 1 g/g |
| | | | | | | | C4-Naphthobenzothiophenes | 1 g/g |
| | | | | | | | C4-Phenanthrenes/Anthracenes | 1 g/g |
| 60xx8270simis_00003 | 11/30/19 | 07/09/19 | Hexane, Lot 221330 | 10 mL | 60MXIS_00008 | 0.25 mL | Acenaphthene-d10 | 50 ug/mL |
| | | | | | | | Chrysene-d12 | 50 ug/mL |
| | | | | | | | Naphthalene-d8 | 50 ug/mL |
| | | | | | | | Perylene-d12 | 50 ug/mL |
| | | | | | | | Phenanthrene-d10 | 50 ug/mL |
| .60MXIS_00008 | 11/30/19 | | Restek, Lot A0139031 | | (Purchased Reagent) | | Acenaphthene-d10 | 2000 ug/mL |
| | | | | | | | Chrysene-d12 | 2000 ug/mL |
| | | | | | | | Naphthalene-d8 | 2000 ug/mL |
| | | | | | | | Perylene-d12 | 2000 ug/mL |
| | | | | | | | Phenanthrene-d10 | 2000 ug/mL |

Reagent

Ag-1000 2nd_00001



2342628
 ID: Ag-1000 2nd_00001
 Exp 08/25/20 Prpd:HJM Opm 03/07/19
 1000 ppm Ag 2nd

Jhu
 3/7/19

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM

Product #: TA-1000511

SE Std Silver (Ag) – 1000 µg/mL

Lot #: 975475-12

Matrix: 5% HNO₃

| Element | Certified Concentration & Uncertainty |
|-----------|---------------------------------------|
| Ag | 996 ± 3 µg/mL (w/v) |
| | 987 ± 3 µg/g (w/w) |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001, ISO 17034, and ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.999% pure silver (Ag) metal dissolved in high purity nitric acid (HNO₃) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3151, lot #992212**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

| Trace Concentrations (µg/L) | | | | | | | | | | | | | |
|-----------------------------|-------|----|------|----|------|----|------|----|------|----|------|----|------|
| Ag | MAJOR | Co | <0.5 | Ge | <0.5 | Lu | <0.2 | P | <100 | Sb | <0.5 | Te | <1 |
| Al | <2 | Cs | <1 | Hf | <0.2 | Mg | <5 | Pb | 2 | Sc | <5 | Ti | <2 |
| As | <2 | Cr | <0.5 | Hg | 3 | Mn | <1 | Pd | <0.5 | Se | <2 | Tl | <0.5 |
| Au | 2 | Cu | 9 | Ho | <0.2 | Mo | <0.5 | Pr | <0.2 | Si | <100 | Tm | <0.2 |
| B | <5 | Dy | <0.2 | In | nd | Na | <25 | Pt | <0.5 | Sm | <0.2 | V | <1 |
| Ba | <1 | Er | <0.2 | Ir | <0.2 | Nb | <0.5 | Rb | <0.5 | Sn | <0.5 | W | <0.5 |
| Bi | <0.2 | Eu | <0.2 | K | <25 | Nd | <0.2 | Re | <0.2 | Sr | <1 | Y | <0.5 |
| Ca | <25 | Fe | <10 | La | <0.5 | Ni | <2 | Rh | <0.5 | Ta | <0.5 | Yb | <0.2 |
| Cd | <0.5 | Ga | <0.5 | Li | <2 | Os | 2 | Ru | <0.5 | Tb | <0.5 | Zn | <2 |
| Ce | <0.2 | Gd | <0.2 | | | | | | | | | | |

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

February 25, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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Europe
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 1013BG Amsterdam F: +31 20 420 28 36
 The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

Ag-1000_00004

Sample Report

Sample Name CCVL STOCK
File Name 038SMPL.d
Data Path Name D:\Agilent\ICPMH1\DATA\ICPMS-7900-20_Jun_2018-07_00_52.b
Acq Time 2018-06-20 10:58:31
Sample Type Sample
Total Dilution 10.0000
Comment ---
ISTD Ref FileName 015CALB.d
Sample QC Pass/Fail Fail
ISTD QC Pass/Fail Pass
Operator Seattle_ins
 T_TAC0182

QC Analyte Table

RECOVERY

| Name | Mass | ISTD | Tune | Raw Conc. | Conc. | Units | RSD | CPS | LDR | QC Flag |
|------|------|------|------|-----------|------------|-------|------|-------------|--------|----------|
| Be | 9 | 45 | He | 37.551 | 375.511 | ug/l | 2.0 | 1472.14 | 900 | 94% |
| Na | 23 | 45 | He | -13.148 | -131.483 | ug/l | N/A | 14045.20 | 225000 | |
| Mg | 24 | 45 | He | -1.082 | -10.820 | ug/l | N/A | 348.67 | 225000 | |
| Al | 27 | 45 | He | 9058.169 | 90581.693 | ug/l | 1.4 | 246054.11 | 225000 | 91% |
| P | 31 | 45 | He | 45892.691 | 458926.910 | ug/l | 1.4 | 83786.10 | 225000 | 92% |
| K | 39 | 45 | He | -1.219 | -12.186 | ug/l | N/A | 4824.13 | 225000 | |
| Ca | 44 | 45 | He | 53.679 | 536.792 | ug/l | 22.2 | 242.79 | 225000 | |
| Ti | 47 | 45 | He | 94.775 | 947.749 | ug/l | 1.7 | 3907.18 | 900 | 95% |
| V | 51 | 45 | He | 368.094 | 3680.941 | ug/l | 1.0 | 861595.67 | 9000 | 92% |
| Cr | 52 | 45 | He | 37.7 | 376.997 | ug/l | 0.6 | 123189.15 | 9000 | 94% |
| Mn | 55 | 45 | He | 189.582 | 1895.823 | ug/l | 0.9 | 190707.42 | 9000 | 95% |
| Fe | 56 | 45 | He | 18754.492 | 187544.919 | ug/l | 1.5 | 39702388.00 | 225000 | 93% |
| Co | 59 | 74 | He | 38.724 | 387.235 | ug/l | 1.4 | 264256.97 | 9000 | 97% |
| Ni | 60 | 74 | He | 295.523 | 2955.226 | ug/l | 1.1 | 589561.88 | 9000 | 98% |
| Cu | 63 | 74 | He | 200.434 | 2004.340 | ug/l | 1.0 | 1151175.04 | 9000 | 100% |
| Zn | 66 | 74 | He | 690.244 | 6902.437 | ug/l | 0.7 | 389457.26 | 9000 | 99% |
| As | 75 | 74 | He | 97.206 | 972.057 | ug/l | 1.1 | 35755.18 | 9000 | 97% |
| Se | 78 | 74 | He | 761.975 | 7619.745 | ug/l | 0.4 | 8208.02 | 9000 | 95% |
| Sr | 88 | 74 | He | 37.933 | 379.330 | ug/l | 0.6 | 36861.11 | 9000 | 95% |
| Mo | 95 | 74 | He | 76.185 | 761.849 | ug/l | 1.0 | 194549.84 | 900 | 95% |
| Ag | 109 | 103 | He | 39.187 | 391.869 | ug/l | 1.0 | 412094.18 | 900 | 97% |
| Cd | 111 | 103 | He | 38.908 | 389.085 | ug/l | 0.3 | 37820.02 | 9000 | 97% |
| Sn | 118 | 103 | He | 952.844 | 9528.439 | ug/l | 1.3 | 1486100.91 | 900 | >LDR 95% |
| Sb | 123 | 103 | He | 37.475 | 374.747 | ug/l | 0.7 | 62224.88 | 900 | 94% |
| Ba | 135 | 165 | He | 112.931 | 1129.311 | ug/l | 0.3 | 36857.67 | 9000 | 94% |
| Hg | 201 | 209 | He | 22.793 | 227.935 | ug/l | 2.9 | 45543.57 | 45 | 91% |
| Tl | 205 | 103 | He | 91.752 | 917.523 | ug/l | 2.8 | 2060438.51 | 900 | 92% |
| Pb | 208 | 209 | He | 73.908 | 739.083 | ug/l | 2.8 | 2100657.24 | 9000 | 92% |
| U | 238 | 103 | He | 54.411 | 544.111 | ug/l | 2.0 | 1568712.74 | 900 | 91% |

QC ISTD Table

| Name | Mass | Tune Mode | CPS | CPS RSD | Ref CPS | % Rec | %QC Low | %QC High | QC Flag |
|------|------|-----------|------------|---------|------------|-------|---------|----------|---------|
| Li | 6 | He | 17247.06 | 1.3 | 17545.42 | 98.3 | 30 | 150 | |
| Sc | 45 | He | 2712106.33 | 1.2 | 2746229.92 | 98.76 | 30 | 150 | |
| Ge | 74 | He | 4020291.67 | 0.9 | 4112164.17 | 97.77 | 30 | 150 | |



Sample Report

| Name | Mass | Tune Mode | CPS | CPS RSD | Ref CPS | % Rec | %QC Low | %QC High | QC Flag |
|------|------|-----------|-------------|---------|-------------|-------|---------|----------|---------|
| Rh | 103 | He | 9799128.67 | 0.9 | 9951074 | 98.47 | 30 | 150 | |
| Ho | 165 | He | 12760624.00 | 0.5 | 12722861 | 100.3 | 30 | 150 | |
| Bi | 209 | He | 14443256.00 | 2.7 | 14063318.33 | 102.7 | 30 | 150 | |

Reagent

As-1000_00004

CERTIFICATE OF ANALYSIS



1678236
ID: As-1000_00004
Exp:11/30/20 Prpd:HJM Opm:04/1
1000 ppm As

AccuTrace™ Reference Standard

Catalog No: ICP-03N-1
Description: Arsenic ICP Standard
Element: Arsenic (As)
SRM: 3103a
Lot: 215105135
Matrix: 2% Nitric acid
Hazards: **CORROSIVE** - Refer to SDS for safety info

Date Certified: Nov 2, 2015
Expiration: Nov 2, 2020
Concentration: 1000 µg/mL
Density: 1.013 g/mL
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Danger 1

Elements in µg/mL

| | | | | | | | | | | | | | |
|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|
| Ag | nd<0.02 | Ce | N/A | Gd | nd<0.02 | Lu | nd<0.02 | Pb | nd<0.2 | Sc | nd<0.02 | Ti | nd<0.02 |
| Al | N/A | Co | nd<0.02 | Ge | nd<0.2 | Mg | nd<0.02 | Pd | nd<0.2 | Se | N/A | Tl | nd<0.2 |
| As | * | Cr | nd<0.02 | Hf | nd<0.02 | Mn | nd<0.02 | Pr | nd<0.2 | Si | N/A | Tm | nd<0.02 |
| Au | nd<0.02 | Cs | N/A | Hg | nd<0.2 | Mo | nd<0.02 | Pt | nd<0.2 | Sm | nd<0.2 | U | nd<0.2 |
| B | nd<0.2 | Cu | N/A | Ho | nd<0.02 | Na | nd<0.02 | Rb | N/A | Sn | N/A | V | nd<0.02 |
| Ba | nd<0.02 | Dy | nd<0.02 | In | nd<0.2 | Nb | nd<0.2 | Re | nd<0.2 | Sr | nd<0.02 | W | nd<0.2 |
| Be | nd<0.02 | Er | nd<0.02 | Ir | nd<0.2 | Nd | nd<0.02 | Rh | nd<0.2 | Ta | N/A | Y | nd<0.02 |
| Bi | nd<0.2 | Eu | nd<0.02 | K | nd<0.2 | Ni | nd<0.02 | Ru | nd<0.02 | Tb | nd<0.02 | Yb | nd<0.02 |
| Ca | nd<0.02 | Fe | nd<0.02 | La | nd<0.02 | Os | N/A | S | N/A | Te | N/A | Zn | N/A |
| Cd | nd<0.02 | Ga | nd<0.02 | Li | nd<0.02 | P | N/A | Sb | N/A | Th | nd<0.02 | Zr | nd<0.02 |

This solution was assayed gravimetrically, using a balance calibrated against weight sets, ID #19305, traceable to NIST.

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±5%. See reverse side for details.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are acid leached and triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By:

Lydia Snyder

Lydia Snyder, Inorganic QC Manager

Reagent

B-10000_00003



CERTIFICATE OF ANALYSIS

1544354
ID: B-10000_00003
Exp: 10/31/22 Prpd:HJM Opm:09/02/15
10000 ppm B

AccuTrace™ Reference Standard

76 9/2/15

Catalog No: ICP-07W-10X-5
Description: Boron ICP Standard
Element: Boron (B)
SRM: 3107
Lot: 212095015
Matrix: Water, tr NH4OH
Hazards: Possible Irritant - Refer to SDS for safety info

Date Certified: Oct 4, 2012
Expiration: Oct 4, 2022
Concentration: 10000 µg/mL

Sample Size: 500 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Warning 5

Elements in µg/mL

| | | | | | | | | | | | | | |
|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|
| Ag | nd<0.02 | Ce | nd<0.2 | Gd | nd<0.02 | Lu | nd<0.02 | Pb | N/A | Sc | nd<0.02 | Ti | nd<0.02 |
| Al | nd<0.02 | Co | nd<0.02 | Ge | nd<0.2 | Mg | nd<0.02 | Pd | nd<0.2 | Se | N/A | TL | nd<0.2 |
| As | nd<0.2 | Cr | nd<0.02 | Hf | nd<0.02 | Mn | nd<0.02 | Pr | nd<0.2 | Si | nd<0.2 | Tm | nd<0.02 |
| Au | nd<0.02 | Cs | N/A | Hg | nd<0.2 | Mo | nd<0.02 | Pt | nd<0.2 | Sm | nd<0.2 | U | N/A |
| B | * | Cu | N/A | Ho | nd<0.02 | Na | N/A | Rb | N/A | Sn | N/A | V | nd<0.02 |
| Ba | nd<0.02 | Dy | nd<0.02 | In | nd<0.2 | Nb | nd<0.2 | Re | nd<0.2 | Sr | N/A | W | N/A |
| Be | nd<0.02 | Er | nd<0.02 | Ir | nd<0.2 | Nd | nd<0.02 | Rh | N/A | Ta | nd<0.2 | Y | nd<0.02 |
| Bi | nd<0.2 | Eu | nd<0.02 | K | N/A | Ni | nd<0.02 | Ru | nd<0.02 | Tb | nd<0.02 | Yb | nd<0.02 |
| Ca | N/A | Fe | 0.05 | La | nd<0.02 | Os | N/A | S | N/A | Te | nd<0.2 | Zn | nd<0.02 |
| Cd | nd<0.02 | Ga | N/A | Li | nd<0.02 | P | N/A | Sb | nd<0.2 | Th | nd<0.02 | Zr | nd<0.02 |

This solution was assayed by acid/base titration using NaOH which was standardized against NIST SRM #84J (potassium hydrogen phthalate.)

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±5%. See reverse side for details.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All glassware used in preparation is Class A and calibrated regularly.

Balances used during preparation are calibrated regularly using NIST traceable weights.

All bottles are acid leached and triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By:

Lydia Snyder

Lydia Snyder, Inorganic QC Manager

Reagent

CCVL STOCK_00001

Sample Report

Sample Name CCVL STOCK
File Name 038SMPL.d
Data Path Name D:\Agilent\ICPMH1\DATA\ICPMS-7900-20_Jun_2018-07_00_52.b
Acq Time 2018-06-20 10:58:31
Sample Type Sample
Total Dilution 10.0000
Comment ---
ISTD Ref FileName 015CALB.d
Sample QC Pass/Fail Fail
ISTD QC Pass/Fail Pass
Operator Seattle_ins
 T_TAC0182

QC Analyte Table

RECOVERY

| Name | Mass | ISTD | Tune | Raw Conc. | Conc. | Units | RSD | CPS | LDR | QC Flag |
|------|------|------|------|-----------|------------|-------|------|-------------|--------|----------|
| Be | 9 | 45 | He | 37.551 | 375.511 | ug/l | 2.0 | 1472.14 | 900 | 94% |
| Na | 23 | 45 | He | -13.148 | -131.483 | ug/l | N/A | 14045.20 | 225000 | |
| Mg | 24 | 45 | He | -1.082 | -10.820 | ug/l | N/A | 348.67 | 225000 | |
| Al | 27 | 45 | He | 9058.169 | 90581.693 | ug/l | 1.4 | 246054.11 | 225000 | 91% |
| P | 31 | 45 | He | 45892.691 | 458926.910 | ug/l | 1.4 | 83786.10 | 225000 | 92% |
| K | 39 | 45 | He | -1.219 | -12.186 | ug/l | N/A | 4824.13 | 225000 | |
| Ca | 44 | 45 | He | 53.679 | 536.792 | ug/l | 22.2 | 242.79 | 225000 | |
| Ti | 47 | 45 | He | 94.775 | 947.749 | ug/l | 1.7 | 3907.18 | 900 | 95% |
| V | 51 | 45 | He | 368.094 | 3680.941 | ug/l | 1.0 | 861595.67 | 9000 | 92% |
| Cr | 52 | 45 | He | 37.7 | 376.997 | ug/l | 0.6 | 123189.15 | 9000 | 94% |
| Mn | 55 | 45 | He | 189.582 | 1895.823 | ug/l | 0.9 | 190707.42 | 9000 | 95% |
| Fe | 56 | 45 | He | 18754.492 | 187544.919 | ug/l | 1.5 | 39702388.00 | 225000 | 93% |
| Co | 59 | 74 | He | 38.724 | 387.235 | ug/l | 1.4 | 264256.97 | 9000 | 97% |
| Ni | 60 | 74 | He | 295.523 | 2955.226 | ug/l | 1.1 | 589561.88 | 9000 | 98% |
| Cu | 63 | 74 | He | 200.434 | 2004.340 | ug/l | 1.0 | 1151175.04 | 9000 | 100% |
| Zn | 66 | 74 | He | 690.244 | 6902.437 | ug/l | 0.7 | 389457.26 | 9000 | 99% |
| As | 75 | 74 | He | 97.206 | 972.057 | ug/l | 1.1 | 35755.18 | 9000 | 97% |
| Se | 78 | 74 | He | 761.975 | 7619.745 | ug/l | 0.4 | 8208.02 | 9000 | 95% |
| Sr | 88 | 74 | He | 37.933 | 379.330 | ug/l | 0.6 | 36861.11 | 9000 | 95% |
| Mo | 95 | 74 | He | 76.185 | 761.849 | ug/l | 1.0 | 194549.84 | 900 | 95% |
| Ag | 109 | 103 | He | 39.187 | 391.869 | ug/l | 1.0 | 412094.18 | 900 | 97% |
| Cd | 111 | 103 | He | 38.908 | 389.085 | ug/l | 0.3 | 37820.02 | 9000 | 97% |
| Sn | 118 | 103 | He | 952.844 | 9528.439 | ug/l | 1.3 | 1486100.91 | 900 | >LDR 95% |
| Sb | 123 | 103 | He | 37.475 | 374.747 | ug/l | 0.7 | 62224.88 | 900 | 94% |
| Ba | 135 | 165 | He | 112.931 | 1129.311 | ug/l | 0.3 | 36857.67 | 9000 | 94% |
| Hg | 201 | 209 | He | 22.793 | 227.935 | ug/l | 2.9 | 45543.57 | 45 | 91% |
| Tl | 205 | 103 | He | 91.752 | 917.523 | ug/l | 2.8 | 2060438.51 | 900 | 92% |
| Pb | 208 | 209 | He | 73.908 | 739.083 | ug/l | 2.8 | 2100657.24 | 9000 | 92% |
| U | 238 | 103 | He | 54.411 | 544.111 | ug/l | 2.0 | 1568712.74 | 900 | 91% |

QC ISTD Table

| Name | Mass | Tune Mode | CPS | CPS RSD | Ref CPS | % Rec | %QC Low | %QC High | QC Flag |
|------|------|-----------|------------|---------|------------|-------|---------|----------|---------|
| Li | 6 | He | 17247.06 | 1.3 | 17545.42 | 98.3 | 30 | 150 | |
| Sc | 45 | He | 2712106.33 | 1.2 | 2746229.92 | 98.76 | 30 | 150 | |
| Ge | 74 | He | 4020291.67 | 0.9 | 4112164.17 | 97.77 | 30 | 150 | |

Sample Report

| Name | Mass | Tune Mode | CPS | CPS RSD | Ref CPS | % Rec | %QC Low | %QC High | QC Flag |
|------|------|-----------|-------------|---------|-------------|-------|---------|----------|---------|
| Rh | 103 | He | 9799128.67 | 0.9 | 9951074 | 98.47 | 30 | 150 | |
| Ho | 165 | He | 12760624.00 | 0.5 | 12722861 | 100.3 | 30 | 150 | |
| Bi | 209 | He | 14443256.00 | 2.7 | 14063318.33 | 102.7 | 30 | 150 | |

Reagent

Cd-1000_00003

CERTIFICATE OF ANALYSIS



1678706
ID: Cd-1000_00003
Exp:01/31/21 Pprd:HJM Oprn:04/1
1000 ppm Cd

AccuTrace™ Reference Standard

Catalog No: ICP-08N-1
Description: Cadmium ICP Standard
Element: Cadmium (Cd)
SRM: 3108
Lot: 215125117
Matrix: 2% Nitric acid
Hazards: **CORROSIVE** - Refer to SDS for safety info

Date Certified: Jan 4, 2016
Expiration: Jan 4, 2021
Concentration: 1000 µg/mL
Density: 1.013 g/mL
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Danger 1

Elements in µg/mL

| | | | | | | | | | | | | | |
|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|
| Ag | nd<0.02 | Ce | nd<0.2 | Gd | nd<0.02 | Lu | nd<0.02 | Pb | nd<0.2 | Sc | nd<0.02 | Ti | nd<0.02 |
| Al | nd<0.02 | Co | nd<0.02 | Ge | nd<0.2 | Mg | nd<0.02 | Pd | nd<0.2 | Se | nd<0.2 | Tl | nd<0.2 |
| As | nd<0.2 | Cr | nd<0.02 | Hf | nd<0.02 | Mn | nd<0.02 | Pr | nd<0.2 | Si | nd<0.2 | Tm | nd<0.02 |
| Au | nd<0.02 | Cs | N/A | Hg | nd<0.2 | Mo | nd<0.02 | Pt | nd<0.2 | Sm | nd<0.2 | U | nd<0.2 |
| B | nd<0.2 | Cu | nd<0.02 | Ho | nd<0.02 | Na | nd<0.02 | Rb | N/A | Sn | nd<0.02 | V | nd<0.02 |
| Ba | nd<0.02 | Dy | nd<0.02 | In | nd<0.2 | Nb | nd<0.2 | Re | N/A | Sr | nd<0.02 | W | N/A |
| Be | nd<0.02 | Er | nd<0.02 | Ir | nd<0.2 | Nd | nd<0.02 | Rh | nd<0.2 | Ta | nd<0.2 | Y | nd<0.02 |
| Bi | nd<0.2 | Eu | nd<0.02 | K | nd<0.2 | Ni | nd<0.02 | Ru | nd<0.02 | Tb | nd<0.02 | Yb | nd<0.02 |
| Ca | nd<0.02 | Fe | nd<0.02 | La | nd<0.02 | Os | N/A | S | N/A | Te | N/A | Zn | nd<0.02 |
| Cd | * | Ga | nd<0.02 | Li | nd<0.02 | P | N/A | Sb | nd<0.2 | Th | nd<0.02 | Zr | nd<0.02 |

This solution was assayed titrimetrically, using EDTA which was standardized against NIST SRM #928 (lead nitrate).

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±5%. See reverse side for details.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are acid leached and triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: 
Lydia Snyder, Inorganic QC Manager

Reagent

Cu-1000_00004

CERTIFICATE OF ANALYSIS



1922724
ID: Cu-1000_00004
Exp: 10/04/21 Prpd HJM Opm 05/03/17
1000 ppm Cu

AccuTrace™ Reference Standard

Catalog No: ICP-15N-1
Description: Copper ICP Standard
Element: Copper (Cu)
SRM: 3114
Lot: 216095132
Matrix: 2% Nitric acid
Hazards: Refer to SDS for complete safety information

Date Certified: Oct 4, 2016
Expiration: Oct 4, 2021

Density: 1.015 g/mL
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

M
5/3/17



Signal Word: Danger

Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes

Certified Concentration: 1000 µg/mL

Trace Elements in µg/mL

| | | | | | | | | | | | | | |
|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|
| Ag | nd<0.02 | Ce | nd<0.2 | Gd | nd<0.02 | Lu | nd<0.02 | Pb | N/A | Sc | nd<0.02 | Ti | nd<0.02 |
| Al | nd<0.02 | Co | nd<0.02 | Ge | nd<0.2 | Mg | nd<0.02 | Pd | N/A | Se | nd<0.2 | Tl | nd<0.2 |
| As | nd<0.2 | Cr | nd<0.02 | Hf | nd<0.02 | Mn | nd<0.02 | Pr | nd<0.2 | Si | N/A | Tm | nd<0.02 |
| Au | nd<0.02 | Cs | N/A | Hg | nd<0.2 | Mo | nd<0.02 | Pt | nd<0.2 | Sm | nd<0.2 | U | nd<0.2 |
| B | nd<0.2 | Cu | * | Ho | nd<0.02 | Na | nd<0.02 | Rb | N/A | Sn | N/A | V | nd<0.02 |
| Ba | nd<0.02 | Dy | nd<0.02 | In | nd<0.2 | Nb | nd<0.2 | Re | nd<0.2 | Sr | nd<0.02 | W | nd<0.2 |
| Be | nd<0.02 | Er | nd<0.02 | Ir | nd<0.2 | Nd | nd<0.02 | Rh | nd<0.2 | Ta | nd<0.2 | Y | nd<0.02 |
| Bi | N/A | Eu | nd<0.02 | K | nd<0.2 | Ni | N/A | Ru | nd<0.02 | Tb | nd<0.02 | Yb | nd<0.02 |
| Ca | nd<0.02 | Fe | N/A | La | nd<0.02 | Os | N/A | S | N/A | Te | nd<0.2 | Zn | nd<0.02 |
| Cd | nd<0.02 | Ga | nd<0.02 | Li | nd<0.02 | P | N/A | Sb | nd<0.2 | Th | nd<0.02 | Zr | nd<0.02 |

This solution was assayed titrimetrically, using EDTA which was standardized against NIST SRM #928 (lead nitrate).

The gravimetric uncertainty for this product is ±0.2%. See reverse side for details.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are acid leached and triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

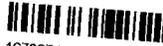
We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Meigan O'Leary
Certified By: _____
Meigan O'Leary, Inorganic QC Manager

Reagent

Hg-1000_00003

CERTIFICATE OF ANALYSIS

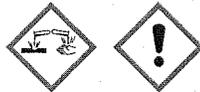

1678674
ID: Hg-1000_00003
Exp: 11/30/20 Prod: HLM Opt: 04/1
1000 ppm Hg

AccuTrace™ Reference Standard

Catalog No: ICP-34N-1
Description: Mercury ICP Standard
Element: Mercury (Hg)
SRM: 3133
Lot: 215105125
Matrix: 10% Nitric acid
Hazards: **CORROSIVE** - Refer to SDS for safety info

Date Certified: Nov 17, 2015
Expiration: Nov 17, 2020
Concentration: 1000 µg/mL
Density: 1.059 g/mL
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Danger 1

Elements in µg/mL

| | | | | | | | | | | | | | |
|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|
| Ag | nd<0.02 | Ce | nd<0.2 | Gd | nd<0.02 | Lu | nd<0.02 | Pb | nd<0.2 | Sc | nd<0.02 | Ti | nd<0.02 |
| Al | nd<0.02 | Co | nd<0.02 | Ge | nd<0.2 | Mg | nd<0.02 | Pd | nd<0.2 | Se | nd<0.2 | Tl | nd<0.2 |
| As | nd<0.2 | Cr | nd<0.02 | Hf | nd<0.02 | Mn | nd<0.02 | Pr | nd<0.2 | Si | nd<0.2 | Tm | nd<0.02 |
| Au | nd<0.02 | Cs | N/A | Hg | * | Mo | nd<0.02 | Pt | nd<0.2 | Sm | nd<0.2 | U | nd<0.2 |
| B | nd<0.2 | Cu | nd<0.02 | Ho | nd<0.02 | Na | nd<0.02 | Rb | N/A | Sn | nd<0.02 | V | nd<0.02 |
| Ba | nd<0.02 | Dy | nd<0.02 | In | nd<0.2 | Nb | nd<0.2 | Re | nd<0.2 | Sr | nd<0.02 | W | nd<0.2 |
| Be | nd<0.02 | Er | nd<0.02 | Ir | nd<0.2 | Nd | nd<0.02 | Rh | nd<0.2 | Ta | N/A | Y | nd<0.02 |
| Bi | nd<0.2 | Eu | nd<0.02 | K | nd<0.2 | Ni | nd<0.02 | Ru | nd<0.02 | Tb | nd<0.02 | Yb | nd<0.02 |
| Ca | nd<0.02 | Fe | nd<0.02 | La | nd<0.02 | Os | N/A | S | N/A | Te | nd<0.2 | Zn | nd<0.02 |
| Cd | nd<0.02 | Ga | nd<0.02 | Li | nd<0.02 | P | N/A | Sb | nd<0.2 | Th | nd<0.02 | Zr | nd<0.02 |

This solution was assayed gravimetrically, using a balance calibrated against weight sets, ID #88270, traceable to NIST

This product contains mercury and MUST be disposed of in accordance with all federal, state and local regulations.

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±5%. See reverse side for details.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

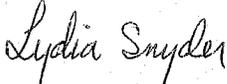
All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11

All bottles are acid leached and triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.


Certified By: Lydia Snyder, Inorganic QC Manager

Reagent

Hg_CAL_STOCK_00003

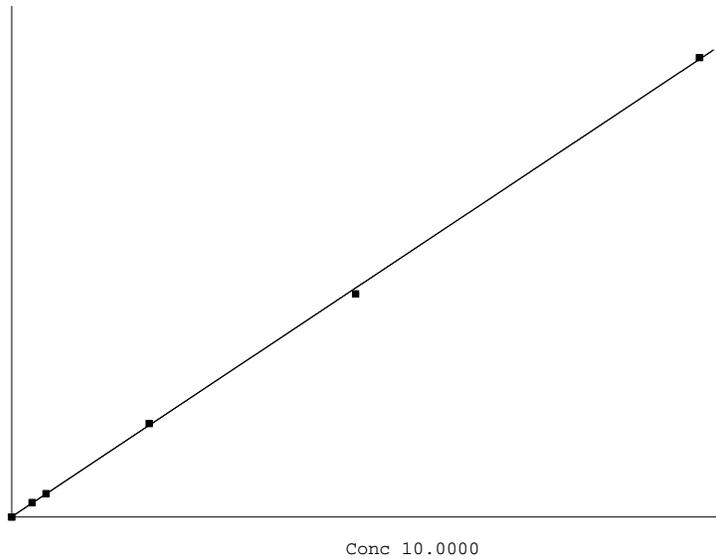
289902-TAC104TH

Method: Hg Operator: Admin Date of Analysis: 29 Nov 2018 12:39:26

| Sample ID | Mean | Units | RSD | Date | Extended ID | Seq ID | Curve Type | Type | Method | Std Conc |
|-------------|-------------|-------|---------|-------------|-------------|--------|------------|------|--------|----------|
| 0 μ Abs | | | | | | | | | | |
| A: | 0.0000e+000 | | | | | | | | | |
| B: | 0.0000e+000 | | | | | | | | | |
| C: | 0.0000e+000 | | | | | | | | | |
| R: | 0.0000000 | | | | | | | | | |
| Conc 0.0000 | | | | | | | | | | |
| STD 0 | -227 | ppb | -4.5069 | 29 Nov 2018 | 12:39:55 | 557 | Linear | Std | Hg | 0.0000 |
| STD 1 | 1783 | ppb | 3.2972 | 29 Nov 2018 | 12:42:11 | 558 | Linear | Std | Hg | 0.3000 |
| STD 2 | 2999 | ppb | 0.6624 | 29 Nov 2018 | 12:44:38 | 559 | Linear | Std | Hg | 0.5000 |
| STD 3 | 12681 | ppb | 1.4374 | 29 Nov 2018 | 12:46:58 | 560 | Linear | Std | Hg | 2.0000 |
| STD 4 | 30520 | ppb | 0.9246 | 29 Nov 2018 | 12:49:14 | 561 | Linear | Std | Hg | 5.0000 |
| STD 5 | 63074 | ppb | 0.6497 | 29 Nov 2018 | 12:51:30 | 562 | Linear | Std | Hg | 10.0000 |

63074 μ Abs

A: 0.0000e+000
 B: 1.5876e-004
 C: 3.4087e-002
 R: 0.9998728



| | | | | | | | | | | | |
|---------------------|---------|--------|-----|---------|-------------|----------|-----|--------|---------|----|---|
| ICV | 101.4% | 4.0568 | ppb | 0.7222 | 29 Nov 2018 | 12:54:16 | 563 | Linear | CK STND | Hg | - |
| ICB | -0.0390 | | ppb | -1.8876 | 29 Nov 2018 | 12:56:44 | 564 | Linear | CK STND | Hg | - |
| RL | 103.9% | 0.3117 | ppb | 2.3611 | 29 Nov 2018 | 12:59:11 | 565 | Linear | CK STND | Hg | - |
| CCV | 98.3% | 4.9127 | ppb | 1.4950 | 29 Nov 2018 | 16:45:14 | 566 | Linear | CK STND | Hg | - |
| CCB | -0.0856 | | ppb | -1.1767 | 29 Nov 2018 | 16:47:32 | 567 | Linear | CK STND | Hg | - |
| MB 580-289902/22-A | -0.1200 | | ppb | -0.9982 | 29 Nov 2018 | 16:50:01 | 568 | Linear | SMPL | Hg | - |
| LCS 580-289902/23-A | 2.0553 | | ppb | 1.0572 | 29 Nov 2018 | 16:52:27 | 569 | Linear | SMPL | Hg | - |
| LCS 580-289902/24-A | 2.0426 | | ppb | 1.5012 | 29 Nov 2018 | 16:54:47 | 570 | Linear | SMPL | Hg | - |
| 580-81936-A-1-E | -0.1491 | | ppb | -3.5475 | 29 Nov 2018 | 16:57:10 | 571 | Linear | SMPL | Hg | - |
| 580-82049-A-9-G | 0.5624 | | ppb | 1.5559 | 29 Nov 2018 | 16:59:37 | 572 | Linear | SMPL | Hg | - |
| 580-82049-A-9-H DU | 0.6475 | | ppb | 0.6490 | 29 Nov 2018 | 17:01:52 | 573 | Linear | SMPL | Hg | - |
| 580-82049-A-9-I MS | 3.2882 | | ppb | 0.8214 | 29 Nov 2018 | 17:04:07 | 574 | Linear | SMPL | Hg | - |
| 580-82049-A-9-J MSD | 3.2434 | | ppb | 1.2451 | 29 Nov 2018 | 17:06:27 | 575 | Linear | SMPL | Hg | - |
| 580-82049-A-10-C | 1.0754 | | ppb | 0.7459 | 29 Nov 2018 | 17:08:44 | 576 | Linear | SMPL | Hg | - |
| 580-82049-A-11-B | 0.9737 | | ppb | 0.9749 | 29 Nov 2018 | 17:11:04 | 577 | Linear | SMPL | Hg | - |
| CCV | 97.9% | 4.8933 | ppb | 0.7577 | 29 Nov 2018 | 17:13:23 | 578 | Linear | CK STND | Hg | - |
| CCB | -0.0964 | | ppb | -4.7287 | 29 Nov 2018 | 17:15:38 | 579 | Linear | CK STND | Hg | - |
| 580-82049-A-12-D | 0.1558 | | ppb | 0.8977 | 29 Nov 2018 | 17:18:05 | 580 | Linear | SMPL | Hg | - |
| 580-82049-A-13-D | 0.1160 | | ppb | 2.1581 | 29 Nov 2018 | 17:20:32 | 581 | Linear | SMPL | Hg | - |
| 580-82049-A-16-B | 0.2689 | | ppb | 2.3896 | 29 Nov 2018 | 17:22:48 | 582 | Linear | SMPL | Hg | - |
| 580-82049-A-17-B | 0.2540 | | ppb | 2.8460 | 29 Nov 2018 | 17:25:02 | 583 | Linear | SMPL | Hg | - |
| 580-82009-C-15-D | 0.1363 | | ppb | 3.2178 | 29 Nov 2018 | 17:27:22 | 864 | Linear | SMPL | Hg | - |
| 580-82009-B-16-K | -0.0257 | | ppb | -5.9721 | 29 Nov 2018 | 17:29:37 | 865 | Linear | SMPL | Hg | - |
| 580-82009-B-17-F | 0.5753 | | ppb | 0.7252 | 29 Nov 2018 | 17:31:57 | 866 | Linear | SMPL | Hg | - |
| 580-82009-B-18-D | 0.6661 | | ppb | 1.0172 | 29 Nov 2018 | 17:34:14 | 867 | Linear | SMPL | Hg | - |
| 580-82009-B-19-D | 0.4037 | | ppb | 1.0597 | 29 Nov 2018 | 17:36:28 | 868 | Linear | SMPL | Hg | - |
| 580-82009-B-20-D | 1.0348 | | ppb | 1.6006 | 29 Nov 2018 | 17:38:48 | 869 | Linear | SMPL | Hg | - |
| CCV | 96.6% | 4.8305 | ppb | 1.1185 | 29 Nov 2018 | 17:41:10 | 870 | Linear | CK STND | Hg | - |
| CCB | -0.0944 | | ppb | -5.6621 | 29 Nov 2018 | 17:43:23 | 871 | Linear | CK STND | Hg | - |
| 580-82009-B-21-D | 0.5930 | | ppb | 0.7652 | 29 Nov 2018 | 17:45:51 | 872 | Linear | SMPL | Hg | - |
| 580-82027-A-5-B | 1.4293 | | ppb | 1.0443 | 29 Nov 2018 | 17:48:06 | 873 | Linear | SMPL | Hg | - |
| 580-82027-A-6-B | 2.0096 | | ppb | 0.8927 | 29 Nov 2018 | 17:50:20 | 874 | Linear | SMPL | Hg | - |
| 580-82027-A-7-B | 3.8255 | | ppb | 1.7062 | 29 Nov 2018 | 17:52:41 | 875 | Linear | SMPL | Hg | - |
| CCV | 96.2% | 4.8092 | ppb | 1.0611 | 29 Nov 2018 | 17:55:01 | 876 | Linear | CK STND | Hg | - |
| CCB | -0.0686 | | ppb | -2.1032 | 29 Nov 2018 | 17:57:15 | 877 | Linear | CK STND | Hg | - |
| MB 580-289807/22-A | -0.1076 | | ppb | -0.4870 | 29 Nov 2018 | 18:00:01 | 878 | Linear | SMPL | Hg | - |

289902-TAC104TH

Method: Hg

Operator: Admin

Date of Analysis: 29 Nov 2018 12:39:26

| Sample ID | Mean | Units | RSD | Date | Extended ID | Seq ID | Curve Type | Type | Method | Std Conc | |
|----------------------|---------|--------|----------|-------------|-------------|----------|------------|---------|---------|----------|---|
| LCS 580-289807/23-A | 2.0907 | ppb | 1.4134 | 29 Nov 2018 | 18:02:17 | 879 | Linear | SMPL | Hg | - | |
| LCSD 580-289807/24-A | 1.9104 | ppb | 1.5042 | 29 Nov 2018 | 18:04:32 | 880 | Linear | SMPL | Hg | - | |
| 580-82005-B-1-D | 2.0545 | ppb | 0.8175 | 29 Nov 2018 | 18:06:49 | 881 | Linear | SMPL | Hg | - | |
| 580-82005-B-1-E DU | 1.1924 | ppb | 1.0889 | 29 Nov 2018 | 18:09:07 | 882 | Linear | SMPL | Hg | - | |
| 580-82005-B-1-F MS | 3.8239 | ppb | 0.5986 | 29 Nov 2018 | 18:11:28 | 883 | Linear | SMPL | Hg | - | |
| 580-82005-B-1-G MSD | 3.8526 | ppb | 0.3868 | 29 Nov 2018 | 18:13:44 | 884 | Linear | SMPL | Hg | - | |
| 580-82005-B-2-B | 1.1677 | ppb | 1.3157 | 29 Nov 2018 | 18:16:04 | 885 | Linear | SMPL | Hg | - | |
| 580-82005-B-4-B | 0.3270 | ppb | 2.1417 | 29 Nov 2018 | 18:18:26 | 886 | Linear | SMPL | Hg | - | |
| 580-82005-B-5-B | 2.4655 | ppb | 1.1515 | 29 Nov 2018 | 18:20:47 | 887 | Linear | SMPL | Hg | - | |
| CCV | 98.2% | 4.9105 | ppb | 0.7982 | 29 Nov 2018 | 18:23:08 | 888 | Linear | CK STND | Hg | - |
| CCB | -0.0843 | ppb | -5.5707 | 29 Nov 2018 | 18:25:23 | 889 | Linear | CK STND | Hg | - | |
| 580-82005-B-7-B | 0.8115 | ppb | 0.3935 | 29 Nov 2018 | 18:27:51 | 890 | Linear | SMPL | Hg | - | |
| 580-79695-A-1-A | 0.1542 | ppb | 2.4692 | 29 Nov 2018 | 18:30:10 | 891 | Linear | SMPL | Hg | - | |
| 580-79695-A-2-A | 0.1900 | ppb | 1.1860 | 29 Nov 2018 | 18:32:31 | 892 | Linear | SMPL | Hg | - | |
| 580-79695-A-3-A | 0.3623 | ppb | 0.3438 | 29 Nov 2018 | 18:34:53 | 893 | Linear | SMPL | Hg | - | |
| 580-79695-A-4-A | 0.5970 | ppb | 1.5902 | 29 Nov 2018 | 18:37:07 | 894 | Linear | SMPL | Hg | - | |
| 580-79695-A-5-A | 0.6382 | ppb | 2.1746 | 29 Nov 2018 | 18:39:27 | 895 | Linear | SMPL | Hg | - | |
| 580-79695-A-6-A | 0.5746 | ppb | 0.7497 | 29 Nov 2018 | 18:41:42 | 896 | Linear | SMPL | Hg | - | |
| 580-79695-A-7-A | 0.1242 | ppb | 0.3667 | 29 Nov 2018 | 18:44:03 | 897 | Linear | SMPL | Hg | - | |
| 580-79695-A-8-A | 0.2979 | ppb | 1.4578 | 29 Nov 2018 | 18:46:20 | 898 | Linear | SMPL | Hg | - | |
| 580-79695-A-9-A | 0.3205 | ppb | 0.4261 | 29 Nov 2018 | 18:48:39 | 899 | Linear | SMPL | Hg | - | |
| CCV | 98.2% | 4.9117 | ppb | 1.1727 | 29 Nov 2018 | 18:50:54 | 900 | Linear | CK STND | Hg | - |
| CCB | -0.0774 | ppb | -3.3502 | 29 Nov 2018 | 18:53:08 | 901 | Linear | CK STND | Hg | - | |
| 580-79695-A-10-A | 0.5195 | ppb | 1.5474 | 29 Nov 2018 | 18:55:35 | 902 | Linear | SMPL | Hg | - | |
| 580-79695-A-12-A | 0.1791 | ppb | 0.2327 | 29 Nov 2018 | 18:57:51 | 903 | Linear | SMPL | Hg | - | |
| 580-79695-A-13-A | 0.1888 | ppb | 0.2412 | 29 Nov 2018 | 19:00:07 | 904 | Linear | SMPL | Hg | - | |
| 580-79695-A-14-A | 0.5663 | ppb | 2.1323 | 29 Nov 2018 | 19:02:33 | 905 | Linear | SMPL | Hg | - | |
| CCV | 101.2% | 5.0604 | ppb | 1.2880 | 29 Nov 2018 | 19:04:48 | 906 | Linear | CK STND | Hg | - |
| CCB | -0.1180 | ppb | -1.3720 | 29 Nov 2018 | 19:07:05 | 907 | Linear | CK STND | Hg | - | |
| MB 580-289907/22-A | -0.1104 | ppb | -1.2551 | 29 Nov 2018 | 19:09:28 | 908 | Linear | SMPL | Hg | - | |
| LCS 580-289907/23-A | 1.9755 | ppb | 1.1418 | 29 Nov 2018 | 19:11:43 | 909 | Linear | SMPL | Hg | - | |
| LCSD 580-289907/24-A | 1.9503 | ppb | 1.6551 | 29 Nov 2018 | 19:14:09 | 910 | Linear | SMPL | Hg | - | |
| 580-82027-A-15-E | 0.0491 | ppb | 2.1191 | 29 Nov 2018 | 19:16:26 | 911 | Linear | SMPL | Hg | - | |
| 580-82027-A-15-F DU | 0.0334 | ppb | 18.6230 | 29 Nov 2018 | 19:18:45 | 912 | Linear | SMPL | Hg | - | |
| 580-82027-A-15-G MS | 2.4153 | ppb | 1.0036 | 29 Nov 2018 | 19:20:59 | 913 | Linear | SMPL | Hg | - | |
| 580-82027-A-15-H MSD | 2.2884 | ppb | 0.7486 | 29 Nov 2018 | 19:23:14 | 914 | Linear | SMPL | Hg | - | |
| 580-82027-A-8-B | 2.0302 | ppb | 0.5368 | 29 Nov 2018 | 19:25:32 | 915 | Linear | SMPL | Hg | - | |
| 580-82027-A-9-B | 0.6616 | ppb | 1.2356 | 29 Nov 2018 | 19:28:01 | 916 | Linear | SMPL | Hg | - | |
| 580-82027-A-10-B | -0.1087 | ppb | -1.6703 | 29 Nov 2018 | 19:30:17 | 917 | Linear | SMPL | Hg | - | |
| CCV | 97.7% | 4.8851 | ppb | 0.9331 | 29 Nov 2018 | 19:32:33 | 918 | Linear | CK STND | Hg | - |
| CCB | -0.0953 | ppb | -0.4904 | 29 Nov 2018 | 19:34:49 | 919 | Linear | CK STND | Hg | - | |
| 580-82027-A-11-B | -0.0258 | ppb | -19.5246 | 29 Nov 2018 | 19:37:17 | 920 | Linear | SMPL | Hg | - | |
| 580-82027-A-12-B | 0.6725 | ppb | 2.0002 | 29 Nov 2018 | 19:39:40 | 921 | Linear | SMPL | Hg | - | |
| 580-82027-A-13-B | -0.0962 | ppb | -1.4289 | 29 Nov 2018 | 19:41:57 | 922 | Linear | SMPL | Hg | - | |
| 580-82027-A-14-B | 0.0497 | ppb | 5.5104 | 29 Nov 2018 | 19:44:14 | 923 | Linear | SMPL | Hg | - | |
| 580-82027-A-16-B | 0.3676 | ppb | 0.8510 | 29 Nov 2018 | 19:46:28 | 924 | Linear | SMPL | Hg | - | |
| 580-82027-A-17-B | -0.0184 | ppb | -18.7131 | 29 Nov 2018 | 19:48:44 | 925 | Linear | SMPL | Hg | - | |
| 580-82027-A-18-A | -0.0271 | ppb | -13.6050 | 29 Nov 2018 | 19:51:04 | 926 | Linear | SMPL | Hg | - | |
| 580-82027-A-19-A | -0.0061 | ppb | -39.8318 | 29 Nov 2018 | 19:53:21 | 927 | Linear | SMPL | Hg | - | |
| 580-82027-A-20-A | 0.0737 | ppb | 2.0530 | 29 Nov 2018 | 19:55:47 | 928 | Linear | SMPL | Hg | - | |
| 580-82027-A-21-A | 0.2902 | ppb | 0.7558 | 29 Nov 2018 | 19:58:02 | 929 | Linear | SMPL | Hg | - | |
| CCV | 101.7% | 5.0872 | ppb | 1.3987 | 29 Nov 2018 | 20:00:18 | 930 | Linear | CK STND | Hg | - |
| CCB | -0.0434 | ppb | -5.4764 | 29 Nov 2018 | 20:02:35 | 931 | Linear | CK STND | Hg | - | |
| 580-82027-A-22-A | 1.1580 | ppb | 1.3225 | 29 Nov 2018 | 20:05:09 | 932 | Linear | SMPL | Hg | - | |
| 580-82027-A-23-A | -0.0131 | ppb | -11.1811 | 29 Nov 2018 | 20:07:26 | 933 | Linear | SMPL | Hg | - | |
| 580-82027-A-24-A | 0.4603 | ppb | 0.6198 | 29 Nov 2018 | 20:09:45 | 934 | Linear | SMPL | Hg | - | |
| 580-82027-A-25-A | 0.2063 | ppb | 1.7590 | 29 Nov 2018 | 20:12:00 | 935 | Linear | SMPL | Hg | - | |
| CCV | 97.3% | 4.8633 | ppb | 1.2128 | 29 Nov 2018 | 20:14:16 | 936 | Linear | CK STND | Hg | - |
| CCB | -0.0528 | ppb | -9.2836 | 29 Nov 2018 | 20:16:30 | 937 | Linear | CK STND | Hg | - | |

Reagent

ICP CAL 1_00003



2365418
 ID: ICP CAL 1_00003
 Exp: 09/22/20 Prpd: HJM Ogn: 04/09/19
 ICP ICPMS CAL Mix 1

Handwritten:
 Hm
 4/9/19

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CAL1

ICP ICPMS CAL Mix # 1

Lot #: 992737-2

Matrix: 5% HNO₃/tr. HF

| Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty |
|---------|---------------------------------------|---------|---------------------------------------|---------|---------------------------------------|
| As | 99.99 ± 0.50 mg/L | Li | 100.0 ± 0.5 mg/L | Si | 999.9 ± 5.0 mg/L |
| Ba | 100.0 ± 0.5 mg/L | Mn | 100.0 ± 0.5 mg/L | Sn | 99.99 ± 0.50 mg/L |
| Be | 99.97 ± 0.50 mg/L | Mo | 99.98 ± 0.50 mg/L | Sr | 100.0 ± 0.5 mg/L |
| Cd | 100.0 ± 0.5 mg/L | Ni | 99.99 ± 0.50 mg/L | Ti | 100.0 ± 0.5 mg/L |
| Co | 100.0 ± 0.5 mg/L | Pb | 100.0 ± 0.5 mg/L | Tl | 100.0 ± 0.5 mg/L |
| Cr | 100.0 ± 0.5 mg/L | Sb | 99.98 ± 0.50 mg/L | V | 100.0 ± 0.5 mg/L |
| Cu | 100.0 ± 0.5 mg/L | Se | 99.99 ± 0.50 mg/L | | |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO₃), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau, Certifying Officer

March 22, 2019

Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

USA
 5580 Skylane Boulevard P: 707.525.5788
 Santa Rosa, CA 95403 P: 800.878.7654
 F: 707.545.7901

Europe
 Nieuwe Hemweg 7P P: +31 20 638 05 97
 1013BG Amsterdam F: +31 20 420 28 36
 The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

| Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM |
|---------|---------|--------|-------------------------------|---------|--------|-------------------------------|---------|--------|
| Ag | 3151 | 1077a | Hf | 3122 | — | S | 3154 | 2770 |
| Al | 3101a | 1075a | Hg | 3133 | 3133 | Sb | 3102a | 3102a |
| As | 3103a | 3103a | Ho | 3123a | — | Sc | 3148a | 3148a |
| Au | 3121 | — | In | 3124a | 3124a | Se | 3149 | 3149 |
| B | 3107 | 3107 | K | 3141a | 3141a | Si | 3150 | 1066a |
| Ba | 3104a | 1051b | La | 3127a | 3127a | Sm | 3147a | — |
| Be | 3105a | 3105a | Li | 3129a | 3129a | Sn | 3161a | 1057b |
| Bi | 3106 | 3106 | Lu | 3130a | — | SO ₄ ²⁻ | 3181 | — |
| Br | 3184 | — | Mg | 3131a | 3131a | Sr | 3153a | 3153a |
| Ca | 3109a | 3109a | Mn | 3132 | 3132 | Ta | 3155 | — |
| Cd | 3108 | 1053a | Mo | 3134 | 3134 | Tb | 3157a | — |
| Ce | 3110 | 3110 | Na | 3152a | 3152a | Te | 3156 | — |
| Cl | 3182 | 1818a | Nb | 3137 | — | Th | 3159 | — |
| Co | 3113 | 3113 | Nd | 3135a | — | Ti | 3162a | 3162a |
| Cr | 3112a | 1078b | Ni | 3136 | 1065b | Tl | 3158 | 3158 |
| Cs | 3111a | — | NO ₃ ⁻ | 3185 | — | Tm | 3160a | — |
| Cu | 3114 | 1080a | P | 3139a | 3139a | U | 3164 | — |
| Dy | 3115a | — | Pb | 3128 | 3128 | V | 3165 | 1052b |
| Er | 3116a | — | Pd | 3138 | — | W | 3163 | 3163 |
| Eu | 3117a | — | PO ₄ ³⁻ | 3186 | — | Y | 3167a | 3167a |
| F | 3183 | — | Pr | 3142a | — | Yb | 3166a | — |
| Fe | 3126a | 1079b | Pt | 3140 | 3140 | Zn | 3168a | 3168a |
| Ga | 3119a | — | Rb | 3145a | — | Zr | 3169 | 3169 |
| Gd | 3118a | — | Re | 3143 | — | | | |
| Ge | 3120a | — | Rh | 3144 | 3144 | | | |

Reagent

ICP CAL 2_00003



2365419
 ID: ICP CAL 2_00003
 Exp: 09/21/20 Prpd: HJM Opr: 04/09/19
 ICP ICPMS CAL Mix 2

7th
 4/9/19

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-CAL2

ICP ICPMS CAL Mix # 2

Lot #: 992739-1

Matrix: 5% HNO₃

| Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty |
|---------|---------------------------------------|---------|---------------------------------------|---------|---------------------------------------|
| Al | 2000 ± 10 mg/L | Fe | 2000 ± 10 mg/L | Mg | 2000 ± 10 mg/L |
| Ca | 2000 ± 10 mg/L | K | 2000 ± 10 mg/L | Na | 2000 ± 10 mg/L |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to ISO 9001, ISO 17034, and ISO/IEC 17025. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to NIST SRMs (see reverse side). The solution was stabilized using high purity nitric acid (HNO₃) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against NIST SRMs (see reverse side). The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau, Certifying Officer

March 21, 2019
 Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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Europe
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 1013BG Amsterdam F: +31 20 420 28 36
 The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

| Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM |
|---------|---------|--------|-------------------------------|---------|--------|-------------------------------|---------|--------|
| Ag | 3151 | 1077a | Hf | 3122 | — | S | 3154 | 2770 |
| Al | 3101a | 1075a | Hg | 3133 | 3133 | Sb | 3102a | 3102a |
| As | 3103a | 3103a | Ho | 3123a | — | Sc | 3148a | 3148a |
| Au | 3121 | — | In | 3124a | 3124a | Se | 3149 | 3149 |
| B | 3107 | 3107 | K | 3141a | 3141a | Si | 3150 | 1066a |
| Ba | 3104a | 1051b | La | 3127a | 3127a | Sm | 3147a | — |
| Be | 3105a | 3105a | Li | 3129a | 3129a | Sn | 3161a | 1057b |
| Bi | 3106 | 3106 | Lu | 3130a | — | SO ₄ ²⁻ | 3181 | — |
| Br | 3184 | — | Mg | 3131a | 3131a | Sr | 3153a | 3153a |
| Ca | 3109a | 3109a | Mn | 3132 | 3132 | Ta | 3155 | — |
| Cd | 3108 | 1053a | Mo | 3134 | 3134 | Tb | 3157a | — |
| Ce | 3110 | 3110 | Na | 3152a | 3152a | Te | 3156 | — |
| Cl | 3182 | 1818a | Nb | 3137 | — | Th | 3159 | — |
| Co | 3113 | 3113 | Nd | 3135a | — | Ti | 3162a | 3162a |
| Cr | 3112a | 1078b | Ni | 3136 | 1065b | Tl | 3158 | 3158 |
| Cs | 3111a | — | NO ₃ ⁻ | 3185 | — | Tm | 3160a | — |
| Cu | 3114 | 1080a | P | 3139a | 3139a | U | 3164 | — |
| Dy | 3115a | — | Pb | 3128 | 3128 | V | 3165 | 1052b |
| Er | 3116a | — | Pd | 3138 | — | W | 3163 | 3163 |
| Eu | 3117a | — | PO ₄ ³⁻ | 3186 | — | Y | 3167a | 3167a |
| F | 3183 | — | Pr | 3142a | — | Yb | 3166a | — |
| Fe | 3126a | 1079b | Pt | 3140 | 3140 | Zn | 3168a | 3168a |
| Ga | 3119a | — | Rb | 3145a | — | Zr | 3169 | 3169 |
| Gd | 3118a | — | Re | 3143 | — | | | |
| Ge | 3120a | — | Rh | 3144 | 3144 | | | |

Reagent

ICP CAL 3_00001



2265400
 ID: ICP CAL 3_00001
 Exp: 03/28/20 Prpd+JM Opi: 10/09/18
 ICP ICPMS CAL Mix 1

CERTIFICATE OF ANALYSIS

Wm 10-9-18

Multi-Element Aqueous CRM

Product #: TA-CAL3

ICP ICPMS CAL Mix # 3

Lot #: 982737-1

Matrix: 5% HNO₃/tr. HF

| Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty |
|---------|---------------------------------------|---------|---------------------------------------|
| P | 1000 ± 5 mg/L | U | 100.0 ± 0.5 mg/L |
| S | 1000 ± 5 mg/L | W | 100.0 ± 0.5 mg/L |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001, ISO 17034, and ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO₃), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

September 28, 2018
 Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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 1013BG Amsterdam F: +31 20 420 28 36
 The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

| Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM |
|---------|---------|--------|-------------------------------|---------|--------|-------------------------------|---------|--------|
| Ag | 3151 | 1077a | Hf | 3122 | — | S | 3154 | 2770 |
| Al | 3101a | 1075a | Hg | 3133 | 3133 | Sb | 3102a | 3102a |
| As | 3103a | 3103a | Ho | 3123a | — | Sc | 3148a | 3148a |
| Au | 3121 | — | In | 3124a | 3124a | Se | 3149 | 3149 |
| B | 3107 | 3107 | K | 3141a | 3141a | Si | 3150 | 1066a |
| Ba | 3104a | 1051b | La | 3127a | 3127a | Sm | 3147a | — |
| Be | 3105a | 3105a | Li | 3129a | 3129a | Sn | 3161a | 1057b |
| Bi | 3106 | 3106 | Lu | 3130a | — | SO ₄ ²⁻ | 3181 | — |
| Br | 3184 | — | Mg | 3131a | 3131a | Sr | 3153a | 3153a |
| Ca | 3109a | 3109a | Mn | 3132 | 3132 | Ta | 3155 | — |
| Cd | 3108 | 1053a | Mo | 3134 | 3134 | Tb | 3157a | — |
| Ce | 3110 | 3110 | Na | 3152a | 3152a | Te | 3156 | — |
| Cl | 3182 | 1818a | Nb | 3137 | — | Th | 3159 | — |
| Co | 3113 | 3113 | Nd | 3135a | — | Ti | 3162a | 3162a |
| Cr | 3112a | 1078b | Ni | 3136 | 1065b | Tl | 3158 | 3158 |
| Cs | 3111a | — | NO ₃ ⁻ | 3185 | — | Tm | 3160a | — |
| Cu | 3114 | 1080a | P | 3139a | 3139a | U | 3164 | — |
| Dy | 3115a | — | Pb | 3128 | 3128 | V | 3165 | 1052b |
| Er | 3116a | — | Pd | 3138 | — | W | 3163 | 3163 |
| Eu | 3117a | — | PO ₄ ³⁻ | 3186 | — | Y | 3167a | 3167a |
| F | 3183 | — | Pr | 3142a | — | Yb | 3166a | — |
| Fe | 3126a | 1079b | Pt | 3140 | 3140 | Zn | 3168a | 3168a |
| Ga | 3119a | — | Rb | 3145a | — | Zr | 3169 | 3169 |
| Gd | 3118a | — | Re | 3143 | — | | | |
| Ge | 3120a | — | Rh | 3144 | 3144 | | | |

Reagent

ICPMS- ICSEA_00015



2419951
 ID: ICPMS-ICSA_00015
 Exp 08/21/20 Prpd HJM Opr 06/30/19
 ICSA Stock Solution

JM
 6/30/19

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-ICPMS-ICSA

ICPMS ICSA Mix

Lot #: 992328-1

Matrix: 2% HNO₃

| Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty |
|---------|---------------------------------------|---------|---------------------------------------|---------|---------------------------------------|
| Al | 1000 ± 5 mg/L | Fe | 1000 ± 5 mg/L | Na | 999.9 ± 5.0 mg/L |
| C | 1999 ± 10.0 mg/L | K | 1000 ± 5 mg/L | P | 1000 ± 5 mg/L |
| Ca | 1000 ± 5 mg/L | Mg | 1000 ± 5 mg/L | S | 1000 ± 5 mg/L |
| Cl | 9999 ± 50.0 mg/L | Mo | 20.01 ± 0.10 mg/L | Ti | 19.99 ± 0.10 mg/L |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO₃) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau, Certifying Officer

February 21, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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 The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

| Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM |
|---------|---------|--------|-------------------------------|---------|--------|-------------------------------|---------|--------|
| Ag | 3151 | 1077a | Hf | 3122 | — | S | 3154 | 2770 |
| Al | 3101a | 1075a | Hg | 3133 | 3133 | Sb | 3102a | 3102a |
| As | 3103a | 3103a | Ho | 3123a | — | Sc | 3148a | 3148a |
| Au | 3121 | — | In | 3124a | 3124a | Se | 3149 | 3149 |
| B | 3107 | 3107 | K | 3141a | 3141a | Si | 3150 | 1066a |
| Ba | 3104a | 1051b | La | 3127a | 3127a | Sm | 3147a | — |
| Be | 3105a | 3105a | Li | 3129a | 3129a | Sn | 3161a | 1057b |
| Bi | 3106 | 3106 | Lu | 3130a | — | SO ₄ ²⁻ | 3181 | — |
| Br | 3184 | — | Mg | 3131a | 3131a | Sr | 3153a | 3153a |
| Ca | 3109a | 3109a | Mn | 3132 | 3132 | Ta | 3155 | — |
| Cd | 3108 | 1053a | Mo | 3134 | 3134 | Tb | 3157a | — |
| Ce | 3110 | 3110 | Na | 3152a | 3152a | Te | 3156 | — |
| Cl | 3182 | 1818a | Nb | 3137 | — | Th | 3159 | — |
| Co | 3113 | 3113 | Nd | 3135a | — | Ti | 3162a | 3162a |
| Cr | 3112a | 1078b | Ni | 3136 | 1065b | Tl | 3158 | 3158 |
| Cs | 3111a | — | NO ₃ | 3185 | — | Tm | 3160a | — |
| Cu | 3114 | 1080a | P | 3139a | 3139a | U | 3164 | — |
| Dy | 3115a | — | Pb | 3128 | 3128 | V | 3165 | 1052b |
| Er | 3116a | — | Pd | 3138 | — | W | 3163 | 3163 |
| Eu | 3117a | — | PO ₄ ³⁻ | 3186 | — | Y | 3167a | 3167a |
| F | 3183 | — | Pr | 3142a | — | Yb | 3166a | — |
| Fe | 3126a | 1079b | Pt | 3140 | 3140 | Zn | 3168a | 3168a |
| Ga | 3119a | — | Rb | 3145a | — | Zr | 3169 | 3169 |
| Gd | 3118a | — | Re | 3143 | — | | | |
| Ge | 3120a | — | Rh | 3144 | 3144 | | | |

Reagent

ICPMS-CAL_00006



Reference Materials Producer
Cert #2495.01

SPEXertificate®

Certificate of Reference Material



Chemical Testing
Cert #2495.02

Catalog Number: ZSTLSWA-28-500 **Lot No.** 49-160CR
Description: Custom Claritas Standard
Matrix: 5% HNO₃ / Tr. Tart. Acid / Tr. HF

This CLARITAS PPT® Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for inorganic spectroscopic instrumentation such as ICP-OES, DCP, AA, ICP-MS, and XRF. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

The CRM is prepared from high purity single element concentrates of individual elements using Class A laboratory ware to give precise concentrations.

Instrumental Analysis by ICP Spectrometer:

| Analyte | Labeled | Uncertainty | SRM | Analyte | Labeled | Uncertainty | SRM |
|---------|------------|-------------|--------|---------|----------|-------------|--------|
| Ca | 1000 µg/mL | ±5 µg/mL | 3109a* | Cu | 10 µg/mL | ±0.05 µg/mL | 3114* |
| Fe | 1000 µg/mL | ±5 µg/mL | 3126a* | Mn | 10 µg/mL | ±0.05 µg/mL | 3132* |
| K | 1000 µg/mL | ±5 µg/mL | 3141a* | Mo | 10 µg/mL | ±0.05 µg/mL | 3134* |
| Mg | 1000 µg/mL | ±5 µg/mL | 3131a* | Ni | 10 µg/mL | ±0.05 µg/mL | 3136* |
| Na | 1000 µg/mL | ±5 µg/mL | 3152a* | Pb | 10 µg/mL | ±0.05 µg/mL | 3128* |
| P | 1000 µg/mL | ±5 µg/mL | 3139a* | Sb | 10 µg/mL | ±0.05 µg/mL | 3102a* |
| Al | 100 µg/mL | ±0.5 µg/mL | 3101a* | Se | 10 µg/mL | ±0.05 µg/mL | 3149* |
| Ag | 10 µg/mL | ±0.05 µg/mL | 3151* | Sn | 10 µg/mL | ±0.05 µg/mL | 3161a* |
| As | 10 µg/mL | ±0.05 µg/mL | 3103a* | Sr | 10 µg/mL | ±0.05 µg/mL | 3153a* |
| Ba | 10 µg/mL | ±0.05 µg/mL | 3104a* | Ti | 10 µg/mL | ±0.05 µg/mL | 3162a* |
| Be | 10 µg/mL | ±0.05 µg/mL | 3105a* | Tl | 10 µg/mL | ±0.05 µg/mL | 3158* |
| Cd | 10 µg/mL | ±0.05 µg/mL | 3108* | U | 10 µg/mL | ±0.05 µg/mL | 3164* |
| Co | 10 µg/mL | ±0.05 µg/mL | 3113* | V | 10 µg/mL | ±0.05 µg/mL | 3165* |
| Cr | 10 µg/mL | ±0.05 µg/mL | 3112a* | Zn | 10 µg/mL | ±0.05 µg/mL | 3168a* |

* - indicates NIST SRM

† - indicates SPEX CertiPrep CRM (when NIST SRM is not available)

SPEX CertiPrep Reference Multi: Lot# ALL8

Trace Metallic Impurities in the Actual Solution via ICP-MS Analysis:

| Element | µg/L | Element | µg/L | Element | µg/L | Element | µg/L | Element | µg/L | Element | µg/L |
|---------|-------|---------|-------|---------|------|---------|------|---------|-------|---------|-------|
| Au | <0.4 | Eu | <0.1 | In | <2 | Pd | <3 | Sc | <3 | Th | 2 |
| B | <70 | Ga | 7 | Ir | 3 | Pr | <0.3 | Si | <400 | Tm | <0.06 |
| Bi | <0.6 | Gd | <0.01 | La | 1 | Pt | <0.4 | Sm | <2 | W | <2 |
| Ce | 1 | Ge | <20 | Li | <7 | Rb | 30 | Ta | 3 | Y | <0.3 |
| Cs | <0.4 | Hf | <0.8 | Lu | 0.03 | Re | <0.2 | Tb | <0.07 | Yb | <0.01 |
| Dy | <0.3 | Hg | <3 | Nb | <1 | Rh | 3 | Te | <10 | Zr | 5 |
| Er | <0.01 | Ho | <0.1 | Nd | <0.5 | Ru | <3 | | | | |



2259462

ID: ICPMS-CAL_00006

Exp: 09/30/19 Prpd: FCV Opn: 09/26/18

CAL/CR/CCV Stock Solution

rec'd 9/26/18

Balances are calibrated regularly with weight sets traceable to NIST#s 32856, 32867 and others. This CRM is guaranteed stable and accurate to ±0.5% of the labeled value. This includes uncertainty components due to preparation, measurement, homogeneity, and short-term and long-term stability. This guarantee is valid for a period of one year from the date of certification only when the material is kept tightly capped and stored under ambient laboratory conditions.

Date of Certification: SEP -- 2018

Certifying Officer: Katherine Cullinan
Katherine Cullinan, QC Manager

Page 1 of 2
Rev. 0

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Reagent

ICPMS-ICSB_00014



2419952
 ID: ICPMS-ICSB_00014
 Exp:08/21/20 Prpd:HJM Opn:06/30/19
 ICS-B Stock Solution

2h
 6-30-19

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: TA-ICPMS-ICSAB

ICPMS ICSAB Mix

Lot #: 992327-1

Matrix: 5% HNO₃/tr. HF

| Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty |
|---------|---------------------------------------|---------|---------------------------------------|---------|---------------------------------------|
| As | 10.00 ± 0.05 mg/L | Li | 10.00 ± 0.05 mg/L | Sn | 10.00 ± 0.05 mg/L |
| Ba | 10.00 ± 0.05 mg/L | Mn | 10.00 ± 0.05 mg/L | Sr | 10.00 ± 0.05 mg/L |
| Be | 10.00 ± 0.05 mg/L | Ni | 10.01 ± 0.05 mg/L | Tl | 5.00 ± 0.03 mg/L |
| Cd | 10.00 ± 0.05 mg/L | Pb | 10.00 ± 0.05 mg/L | V | 10.00 ± 0.05 mg/L |
| Co | 10.01 ± 0.05 mg/L | Sb | 5.00 ± 0.03 mg/L | W | 100.0 ± 0.5 mg/L |
| Cr | 10.00 ± 0.05 mg/L | Se | 10.00 ± 0.05 mg/L | | |
| Cu | 10.01 ± 0.05 mg/L | Si | 10.01 ± 0.05 mg/L | | |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001, ISO 17034, and ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO₃), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

February 21, 2019
 Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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Europe
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 1013BG Amsterdam F: +31 20 420 28 36
 The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

This CRM is traceable to the following NIST SRMs:

| Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM | Analyte | Aq. SRM | MO SRM |
|---------|---------|--------|-------------------------------|---------|--------|-------------------------------|---------|--------|
| Ag | 3151 | 1077a | Hf | 3122 | — | S | 3154 | 2770 |
| Al | 3101a | 1075a | Hg | 3133 | 3133 | Sb | 3102a | 3102a |
| As | 3103a | 3103a | Ho | 3123a | — | Sc | 3148a | 3148a |
| Au | 3121 | — | In | 3124a | 3124a | Se | 3149 | 3149 |
| B | 3107 | 3107 | K | 3141a | 3141a | Si | 3150 | 1066a |
| Ba | 3104a | 1051b | La | 3127a | 3127a | Sm | 3147a | — |
| Be | 3105a | 3105a | Li | 3129a | 3129a | Sn | 3161a | 1057b |
| Bi | 3106 | 3106 | Lu | 3130a | — | SO ₄ ²⁻ | 3181 | — |
| Br | 3184 | — | Mg | 3131a | 3131a | Sr | 3153a | 3153a |
| Ca | 3109a | 3109a | Mn | 3132 | 3132 | Ta | 3155 | — |
| Cd | 3108 | 1053a | Mo | 3134 | 3134 | Tb | 3157a | — |
| Ce | 3110 | 3110 | Na | 3152a | 3152a | Te | 3156 | — |
| Cf | 3182 | 1818a | Nb | 3137 | — | Th | 3159 | — |
| Co | 3113 | 3113 | Nd | 3135a | — | Ti | 3162a | 3162a |
| Cr | 3112a | 1078b | Ni | 3136 | 1065b | Tl | 3158 | 3158 |
| Cs | 3111a | — | NO ₃ ⁻ | 3185 | — | Tm | 3160a | — |
| Cu | 3114 | 1080a | P | 3139a | 3139a | U | 3164 | — |
| Dy | 3115a | — | Pb | 3128 | 3128 | V | 3165 | 1052b |
| Er | 3116a | — | Pd | 3138 | — | W | 3163 | 3163 |
| Eu | 3117a | — | PO ₄ ³⁻ | 3186 | — | Y | 3167a | 3167a |
| F | 3183 | — | Pr | 3142a | — | Yb | 3166a | — |
| Fe | 3126a | 1079b | Pt | 3140 | 3140 | Zn | 3168a | 3168a |
| Ga | 3119a | — | Rb | 3145a | — | Zr | 3169 | 3169 |
| Gd | 3118a | — | Re | 3143 | — | | | |
| Ge | 3120a | — | Rh | 3144 | 3144 | | | |

Reagent

ICPMS-ICV1_00006



REC'D 2/22/18
✓

CERTIFICATE OF ANALYSIS

Multi-Element Aqueous CRM

Product #: G34-4400-070411BD01-A

Custom ISO Guide 34 Standard Solution A



Lot #: 10074933-1

Matrix: 5% HNO₃/tr. HF

2110317
ID: ICPMS-ICV1_00006
Exp:08/31/19 Pipd:FCW Opn:02/22/18
ICV/200.8 SPIKE

| Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty | Element | Certified Concentration & Uncertainty |
|---------|---------------------------------------|---------|---------------------------------------|---------|---------------------------------------|
| Al | 100.2 ± 0.5 µg/mL | Fe | 1001 ± 5 µg/mL | Sb | 9.97 ± 0.05 µg/mL |
| As | 10.07 ± 0.05 µg/mL | K | 999.9 ± 5.0 µg/mL | Se | 10.07 ± 0.05 µg/mL |
| Ba | 9.93 ± 0.05 µg/mL | Mg | 1001 ± 5 µg/mL | Sn | 10.01 ± 0.05 µg/mL |
| Be | 10.08 ± 0.05 µg/mL | Mn | 10.06 ± 0.05 µg/mL | Sr | 10.06 ± 0.05 µg/mL |
| Ca | 1000 ± 5 µg/mL | Mo | 10.02 ± 0.05 µg/mL | Ti | 10.11 ± 0.05 µg/mL |
| Cd | 9.98 ± 0.05 µg/mL | Na | 1000 ± 5 µg/mL | Tl | 10.03 ± 0.05 µg/mL |
| Co | 10.08 ± 0.05 µg/mL | Ni | 9.97 ± 0.05 µg/mL | U | 9.99 ± 0.05 µg/mL |
| Cr | 9.98 ± 0.05 µg/mL | P | 999.7 ± 5.0 µg/mL | V | 10.04 ± 0.05 µg/mL |
| Cu | 10.03 ± 0.05 µg/mL | Pb | 10.05 ± 0.05 µg/mL | Zn | 10.15 ± 0.05 µg/mL |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO Guide 34**, and **ISO/IEC 17025**. This CRM was prepared to the certified concentrations shown above by gravimetric methods, using single-element concentrates that were certified using the "High Performance ICP-OES" protocol developed by NIST and are directly traceable to **NIST SRMs (see reverse side)**. The solution was stabilized using high purity nitric acid (HNO₃), trace hydrofluoric acid (HF) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentrations were determined based upon gravimetric procedures. Secondary verification of the certified concentrations was performed using ICP-OES that was calibrated and/or referenced against **NIST SRMs (see reverse side)**. The uncertainty associated with each certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau, Certifying Officer

February 12, 2018
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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The Netherlands



Rec'd 2/22/18
✓

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM

Product #: G34-4400-070411BD01-B

Custom ISO Guide 34 Standard Solution B

Lot #: 10074933-2

Matrix: 2% HNO₃

| Element | Certified Concentration & Uncertainty |
|---------|---------------------------------------|
| Ag | 10.02 ± 0.05 µg/mL |



2110318
 ID: ICPMS-ICV2_00006
 Exp: 08/31/19 Prpd: FCW Opn: 0222/18
 ICV/200.8 SPIKE

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO Guide 34**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 10.00 µg/mL by gravimetric methods using a single-element concentrate dissolved in high purity nitric acid (HNO₃) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3151**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau, Certifying Officer

February 12, 2018
Certification Date

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 The Netherlands

Reagent

Pb-1000_00005

CERTIFICATE OF ANALYSIS



1678610

ID: Pb-1000_00005

Exp:04/30/20 Pypd:HJM Opm:04/1
1000 ppm Pb

AccuTrace[™] Reference Standard

Catalog No: ICP-29N-1
Description: Lead ICP Standard
Element: Lead (Pb)
SRM: 3128
Lot: 215045013
Matrix: 2% Nitric acid
Hazards: **CORROSIVE** - Refer to SDS for safety info

Date Certified: Apr 8, 2015
Expiration: Apr 8, 2020
Concentration: 1000 µg/mL
Density: 1.013 g/mL
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes

Included on ISO Guide 34 Scope of Accreditation: Yes



Danger 1

Elements in µg/mL

| | | | | | | | | | | | | | |
|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|
| Ag | nd<0.02 | Ce | nd<0.2 | Gd | nd<0.02 | Lu | nd<0.02 | Pb | * | Sc | nd<0.02 | Ti | nd<0.02 |
| Al | nd<0.02 | Co | nd<0.02 | Ge | nd<0.2 | Mg | nd<0.02 | Pd | nd<0.2 | Se | nd<0.2 | Tl | nd<0.2 |
| As | nd<0.2 | Cr | nd<0.02 | Hf | nd<0.02 | Mn | nd<0.02 | Pr | nd<0.2 | Si | N/A | Tm | nd<0.02 |
| Au | nd<0.02 | Cs | N/A | Hg | nd<0.2 | Mo | nd<0.02 | Pt | nd<0.2 | Sm | nd<0.2 | U | nd<0.2 |
| B | nd<0.2 | Cu | nd<0.02 | Ho | nd<0.02 | Na | N/A | Rb | N/A | Sn | nd<0.02 | V | nd<0.02 |
| Ba | nd<0.02 | Dy | nd<0.02 | In | nd<0.2 | Nb | nd<0.2 | Re | nd<0.2 | Sr | nd<0.02 | W | nd<0.2 |
| Be | nd<0.02 | Er | nd<0.02 | Ir | nd<0.2 | Nd | nd<0.02 | Rh | nd<0.2 | Ta | nd<0.2 | Y | nd<0.02 |
| Bi | nd<0.2 | Eu | nd<0.02 | K | nd<0.2 | Ni | nd<0.02 | Ru | nd<0.02 | Tb | nd<0.02 | Yb | nd<0.02 |
| Ca | nd<0.02 | Fe | nd<0.02 | La | nd<0.02 | Os | N/A | S | N/A | Te | nd<0.2 | Zn | nd<0.02 |
| Cd | nd<0.02 | Ga | nd<0.02 | Li | nd<0.02 | P | N/A | Sb | nd<0.2 | Th | nd<0.02 | Zr | N/A |

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±5%. See reverse side for details.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type 1 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All glassware used in preparation is Class A and calibrated regularly.

Balances used during preparation are calibrated regularly using NIST traceable weights.

All bottles are acid leached and triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By: 
Lydia Snyder, Inorganic QC Manager

Reagent

Zn-1000 2nd_00001



2342328
 ID: Zn-1000 2nd_00001
 Exp 08/25/20 Pp'd HJM Op'n 03/07/19
 1000 ppm Zn 2nd

km
 3/7/19

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM

Product #: TA-1000681

SE Std Zinc (Zn) – 1000 µg/mL

Lot #: 984272-23

Matrix: 5% HNO₃

| Element | Certified Concentration & Uncertainty |
|-----------|---------------------------------------|
| Zn | 1005 ± 3 µg/mL (w/v) |
| | 998 ± 3 µg/g (w/w) |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.9999% pure zinc (Zn) metal dissolved in high purity nitric acid (HNO₃) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3168a, lot #120629**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

| Trace Concentrations (µg/L) | | | | | | | | | | | | | |
|-----------------------------|------|----|------|----|------|----|------|----|------|----|------|----|-------|
| Ag | <0.5 | Co | <1 | Ge | <0.5 | Lu | <0.2 | P | <100 | Sb | <0.5 | Te | <1 |
| Al | 3 | Cs | <0.5 | Hf | <0.2 | Mg | <5 | Pb | <1 | Sc | <5 | Ti | <2 |
| As | 6 | Cr | <0.5 | Hg | <0.5 | Mn | <1 | Pd | <0.5 | Se | <2 | Tl | <0.5 |
| Au | <0.5 | Cu | <1 | Ho | <0.2 | Mo | <0.5 | Pr | <0.2 | Si | <100 | Tm | <0.2 |
| B | <5 | Dy | <0.2 | In | nd | Na | <25 | Pt | <0.5 | Sm | <0.2 | V | <1 |
| Ba | <1 | Er | <0.2 | Ir | <0.2 | Nb | <0.5 | Rb | <0.5 | Sn | 12 | W | <0.5 |
| Bi | <0.2 | Eu | <0.2 | K | 296 | Nd | <0.2 | Re | <0.2 | Sr | <1 | Y | <0.5 |
| Ca | <25 | Fe | <10 | La | <0.5 | Ni | <2 | Rh | <0.5 | Ta | <0.5 | Yb | <0.2 |
| Cd | <0.5 | Ga | <0.5 | Li | <2 | Os | <0.5 | Ru | 1 | Tb | <0.5 | Zn | MAJOR |
| Ce | <0.2 | Gd | <0.2 | | | | | | | | | | |

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

February 25, 2019
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

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Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

Zn-1000_00003

CERTIFICATE OF ANALYSIS



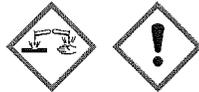
1678238
ID: Zn-1000_00003
Exp:03/31/21 Prpd:HJM Oprn:04/1
1000 ppm Zn

AccuTrace[™] Reference Standard

Catalog No: ICP-70N-1
Description: Zinc ICP Standard
Element: Zinc (Zn)
SRM: 3168a
Lot: 216035069
Matrix: 2-5% Nitric acid
Hazards: **CORROSIVE** - Refer to SDS for safety info

Date Certified: Mar 23, 2016
Expiration: Mar 23, 2021
Concentration: 1000 µg/mL
Density: 1.015 g/mL
Sample Size: 100 mL
Components: 1
Storage Condition: Ambient (>5 °C)

Included on ISO/IEC 17025 Scope of Accreditation: Yes
Included on ISO Guide 34 Scope of Accreditation: Yes



Danger 1

Elements in µg/mL

| | | | | | | | | | | | | | |
|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|
| Ag | nd<0.02 | Ce | nd<0.2 | Gd | nd<0.02 | Lu | nd<0.02 | Pb | nd<0.2 | Sc | nd<0.02 | Ti | nd<0.02 |
| Al | nd<0.02 | Co | nd<0.02 | Ge | nd<0.2 | Mg | nd<0.02 | Pd | nd<0.2 | Se | N/A | Tl | nd<0.2 |
| As | nd<0.2 | Cr | nd<0.02 | Hf | nd<0.02 | Mn | nd<0.02 | Pr | nd<0.2 | Si | N/A | Tm | nd<0.02 |
| Au | nd<0.02 | Cs | N/A | Hg | nd<0.2 | Mo | N/A | Pt | nd<0.2 | Sm | nd<0.2 | U | nd<0.2 |
| B | nd<0.2 | Cu | nd<0.02 | Ho | nd<0.02 | Na | nd<0.02 | Rb | N/A | Sn | nd<0.02 | V | nd<0.02 |
| Ba | nd<0.02 | Dy | nd<0.02 | In | nd<0.2 | Nb | nd<0.2 | Re | nd<0.2 | Sr | nd<0.02 | W | N/A |
| Be | nd<0.02 | Er | nd<0.02 | Ir | nd<0.2 | Nd | nd<0.02 | Rh | nd<0.2 | Ta | nd<0.2 | Y | nd<0.02 |
| Bi | N/A | Eu | nd<0.02 | K | nd<0.2 | Ni | nd<0.02 | Ru | nd<0.02 | Tb | nd<0.02 | Yb | nd<0.02 |
| Ca | nd<0.02 | Fe | nd<0.02 | La | nd<0.02 | Os | N/A | S | N/A | Te | nd<0.2 | Zn | * |
| Cd | nd<0.02 | Ga | nd<0.02 | Li | nd<0.02 | P | N/A | Sb | nd<0.2 | Th | nd<0.02 | Zr | nd<0.02 |

This solution was assayed titrimetrically, using EDTA which was standardized against NIST SRM #928 (lead nitrate).

The gravimetric uncertainty for this product is ±0.24%. The CRM uncertainty is ±5%. See reverse side for details.

In order to verify the concentration(s), the final solution was checked by plasma emission spectroscopy (ICP) against material traceable to the above listed NIST SRM(s).

We use the highest purity raw materials available to minimize impurity levels in the final solution. Typically 99.999%+ pure starting materials are used as well as high purity acids and ASTM Type I 18 megohm deionized water.

All trace level elemental impurities were determined via plasma emission spectroscopy on the concentrate.

All glassware used in preparation is Class A and calibrated regularly.

All weights are traceable through NIST, Test No. 822-275872-11.

All bottles are acid leached and triple rinsed with deionized water prior to use.

Use good laboratory procedure when diluting this product. Shake bottle prior to use and do not pipette directly out of the bottle. Use only cleaned Class A volumetric glassware.

We certify the accuracy of this standard to be ±0.5% of the stated value until its expiration date provided it is kept tightly capped and stored under the conditions stated above.

Certified By:

Lydia Snyder

Lydia Snyder, Inorganic QC Manager

Reagent

Zn-1000_00005



2322079
 ID: Zn-1000_00005
 Exp 06/05/20 PpPd HJM Opn 01/15/19
 1000 ppm Zn

1/15/19
 Zm

CERTIFICATE OF ANALYSIS

Single-Element Aqueous CRM

Product #: TA-1000681

SE Std Zinc (Zn) – 1000 µg/mL

Lot #: 166918-115

Matrix: 5% HNO₃

| Element | Certified Concentration & Uncertainty |
|-----------|---------------------------------------|
| Zn | 997 ± 3 µg/mL (w/v) |
| | 991 ± 3 µg/g (w/w) |

Intended Use: This solution is intended for use as a certified reference material (CRM) or calibration standard for inductively coupled plasma optical emission spectroscopy (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), flame or furnace atomic absorption spectroscopy (AA or GFAA), and other techniques for elemental analysis.

Certification & Traceability: This CRM was manufactured, processed, and certified under a quality management system that is registered/accredited to **ISO 9001**, **ISO 17034**, and **ISO/IEC 17025**. This CRM was prepared to a nominal concentration of 1000 µg/mL by gravimetric methods using 99.9999% pure zinc (Zn) metal dissolved in high purity nitric acid (HNO₃) and diluted with filtered (0.22 µm), 18 M-ohm deionized water. The balances used in the preparation of this CRM are calibrated regularly with traceability to NIST, using a calibration provider that is accredited to ISO/IEC 17025 by a mutually recognized accreditation body. All volumetric dilutions are performed in Class A calibrated glassware. The certified concentration and uncertainty were determined using the "High Performance ICP-OES" protocol developed by NIST, and both the certified concentration and uncertainty values are traceable to **NIST SRM 3168a, lot #120629**. The uncertainty associated with the certified concentration represents the expanded uncertainty at the 95% confidence level using a coverage factor of k=2.

Indicative Values: ICP-MS was used to determine trace metal concentrations for this product (nd = not determined).

| Trace Concentrations (µg/L) | | | | | | | | | | | | | |
|-----------------------------|------|----|------|----|------|----|------|----|------|----|------|----|-------|
| Ag | <0.5 | Co | <1 | Ge | <0.5 | Mg | <5 | Pd | <0.5 | Si | <100 | V | <1 |
| Al | <2 | Cs | <0.5 | Hf | <0.2 | Mn | <1 | Pr | <0.2 | Sm | <0.2 | W | <0.5 |
| As | 32 | Cr | <0.5 | Hg | <0.5 | Mo | <0.5 | Pt | <0.5 | Sn | <0.5 | Y | <0.5 |
| Au | <0.5 | Cu | <1 | Ho | <0.2 | Na | <25 | Rb | <0.5 | Sr | <1 | Yb | <0.2 |
| B | <5 | Dy | <0.2 | In | nd | Nb | <0.5 | Re | <0.2 | Ta | <0.5 | Zn | MAJOR |
| Ba | <1 | Er | <0.2 | Ir | <0.2 | Nd | <0.2 | Rh | <0.5 | Tb | <0.5 | | |
| Bi | <0.2 | Eu | <0.2 | K | <25 | Ni | <2 | Ru | <0.5 | Te | <1 | | |
| Ca | <25 | Fe | <10 | La | <0.5 | Os | <0.5 | Sb | <0.5 | Ti | <2 | | |
| Cd | <0.5 | Ga | <0.5 | Li | <2 | P | <100 | Sc | <5 | Tl | <0.5 | | |
| Ce | <0.2 | Gd | <0.2 | Lu | <0.2 | Pb | 3 | Se | <2 | Tm | <0.2 | | |

Instructions for Use: We recommend that the solution be thoroughly mixed by repeated shaking or swirling of the bottle immediately prior to use. To achieve the highest accuracy, the analyst should: (1) use only pre-cleaned containers and transferware, (2) not pipette directly from the CRM's original container, (3) never pour used product back into the original container, (4) make dilutions using calibrated balances or certified class A volumetric flasks and pipettes, (5) use a minimum sub-sample size of 500 µL, and (6) dilute with the same matrix as the original CRM or other chemically suitable matrix. The solution should be kept tightly capped and stored under normal laboratory conditions. Do not freeze, heat, or immerse the bottle or its contents, and avoid exposure to direct sunlight or moisture.

Period of Validity: CPI International ensures the accuracy of this solution for **18 months** from the certification date shown below, provided the instructions for use are followed. During the period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution.

Chuck Goudreau

Chuck Goudreau, Certifying Officer

December 5, 2018
Certification Date

CPI International waives all responsibility for any damages resulting from the usage and/or implementation of the products/data described herein.

USA
 5580 Skylane Boulevard P: 707.525.5788
 Santa Rosa, CA 95403 P: 800.878.7654
 F: 707.545.7901

www.cpiinternational.com

Europe
 Nieuwe Hemweg 7P P: +31 20 638 05 97
 1013BG Amsterdam F: +31 20 420 28 36
 The Netherlands

Health and Safety Information: Refer to the Safety Data Sheet (SDS).

Homogeneity: This solution was determined to be homogeneous by procedures consistent with the requirements of ISO Guide 34 and ISO Guide 35. Replicate samples of the finished solution were analyzed to confirm its homogeneity, in accordance with QSP 6-13 Assessment of Homogeneity and Stability. To ensure homogeneity, users should not take a smaller sub-sample than specified in the Instructions for Use, as doing so will invalidate the certified values and uncertainties.

Quality Manual Rev: No. 5, 03/01/2013

Further Information: Please contact CPI International for further information about this CRM.

Quality Certifications: This CRM was prepared under a quality management system that is registered/accredited to the following:

- ISO 9001 – Quality Management Systems – Requirements (TUV NORD Cert. No. 44 100 16560231)
- ISO/IEC 17025 – General Requirements for the Competence of Testing and Calibration Laboratories (A2LA Cert. No. 2848.01)
- ISO Guide 34 – General Requirements for the Competence of Reference Material Producers (A2LA Cert. No. 2848.02)
 - ISO Guide 34 references additional requirements specified in ISO Guide 31 and ISO Guide 35.

Reagent

60MX8270CLMX5_00003

BNA 1335-37
Rec 7/17/17 JAL



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31995 **Lot No.:** A0125411
Description : 8270 Calibration Mix #5, Revised
8270 Calibration Mix #5, Revised 2,000µg/ml, Methylene Chloride, 1ml/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : January 31, 2023 **Storage:** 10°C or colder
Handling: Sonication required. Mix is photosensitive.

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) | | |
|---------------|---|-----------------------------|--------------------------------------|-------|-------------|
| 1 | Naphthalene CAS # 91-20-3 Purity 99% (Lot MKBW2603V) | 2,008.0 µg/mL | +/- 11.7841 | µg/mL | Gravimetric |
| | | | +/- 90.4557 | µg/mL | Unstressed |
| | | | +/- 100.3688 | µg/mL | Stressed |
| 2 | 2-Methylnaphthalene CAS # 91-57-6 Purity 95% (Lot STBF0201V) | 2,014.5 µg/mL | +/- 11.8221 | µg/mL | Gravimetric |
| | | | +/- 90.7474 | µg/mL | Unstressed |
| | | | +/- 100.6925 | µg/mL | Stressed |
| 3 | 1-Methylnaphthalene CAS # 90-12-0 Purity 98% (Lot 523400-9) | 2,005.1 µg/mL | +/- 11.7669 | µg/mL | Gravimetric |
| | | | +/- 90.3242 | µg/mL | Unstressed |
| | | | +/- 100.2229 | µg/mL | Stressed |
| 4 | Acenaphthylene CAS # 208-96-8 Purity 98% (Lot L18Q) | 2,008.5 µg/mL | +/- 11.7871 | µg/mL | Gravimetric |
| | | | +/- 90.4787 | µg/mL | Unstressed |
| | | | +/- 100.3943 | µg/mL | Stressed |
| 5 | Acenaphthene CAS # 83-32-9 Purity 99% (Lot MKBW9515V) | 2,016.0 µg/mL | +/- 11.8310 | µg/mL | Gravimetric |
| | | | +/- 90.8161 | µg/mL | Unstressed |
| | | | +/- 100.7687 | µg/mL | Stressed |
| 6 | Fluorene CAS # 86-73-7 Purity 99% (Lot 10193329) | 2,018.0 µg/mL | +/- 11.8428 | µg/mL | Gravimetric |
| | | | +/- 90.9062 | µg/mL | Unstressed |
| | | | +/- 100.8687 | µg/mL | Stressed |
| 7 | Phenanthrene CAS # 85-01-8 Purity 99% (Lot MKBT8628V) | 2,016.0 µg/mL | +/- 11.8310 | µg/mL | Gravimetric |
| | | | +/- 90.8161 | µg/mL | Unstressed |
| | | | +/- 100.7687 | µg/mL | Stressed |

| | | | | | | | | |
|----|--|-------------------|---------|-------|-----|--------------------------------|-------------------------|---------------------------------------|
| 8 | Anthracene CAS # 120-12-7 Purity 99% | (Lot MKBV7759V) | 2,017.0 | µg/mL | +/- | 11.8369 90.8611 100.8187 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 9 | Fluoranthene CAS # 206-44-0 Purity 98% | (Lot MKBQ6360V) | 2,007.0 | µg/mL | +/- | 11.7784 90.4125 100.3208 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 10 | Pyrene CAS # 129-00-0 Purity 98% | (Lot BCBP9868V) | 2,017.8 | µg/mL | +/- | 11.8417 90.8981 100.8597 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 11 | Benz(a)anthracene CAS # 56-55-3 Purity 99% | (Lot ER031412-01) | 2,017.5 | µg/mL | +/- | 11.8398 90.8837 100.8437 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 12 | Chrysene CAS # 218-01-9 Purity 99% | (Lot 012015) | 2,009.0 | µg/mL | +/- | 11.7899 90.5008 100.4188 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 13 | Benzo(b)fluoranthene CAS # 205-99-2 Purity 99% | (Lot ER03101401) | 2,018.5 | µg/mL | +/- | 11.8457 90.9287 100.8937 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 14 | Benzo(k)fluoranthene CAS # 207-08-9 Purity 99% | (Lot 012012K) | 2,004.0 | µg/mL | +/- | 11.7606 90.2755 100.1689 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 15 | Benzo(a)pyrene CAS # 50-32-8 Purity 99% | (Lot ER071309-02) | 1,995.5 | µg/mL | +/- | 11.7107 89.8926 99.7440 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 16 | Indeno(1,2,3-cd)pyrene CAS # 193-39-5 Purity 99% | (Lot ER082107-02) | 2,020.0 | µg/mL | +/- | 11.8545 90.9963 100.9686 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 17 | Dibenz(a,h)anthracene CAS # 53-70-3 Purity 99% | (Lot ER032211-01) | 2,018.5 | µg/mL | +/- | 11.8457 90.9287 100.8937 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 18 | Benzo(g,h,i)perylene CAS # 191-24-2 Purity 99% | (Lot ER05121401) | 2,018.5 | µg/mL | +/- | 11.8457 90.9287 100.8937 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |

Solvent: Methylene Chloride
CAS # 75-09-2
Purity 99%

Column:
30m x 0.25mm x 0.25µm
Rtx-5 (cat.#10223)

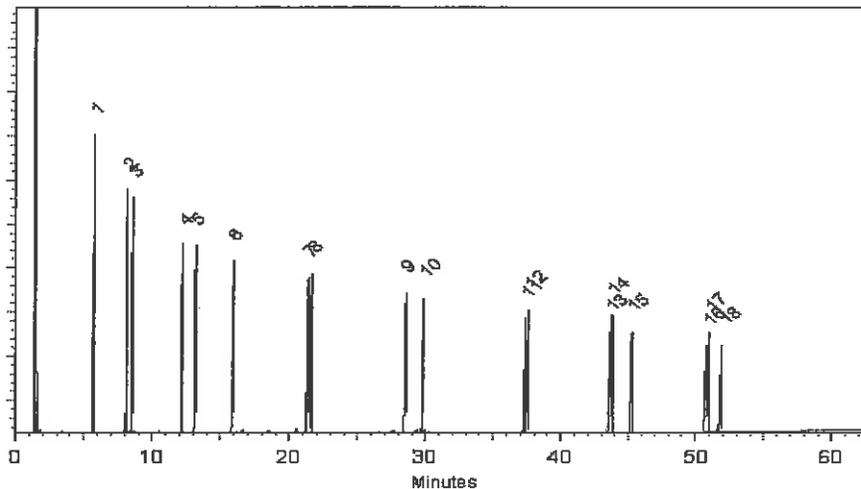
Carrier Gas:
hydrogen-constant pressure 10 psl.

Temp. Program:
100°C (hold 1 min.) to 330°C
@ 4°C/min. (hold 5 min.)

Inj. Temp:
250°C

Det. Temp:
330°C

Det. Type:
FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Dawn Brown
Dawn Brownson - Mix Technician

Date Mixed: 27-Feb-2017 Balance: 1128360905

Jennifer J. Pollino
Jennifer Pollino - Operations Tech-ARM QC

Date Passed: 03-Mar-2017

Manufactured under Restek's ISO 9001:2008
Registered Quality System
Certificate #FM 80397

Reagent

60MXB (b) Th_00001



CERTIFIED WEIGHT REPORT

Part Number: **92840**
Lot Number: **061818**
Description: **Thianaphthene**

Expiration Date: **061823**
Recommended Storage: **Refrigerate (4 °C)**
Nominal Concentration (µg/mL): **2000**
NIST Test ID#: **2684186**

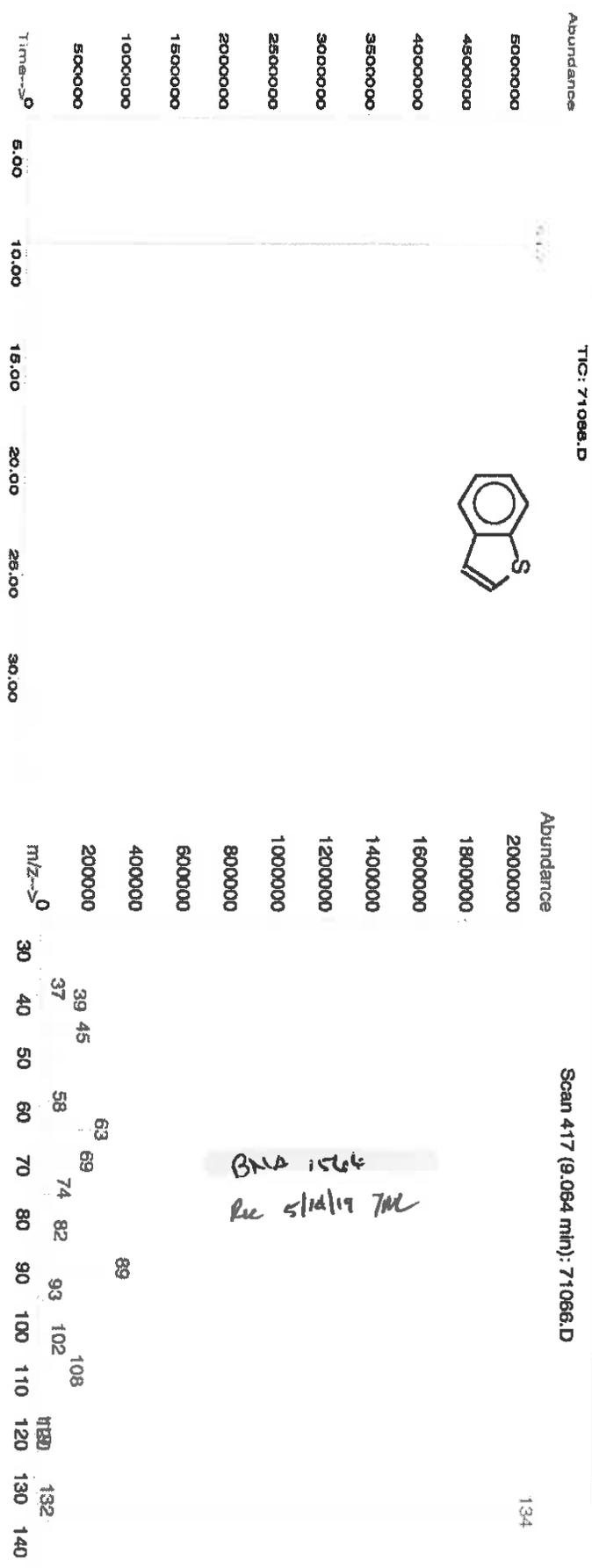
Weight(s) shown below were combined and diluted to (mL): **20.0**

Solvent: **Methylene chloride**
Lot#: **76782**

| | | | |
|----------------|------------------------|------|---------------|
| Formulated By: | <i>Justin Dipold</i> | DATE | 061818 |
| Reviewed By: | <i>Pedro L. Rentas</i> | DATE | 061818 |

| Compound | RM# | Lot Number | Nominal Conc. (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight (g) | Actual Weight (g) | Actual Conc. (µg/mL) | Expanded Uncertainty (Solvent Safety Info. On Attached pg.) | | CAS# | OSHA PEL (TWA) | LD50 |
|------------------|------|------------|-----------------------|------------|--------------------|-------------------|-------------------|----------------------|---|---------|------|----------------|------|
| | | | | | | | | | (+) | (-) | | | |
| 1. Thianaphthene | 1086 | 04526HY | 2000 | 99 | 0.2 | 0.04043 | 0.04050 | 2003.6 | 9.5 | 95-15-8 | NA | NA | NA |

Method GC8MSD-2.M: Column: SBB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (14 min.), Rate = 10°C/min., Injector B = 250°C, Detector B = 300°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by Lance R. Boynton/Nicole Poisson



BNA 1564
Re 5/14/19 TM

*The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
*Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
*Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
*All Standards, after opening sample, should be stored with caps tight and under appropriate laboratory conditions.
*Uncertainty Reference: Taylor, B.N. and Kuyel, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

Reagent

60MXDECALIN_00001



CERTIFIED WEIGHT REPORT

Part Number: 71975
Lot Number: 071018
Description: cis-Decalhydronaphthalene

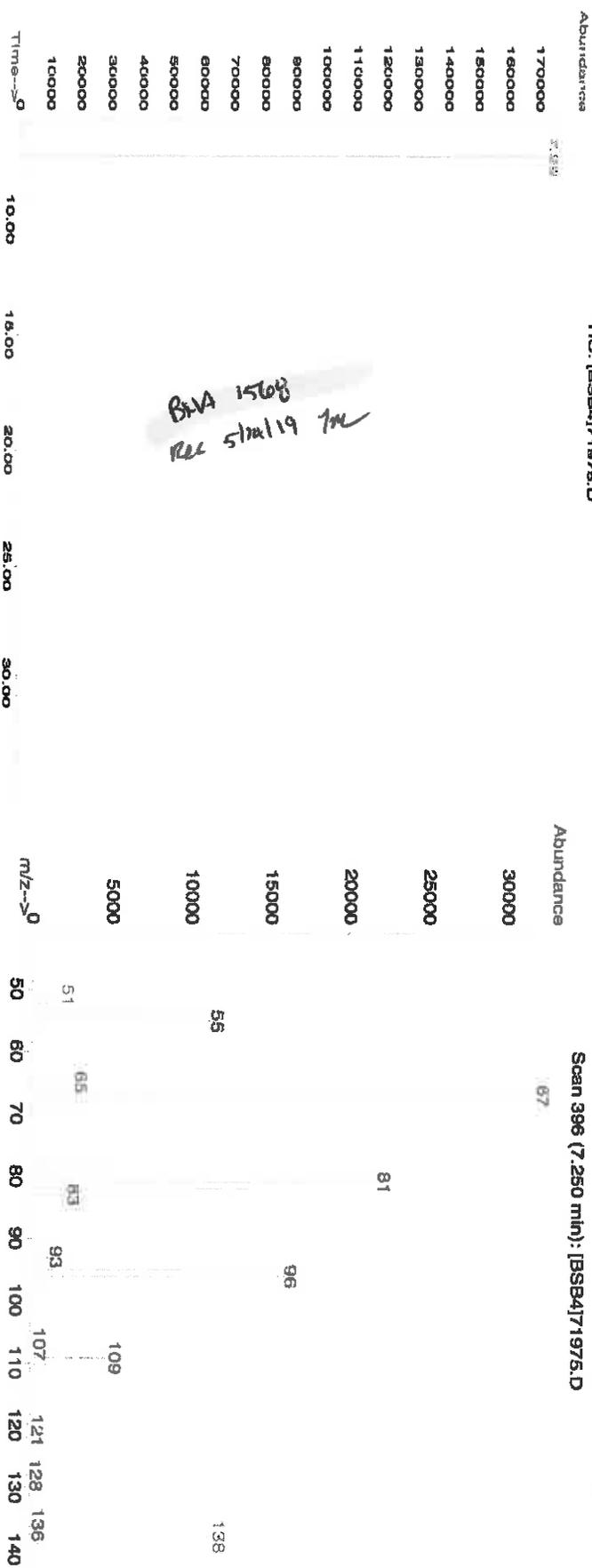
Solvent(s): Methanol
Lot# DS435

Expiration Date: 071023
Recommended Storage: Refrigerate (4 °C)
Nominal Concentration (µg/mL): 1000
NIST Test ID#: 2684186
Weight(s) shown below were combined and diluted to (mL): 10.0

| | |
|--|--------------------|
| Formulated By: <i>Eli Alliego</i> | DATE 071018 |
| Reviewed By: <i>Pedro L. Rantas</i> | DATE 071018 |

| Compound | RM# | Lot Number | Nominal Conc (µg/mL) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Expanded Uncertainty (Solvent Safety Info. On Attached pg.) | SDS Information | | |
|------------------------------|------|------------|----------------------|------------|--------------------|------------------|------------------|---|-----------------|----------|-----|
| | | | | | | | | | OSHA PEL (TWA) | LD50 | |
| 1. cis-Decalhydronaphthalene | 1975 | 00628K1 | 1000 | 99 | 0.2 | 0.01006 | 0.01012 | 1005.7 | 10.7 | 493-01-6 | N/A |

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B = 200°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2, Analysis performed by: Gina McClane.



* The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
* Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
* Standards are certified (+/-) 0.5% of the stated value, unless otherwise stated.
* All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
* Uncertainty Reference: Taylor, B.N., and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

Reagent

60MXIS_00008

BNA 1499-1501



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
 Bellefonte, PA 16823-8812
 Tel: (800)356-1688
 Fax: (814)353-1309

www.restek.com

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.
This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567684 **Lot No.:** A0139031
Description : 8270 Internal Standard
8270 Internal Standard 2,000µg/mL, Methylene chloride, 5mL/ampul
Container Size : 5 mL **Pkg Amt:** > 5 mL
Expiration Date : June 30, 2023 **Storage:** 10°C or colder
Handling: Sonication required. Mix is photosensitive.

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) | | | |
|---------------|---------------------------------|-----------------------------|--------------------------------------|----------|-------|-------------|
| 1 | 1,4-Dichlorobenzene-d4 | 2,005.7 µg/mL | +/- | 11.6613 | µg/mL | Gravimetric |
| | CAS # 3855-82-1 (Lot PR-18488) | | +/- | 90.3379 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.2411 | µg/mL | Stressed |
| 2 | Naphthalene-d8 | 2,011.0 µg/mL | +/- | 11.6921 | µg/mL | Gravimetric |
| | CAS # 1146-65-2 (Lot M-1452) | | +/- | 90.5766 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.5060 | µg/mL | Stressed |
| 3 | Acenaphthene-d10 | 2,011.5 µg/mL | +/- | 11.6950 | µg/mL | Gravimetric |
| | CAS # 15067-26-2 (Lot PR-28021) | | +/- | 90.5992 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.5310 | µg/mL | Stressed |
| 4 | Phenanthrene-d10 | 2,005.3 µg/mL | +/- | 11.6590 | µg/mL | Gravimetric |
| | CAS # 1517-22-2 (Lot PR-23065) | | +/- | 90.3199 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.2211 | µg/mL | Stressed |
| 5 | Chrysene-d12 | 2,005.3 µg/mL | +/- | 11.6590 | µg/mL | Gravimetric |
| | CAS # 1719-03-5 (Lot PR-28823) | | +/- | 90.3199 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.2211 | µg/mL | Stressed |
| 6 | Perylene-d12 | 2,011.6 µg/mL | +/- | 11.6956 | µg/mL | Gravimetric |
| | CAS # 1520-96-3 (Lot PR-24113) | | +/- | 90.6037 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.5360 | µg/mL | Stressed |

Reagent

60MXNATSACPAH_00008

BHA 1521-1525
Rec 2/28/19 *jm*



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Gravimetric Certificate



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 569478-FL **Lot No.:** A0146343
Description : Sacramento SIM PAH Standard
Sacramento SIM PAH Standard 2,000µg/mL, Methylene Chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : August 31, 2020 **Storage:** 10°C or colder
Handling: Sonication required. Mix is photosensitive.

CERTIFIED VALUES

| Component # | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) | | | |
|-------------|-------------------------------|-----------------------------|--------------------------------------|----------|-------|-------------|
| 1 | 1-Methylphenanthrene | 2,000.0 µg/mL | +/- | 20.1475 | µg/mL | Gravimetric |
| | CAS # 832-69-9 (Lot 7137700) | | +/- | 91.5714 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 101.3013 | µg/mL | Stressed |
| 2 | 2,3,5-Trimethylnaphthalene | 2,004.1 µg/mL | +/- | 20.1888 | µg/mL | Gravimetric |
| | CAS # 2245-38-7 (Lot N7VYK) | | +/- | 91.7592 | µg/mL | Unstressed |
| | Purity 98% | | +/- | 101.5090 | µg/mL | Stressed |
| 3 | 2,6-Dimethylnaphthalene | 2,000.0 µg/mL | +/- | 20.1475 | µg/mL | Gravimetric |
| | CAS # 581-42-0 (Lot STBG7481) | | +/- | 91.5714 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 101.3013 | µg/mL | Stressed |
| 4 | 3-Methylphenanthrene | 2,010.0 µg/mL | +/- | 20.2482 | µg/mL | Gravimetric |
| | CAS # 832-71-3 (Lot SABOL) | | +/- | 92.0293 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 101.8078 | µg/mL | Stressed |
| 5 | Benzo(e)pyrene | 2,000.0 µg/mL | +/- | 20.1475 | µg/mL | Gravimetric |
| | CAS # 192-97-2 (Lot NT061029) | | +/- | 91.5714 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 101.3013 | µg/mL | Stressed |
| 6 | Dibenzothiophene | 1,999.2 µg/mL | +/- | 20.1394 | µg/mL | Gravimetric |
| | CAS # 132-65-0 (Lot H27J01) | | +/- | 91.5348 | µg/mL | Unstressed |
| | Purity 98% | | +/- | 101.2608 | µg/mL | Stressed |
| 7 | Perylene | 2,005.0 µg/mL | +/- | 20.1978 | µg/mL | Gravimetric |
| | CAS # 198-55-0 (Lot 04101PG) | | +/- | 91.8004 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 101.5545 | µg/mL | Stressed |

Reagent

60MXNBT_00001



CERTIFIED WEIGHT REPORT

Part Number: **71977**
Lot Number: **051118**
Description: **1,2-Benzodiphenylene sulfide**
Expiration Date: **05/11/21**
Recommended Storage: **Refrigerate (4 °C)**
Nominal Concentration (µg/ml): **1000**
NIST Test ID#: **2884186**
Weight(s) shown below were combined and diluted to (mL): **2.5**

Solvent(s): **Methanol**
Lot#: **DS435**

5E-05 Balance Uncertainty
0.001 Flask Uncertainty

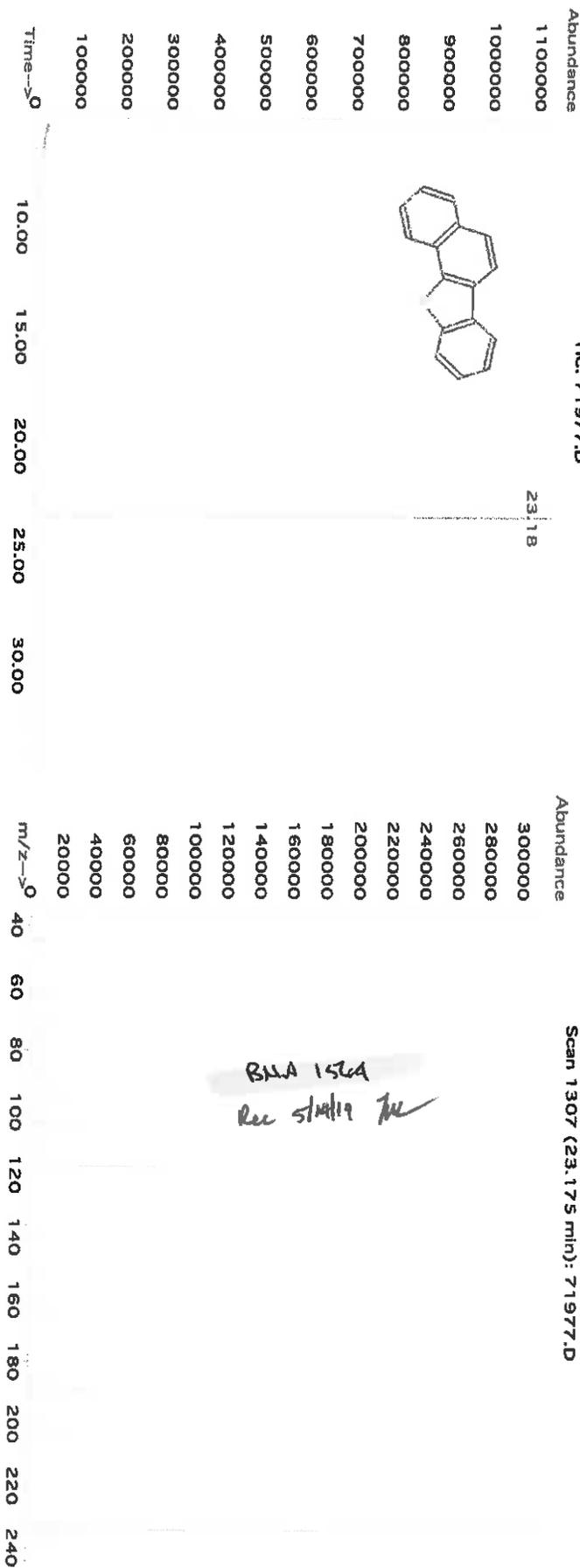
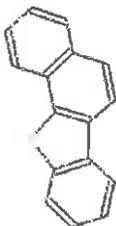
| | | |
|----------------|------------------------|--------|
| Formulated By: | <i>Mario Luján</i> | 051118 |
| Reviewed By: | <i>Pedro L. Remias</i> | 051118 |
| | | DATE |

| Compound | Lot Number | Nominal Conc (µg/ml) | Purity (%) | Uncertainty Purity | Target Weight(g) | Actual Weight(g) | Actual Conc (µg/ml) | Expanded Uncertainty (±) (µg/ml) | CAS# | OSHA PEL (TWA) | LD50 |
|---------------------------------|------------|----------------------|------------|--------------------|------------------|------------------|---------------------|----------------------------------|------|----------------|------|
| 1. 1,2-Benzodiphenylene sulfide | 1877 | 07527KSV | 1000 | 99 | 0.2 | 0.00253 | 0.00255 | 1009.8 | 39.8 | 239-35-0 | N/A |

SDS Information

(Solvent Safety Info. On Attached pg.)

Method GC8MSD-3.M: Column:SPB-5 (30m X 0.25mm ID X 0.25µm film thickness) Temp 1 = 50°C (1min.), Temp 2 = 300°C (9min.), Rate = 10°C/min., Injector B= 200°C, Detector B = 275°C, Split Ratio = 100:1, Scan Rate = 2. Analysis performed by: Melissa Stonier.



BLA 1524
Rec 5/11/21 ML

- The certified value is the concentration calculated from gravimetric and volumetric measurements unless otherwise stated.
- Standards are prepared gravimetrically using balances that are calibrated with weights traceable to NIST (see above).
- Standards are certified (±) 0.5% of the stated value, unless otherwise stated.
- All Standards, after opening ampule, should be stored with caps tight and under appropriate laboratory conditions.
- Uncertainty Reference: Taylor, B.N. and Kuyat, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

Reagent

60MXSSBENZEP_00005



Product Name: BENZO[E]PYRENE
(Isotopic Label & Enrichment Specification) UNLABELED STANDARD 200 UG/ML IN ISOOCTANE

Lot Number: SDGL-018

Catalog Number: ULM-7423-S

Product Information

Chemical Purity Specification: $\geq 98\%$

MW*: 252.31

* For isotopically labeled compounds, MW listed is for the fully enriched product.

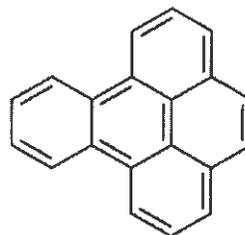
Labeled CAS Number: NA

Unlabeled CAS Number: 192-97-2

Chemical Formula: C₂₀H₁₂

Storage: Store at room temperature away from light and moisture

Stability: See storage and expiration date.



Certification

Cambridge Isotope Laboratories, Inc. guarantees that this material meets or exceeds the specifications stated. Absolute identity as well as chemical and isotopic purities are assured by the use of unambiguous synthetic routes and multiple chemical analyses whenever possible. Results are representative of QC testing at time of release from Quality Control unless otherwise stated.

Volumetric measurements were made with Class A glassware. Gravimetry is traceable to the NIST through calibrated balances and certified, calibrated, standard weights. The calibrations are traceable to the NIST under Test No. 822/270236-04. The calibrations also meet specifications outlined in ISO 9001, ISO/IEC 17025, ANSI/NSCL Z540-1-1994, NCR Document 10CFR50 Appendix B, and applicable subdocuments.

This COA references the bulk catalog number before packaging. The COA also applies to the CIL finished good catalog number. Some possible packaging sizes and their corresponding suffix are -1.2, -1, -0.5, -10, or -0.1.

Approved by: Marina Klionsky

Marina Klionsky, Quality Review

Quality Control Tests and Results

| | |
|-------------------------------------|----------------------------------|
| QC Release Date | 2/01/2017 |
| Expiration Date | 2/01/2027 |
| Concentration Based on Gravimetry | 200.0 \pm 2.1 μ g/mL (k=2) |
| Chemical Purity of Neat Material(s) | 99.5% |

Reagent

60MXSSCLMX5_00001

BNA 1348
 Rec 7/17/17 JAL



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
 Bellefonte, PA 16823-8812
 Tel: (800)356-1688
 Fax: (814)353-1309

Certificate of Analysis

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FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 31995.sec **Lot No.:** A0115109
Description : 8270 Calibration Mix #5, Revised
8270 Calibration Mix #5, Revised 2,000 µg/ml, Methylene Chloride, 1ml/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : October 31, 2021 **Storage:** 10°C or colder
Handling: Sonication required. Mix is photosensitive.

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) | | | |
|---------------|----------------------------------|-----------------------------|--------------------------------------|----------|-------|-------------|
| 1 | Naphthalene | 2,014.0 µg/mL | +/- | 11.9625 | µg/mL | Gravimetric |
| | CAS # 91-20-3.SEC (Lot 4KW3H-00) | | +/- | 90.7448 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.6857 | µg/mL | Stressed |
| 2 | 2-Methylnaphthalene | 2,000.0 µg/mL | +/- | 11.8794 | µg/mL | Gravimetric |
| | CAS # 91-57-6.SEC (Lot 76023-1) | | +/- | 90.1140 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 99.9858 | µg/mL | Stressed |
| 3 | 1-Methylnaphthalene | 2,000.0 µg/mL | +/- | 11.8794 | µg/mL | Gravimetric |
| | CAS # 90-12-0.SEC (Lot UATSA) | | +/- | 90.1140 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 99.9858 | µg/mL | Stressed |
| 4 | Acenaphthylene | 2,005.1 µg/mL | +/- | 11.9096 | µg/mL | Gravimetric |
| | CAS # 208-96-8.SEC (Lot 062013) | | +/- | 90.3429 | µg/mL | Unstressed |
| | Purity 98% | | +/- | 100.2397 | µg/mL | Stressed |
| 5 | Acenaphthene | 2,000.0 µg/mL | +/- | 11.8794 | µg/mL | Gravimetric |
| | CAS # 83-32-9.SEC (Lot BWZJE) | | +/- | 90.1140 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 99.9858 | µg/mL | Stressed |
| 6 | Fluorene | 2,010.0 µg/mL | +/- | 11.9388 | µg/mL | Gravimetric |
| | CAS # 86-73-7.SEC (Lot 1561600) | | +/- | 90.5645 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 100.4857 | µg/mL | Stressed |
| 7 | Phenanthrene | 2,007.0 µg/mL | +/- | 11.9212 | µg/mL | Gravimetric |
| | CAS # 85-01-8.SEC (Lot 1777100) | | +/- | 90.4312 | µg/mL | Unstressed |
| | Purity 98% | | +/- | 100.3377 | µg/mL | Stressed |

| | | | | | | |
|-----------------|--|---------------|---------------|--|-------------------------|---------------------------------------|
| 8 | Anthracene CAS # 120-12-7.SEC Purity 99% | (Lot WDFNJ) | 2,012.0 µg/mL | +/- 11.9507 +/- 90.6547 +/- 100.5857 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 9 | Fluoranthene CAS # 206-44-0.SEC Purity 99% | (Lot FREGF) | 2,016.0 µg/mL | +/- 11.9744 +/- 90.8349 +/- 100.7856 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 10 | Pyrene CAS # 129-00-0.SEC Purity 99% | (Lot ROVJC) | 2,012.0 µg/mL | +/- 11.9507 +/- 90.6547 +/- 100.5857 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 11 | Benz(a)anthracene CAS # 56-55-3.SEC Purity 97% | (Lot MTENF) | 2,015.7 µg/mL | +/- 11.9724 +/- 90.8196 +/- 100.7686 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 12 | chrysene CAS # 218-01-9.SEC Purity 99% | (Lot I3AKL) | 2,002.0 µg/mL | +/- 11.8913 +/- 90.2041 +/- 100.0857 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 13 | Benzo(b)fluoranthene CAS # 205-99-2.SEC Purity 97% | (Lot 012012) | 2,017.6 µg/mL | +/- 11.9839 +/- 90.9070 +/- 100.8656 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 14 | Benzo(k)fluoranthene CAS # 207-08-9.SEC Purity 98% | (Lot 3596500) | 2,005.1 µg/mL | +/- 11.9096 +/- 90.3429 +/- 100.2397 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 15 | Benzo(a)pyrene CAS # 50-32-8.SEC Purity 99% | (Lot 2IGMD) | 2,002.0 µg/mL | +/- 11.8913 +/- 90.2041 +/- 100.0857 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 16 | Indeno(1,2,3-cd)pyrene CAS # 193-39-5.SEC Purity 99% | (Lot 022013) | 2,014.0 µg/mL | +/- 11.9625 +/- 90.7448 +/- 100.6857 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 17 | Dibenz(a,h)anthracene CAS # 53-70-3.SEC Purity 99% | (Lot 0012012) | 2,012.0 µg/mL | +/- 11.9507 +/- 90.6547 +/- 100.5857 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| 18 | Benzo(g,h,i)perylene CAS # 191-24-2.SEC Purity 99% | (Lot 0022012) | 2,016.0 µg/mL | +/- 11.9744 +/- 90.8349 +/- 100.7856 | µg/mL µg/mL µg/mL | Gravimetric Unstressed Stressed |
| Solvent: | Methylene Chloride CAS # 75-09-2 Purity 99% | | | | | |

Column:
 30m x 0.25mm x 0.25µm
 Rtx-5 (cat.#10223)

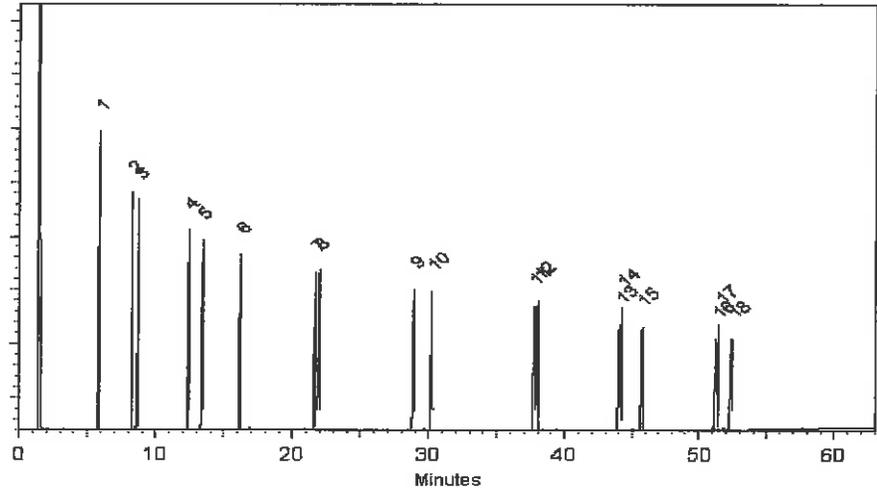
Carrier Gas:
 hydrogen-constant pressure 10 psi.

Temp. Program:
 100°C (hold 1 min.) to 330°C
 @ 4°C/min. (hold 5 min.)

Inj. Temp:
 250°C

Det. Temp:
 330°C

Det. Type:
 FID



This chromatogram represents a general set of testing conditions chosen for product acceptance. For optimal results in your lab, conditions should be adjusted for your specific instrument, method, and application.

Lane Kibe
 Lane Kibe - Mix Technician

Date Mixed: 02-Nov-2015 Balance: 1128353505

Jennifer L. Pollino
 Jennifer L. Pollino - QC Analyst

Date Passed: 04-Nov-2015

Manufactured under Restek's ISO 9001:2008
 Registered Quality System
 Certificate #FM 80397

Reagent

60MXSSDBTHP_00004



SPEXertificate® Certificate of Reference Material

BNA 1593
Rec 7/12/11



Catalog Number: S-1185

Lot No. EN180502014

Description: Dibenzothiophene

Matrix: Methanol (Purge & Trap Grade)

Manufactured Date: 5-2-2018

Expiration Date: 5-1-2021

This SPEXOrganics® Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for organic chromatography instrumentation such as GC, GC-MS, LC, and LC-MS. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

Certified Compounds:

| <u>Compound</u> | <u>CAS #</u> | <u>Labeled</u> | <u>Purity</u> | <u>Certified†</u> | <u>Uncertainty</u> |
|------------------|--------------|----------------|---------------|-------------------|--------------------|
| Dibenzothiophene | 132-65-0 | 1000 µg/mL | 98% | 1009 µg/mL | ± 26 µg/mL |

Final Solution Verification:

Final solution integrity verified by Gas Chromatography/Mass Spectrometry. The mass spectrum of each compound was confirmed against the NIST mass spectral database.

† Certified concentration based on gravimetric weights and corrected for the purity of the compound(s) used to prepare the standard. Analytical balance calibration is verified daily with C1 weight set #23-190006 which is registered with Atlantic Scale, and traceable to NIST and NJ Division of Weights and Measures.

This CRM is guaranteed stable and accurate to within the uncertainty listed for the certified value. This includes uncertainty components due to preparation, homogeneity, short term and long term stability. During the stated period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution. For further information, contact the Sales Support Department at crmsales@spexcsp.com.

Date of Certification: 5-2-2018

Certifying Officer: Shannon Macieira
Shannon Macieira, Operations Manager

Reagent

60MXSSPERYLN_00003



Reference Materials Producer
Cert #2495.01

SPEXertificate®

Certificate of Reference Material

BNA 1595
REL 7/12/17



Chemical Testing
Cert #2495.02

Catalog Number: S-3005 **Lot No.** EN170502007

Description: Perylene

Matrix: Methylene Chloride

Manufactured Date: 5-2-2017

Expiration Date: 5-1-2020

This SPEXOrganics® Certified Reference Material, CRM, is intended primarily for use as a calibration standard or quality control standard for organic chromatography instrumentation such as GC, GC-MS, LC, and LC-MS. It can be employed in USEPA, ASTM and other methods relevant to the certified properties listed below.

Certified Compounds:

| <u>Compound</u> | <u>CAS #</u> | <u>Labeled</u> | <u>Purity</u> | <u>Certified†</u> | <u>Uncertainty</u> |
|-----------------|--------------|----------------|---------------|-------------------|--------------------|
| Perylene | 198-55-0 | 1000 µg/mL | 99% | 1008 µg/mL | ± 26 µg/mL |

Final Solution Verification:

Final solution integrity verified by Gas Chromatography/Mass Spectrometry. The mass spectrum of each compound was confirmed against the NIST mass spectral database.

† Certified concentration based on gravimetric weights and corrected for the purity of the compound(s) used to prepare the standard. Analytical balance calibration is verified daily with C1 weight set #23-190006 which is registered with Atlantic Scale, and traceable to NIST and NJ Division of Weights and Measures.

This CRM is guaranteed stable and accurate to within the uncertainty listed for the certified value. This includes uncertainty components due to preparation, homogeneity, short term and long term stability. During the stated period of validity, the purchaser will be notified if this product is recalled due to any significant changes in the stability of the solution. For further information, contact the Sales Support Department at crmsales@spexcsp.com.

Date of Certification: 5-2-2017

Certifying Officer: Shannon Macieira
Shannon Macieira, Operations Manager

Reagent

60MXSU_00020

BNA 1559-1561



110 Benner Circle
 Bellefonte, PA 16823-8812
 Tel: (800)356-1688
 Fax: (814)353-1309

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CERTIFIED REFERENCE MATERIAL

Certificate of Analysis

rec'd 4/19/19



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567685 Lot No.: A0143524
 Description : 8270 Surrogate Standard
8270 Surrogate Standard 5,000µg/mL, Methylene chloride, 5mL/ampul
 Container Size : 5 mL Pkg Amt: > 5 mL
 Expiration Date : November 30, 2023 Storage: 10°C or colder
 Handling: Sonicate prior to use.

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L.; K=2) | | |
|---------------|--|-----------------------------|--------------------------------------|----------|-------------------|
| 1 | 2-Fluorophenol CAS # 367-12-4 Purity 99% (Lot STBF3761V) | 4,998.8 µg/mL | +/- | 29.0635 | µg/mL Gravimetric |
| | | | +/- | 145.8817 | µg/mL Unstressed |
| | | | +/- | 177.0219 | µg/mL Stressed |
| 2 | Phenol-d5 CAS # 4165-62-2 Purity 99% (Lot CD-105) | 5,018.9 µg/mL | +/- | 29.1801 | µg/mL Gravimetric |
| | | | +/- | 146.4674 | µg/mL Unstressed |
| | | | +/- | 177.7325 | µg/mL Stressed |
| 3 | Nitrobenzene-d5 CAS # 4165-60-0 Purity 99% (Lot PR-29603) | 5,009.3 µg/mL | +/- | 29.1243 | µg/mL Gravimetric |
| | | | +/- | 146.1872 | µg/mL Unstressed |
| | | | +/- | 177.3925 | µg/mL Stressed |
| 4 | 2-Fluorobiphenyl CAS # 321-60-8 Purity 99% (Lot M09E045) | 5,024.7 µg/mL | +/- | 29.2138 | µg/mL Gravimetric |
| | | | +/- | 146.6366 | µg/mL Unstressed |
| | | | +/- | 177.9379 | µg/mL Stressed |
| 5 | 2,4,6-Tribromophenol CAS # 118-79-6 Purity 99% (Lot 29699MJV) | 5,012.1 µg/mL | +/- | 29.1410 | µg/mL Gravimetric |
| | | | +/- | 146.2708 | µg/mL Unstressed |
| | | | +/- | 177.4940 | µg/mL Stressed |
| 6 | p-Terphenyl-d14 CAS # 1718-51-0 Purity 99% (Lot B180320L) | 5,022.9 µg/mL | +/- | 29.2038 | µg/mL Gravimetric |
| | | | +/- | 146.5860 | µg/mL Unstressed |
| | | | +/- | 177.8765 | µg/mL Stressed |

Reagent

60MXSVOCAD_00004

BNA 1515-1519
Rec 1/31/19



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

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Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.

Catalog No. : 567839 **Lot No.:** A0139915
Description : SVOC PAH Additions
SVOC PAH Additions 2,000µg/mL, Methylene chloride, 1mL/ampul
Container Size : 2 mL **Pkg Amt:** > 1 mL
Expiration Date : June 30, 2024 **Storage:** 10°C or colder

CERTIFIED VALUES

| Elution Order | Compound | Grav. Conc. (weight/volume) | Expanded Uncertainty (95% C.L., K=2) | | | |
|---------------|----------------|----------------------------------|--------------------------------------|----------|-------|-------------|
| 1 | Biphenyl | 2,020.0 µg/mL (Lot MKBV9808V) | +/- | 18.7849 | µg/mL | Gravimetric |
| | CAS # 92-52-4 | | +/- | 92.1557 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 102.0148 | µg/mL | Stressed |
| 2 | Dibenzofuran | 2,020.0 µg/mL (Lot MKCD9952) | +/- | 18.7849 | µg/mL | Gravimetric |
| | CAS # 132-64-9 | | +/- | 92.1557 | µg/mL | Unstressed |
| | Purity 99% | | +/- | 102.0148 | µg/mL | Stressed |

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Reagent

60SRMWDM_00001

BNA 1443
Rec. 4/10/10
Exp. 9/30/20

opened: 5/29/10 TAC
Exp. 5/29/20



National Institute of Standards & Technology

Certificate of Analysis

Standard Reference Material® 2779

Gulf of Mexico Crude Oil

This Standard Reference Material (SRM) 2779 is intended for use in evaluating analytical methods for the determination of selected polycyclic aromatic hydrocarbons (PAHs), hopanes, and steranes in a crude oil matrix. All of the constituents for which certified, reference, and information values are provided are naturally present in the oil. A unit of SRM 2779 consists of five ampoules each containing 1.2 mL of crude oil.

Certified Mass Fraction Values: Certified mass fraction values for 21 PAHs are provided in Table 1. A NIST certified value is a value for which NIST has the highest confidence in its accuracy in that all known or suspected sources of bias have been investigated or taken into account [1]. The certified values are based on the agreement of results obtained at NIST using multiple analytical techniques.

Reference Mass Fraction Values: Reference mass fraction values are provided for an additional 22 PAHs (Table 2), alkylated PAHs (Table 3), and hopanes and steranes (Table 4). Reference values are noncertified values that are estimates of the true value. However, the values do not meet the NIST criteria for certification and are provided with associated uncertainties that may reflect only measurement precision, may not include all sources of uncertainty, or may reflect a lack of sufficient statistical agreement among multiple analytical methods [1].

Expiration of Certification: The certification of SRM 2779 is valid, within the measurement uncertainties specified, until **30 September 2020**, provided the SRM is handled and stored in accordance with the instructions given in this certificate (see "Instructions for Handling, Storage, and Use"). The certification is nullified if the SRM is damaged, contaminated, or otherwise modified.

Maintenance of SRM Certification: NIST will monitor this SRM over the period of its certification. If substantive technical changes occur that affect the certification before the expiration of this certificate, NIST will notify the purchaser. Registration (see attached sheet) will facilitate notification.

The overall direction and coordination of technical measurements leading to certification were performed by M.M. Schantz and L.C. Sander of the NIST Analytical Chemistry Division.

Evaluation of the data was provided by N.A. Heckert, S.D. Leigh, and A.L. Pintar of the NIST Statistical Engineering Division.

Support aspects involved in the issuance of this SRM were coordinated through the NIST Measurement Services Division.

Analytical measurements were performed by B.A. Benner, Jr., J.R. Kucklick, and M.M. Schantz of the NIST Analytical Chemistry Division. Additional results for PAHs, hopanes, and steranes were used from 24 laboratories that participated in an interlaboratory study coordinated by M.M. Schantz.

Partial funding support for the preparation and certification of this SRM was provided by the National Oceanic and Atmospheric Administration and ultimately paid by BP Corporation North America, Inc. as part of the natural resource damage assessment for the 2010 Deepwater Horizon oil spill.

Stephen A. Wise, Chief
Analytical Chemistry Division

Robert L. Watters, Jr., Chief
Measurement Services Division

Gaithersburg, MD 20899
Certificate Issue Date: 04 June 2012
Certificate Revision History on Last Page

INSTRUCTIONS FOR HANDLING, STORAGE, AND USE

Handling: This material is naturally occurring crude oil and may contain constituents of unknown toxicities; therefore, caution and care should be exercised during its handling and use.

Storage: Sealed ampoules, as received, should be stored in the dark at temperatures between 4 °C and 30 °C.

Use: Samples for analysis should be withdrawn immediately after opening ampoules and should be processed without delay for the certified values in Table 1 to be valid within the stated uncertainties. Certified values are not applicable to material stored in ampoules that have been opened, even if they are resealed.

PREPARATION AND ANALYSIS⁽¹⁾

Sample Collection and Preparation: The petroleum crude oil for this SRM was collected on May 21, 2010 on the drillship *Discoverer Enterprise* from the insertion tube that was receiving oil directly from the Macondo well during response operations. The oil was collected into certified cleaned 2.5 liter glass bottles and transported under chain of custody to TDI Brooks Laboratory in College Station, Texas. A portion was subsequently provided to NIST under the authority of the National Oceanic and Atmospheric Administration (NOAA). The water was separated from the oil by letting it sit in a separatory funnel for 4 h and removing the water. The resulting oil was homogenized by stirring for 18 h in a 20 L glass flask before transferring into 2 mL amber glass ampoules that had been flushed with argon.

Analysis for PAHs, Hopanes, and Steranes: The general approach used for the value assignment of the PAHs, hopanes, and steranes in SRM 2779 consisted of combining results from analyses using various combinations of different cleanup/isolation procedures and chromatographic separation and detection techniques [2]. Three sets of gas chromatography/mass spectrometry (GC/MS) results, designated as GC/MS (I) through GC/MS (III) were obtained at NIST.

For GC/MS (I) analyses, duplicate test portions of 400 mg from 10 ampoules of SRM 2779 were transferred to a vial, spiked with a known amount of an internal standard solution (see below), and diluted with hexane. A portion of the diluted oil (0.5 mL) was fractionated using an aminopropyl solid-phase extraction (SPE) column to isolate the fraction of interest. Following a concentration step, the processed extract was then fractionated using liquid chromatography on a semi-preparative scale aminopropyl silane column. Three fractions were collected: (1) aliphatics, hopanes, and steranes; (2) naphthalene through the dimethylphenanthrenes and anthracenes; and (3) the remainder of the PAHs through molecular mass 302 g/mol. Each fraction was then analyzed by GC/MS using a 0.25 mm i.d. × 60 m fused silica capillary column with a 50 % (mole fraction) phenyl methylpolysiloxane phase (0.25 µm film thickness; DB-17MS, Agilent Technologies, Wilmington, DE), and fractions 2 and 3 were analyzed using a 0.25 mm i.d. × 15 m fused silica capillary column with a 50 % (mole fraction) liquid crystal polysiloxane phase (0.15 µm film thickness; LC-50, J&K Scientific, Milton, Ontario, Canada). The results from the DB-17MS column are denoted as GC/MS Ia and those from the LC-50 column as GC/MS Ib.

For the GC/MS (II) determination of the PAHs, one test portion (6 mg to 8 mg) from each of six ampoules was transferred to a vial, spiked with a known amount of internal standard solution (see below), and diluted with 2 % dichloromethane in hexane (volume fraction). A portion of the diluted oil (0.1 mL) was fractionated using an aminopropyl SPE column to isolate the fraction of interest. Following a concentration step, the isolated fraction was analyzed by GC/MS using a 0.25 mm i.d. × 60 m fused silica capillary column with a 50 % phenyl methylpolysiloxane phase (0.25 µm film thickness; ZB-50 column, Phenomenex, Torrance, CA).

For the GC/MS (III) determination of the PAHs, hopanes, and steranes, one test portion (1 mL, exact mass known) from each of three ampoules was transferred to a bottle and diluted with 25 mL of hexane (exact mass known) prior to adding the internal standards (see below). The extracts were fractionated into two fractions using a silica/alumina column with the majority of the aliphatics, hopanes, and steranes in fraction 1 and the majority of the PAHs in fraction 2. The analytes of interest were quantified using GC/MS on a 0.25 mm i.d. × 60 m fused silica capillary column with a 50 % (mole fraction) phenyl methylpolysiloxane phase (0.25 µm film thickness; Rxi-17sil MS, Restek, Bellefonte, PA).

For the methods described above, perdeuterated PAHs and perdeuterated aliphatics were added to the crude oil as internal standards for quantification purposes.

⁽¹⁾ Certain commercial equipment, instrumentation, or materials are identified in this certificate to adequately specify the experimental procedure. Such identification does not imply recommendation or endorsement by the NIST, nor does it imply that the materials or equipment identified are necessarily the best available for the purpose.

In addition to the analyses performed at NIST, SRM 2779 was used in an interlaboratory comparison exercise in 2011 [3]. Results from 24 laboratories that participated in this exercise were used as the fourth data set in the determination of the values for PAHs, hopanes, and steranes in SRM 2779. Not all of the laboratories returned data for each analyte. The laboratories participating in this exercise used the analytical procedures routinely used in their laboratories to measure the analytes of interest. For the alkylated PAHs, more than 90 % of the laboratories used the parent PAH for determination of the response factor for the corresponding alkylated group.

Homogeneity Assessment for PAHs: The homogeneity of SRM 2779 was assessed by analyzing duplicate test portions of 400 mg from 10 ampoules selected by stratified random sampling. Test portions were processed and analyzed as described above for GC/MS (I). No differences among ampoules were observed for the PAHs at the 400 mg test portion size.

Certified Values: The certified mass fraction value is a weighted mean of the mass fractions from two to five analytical methods [4]. The uncertainty listed with each value is an expanded uncertainty about the mean [4,5], with coverage factor, $k = 2$, calculated by combining within-method variances with a between-method variance [6] following the ISO Guide [7,8]. Sample fractionation and analysis method are denoted by the footnotes in the table.

Table 1. Certified Mass Fraction Values for PAHs in SRM 2779

| | Mass Fraction (mg/kg) | |
|--|--------------------------|---------|
| Naphthalene ^(a,b,c,d) | 855 | ± 46 |
| 1-Methylnaphthalene ^(a,b,d) | 1140 | ± 20 |
| 2-Methylnaphthalene ^(a,b,d) | 1630 | ± 50 |
| Dibenzothiophene ^(a,b,d) | 51.8 | ± 2.1 |
| Phenanthrene ^(a,b,c,d,e) | 258 | ± 27 |
| Anthracene ^(a,c,e) | 3.42 | ± 0.59 |
| 1-Methylphenanthrene ^(a,b,c,d,e) | 169 | ± 10 |
| 2-Methylphenanthrene ^(a,b,c,e) | 230 | ± 14 |
| 3-Methylphenanthrene ^(a,b,c,e) | 206 | ± 32 |
| 9-Methylphenanthrene ^(a,b,c,e) | 232 | ± 19 |
| Fluoranthene ^(a,b,c,d,e) | 4.36 | ± 0.40 |
| Pyrene ^(a,b,c,d,e) | 14.81 | ± 0.39 |
| Benz[<i>a</i>]anthracene ^(a,b,c,d,e) | 7.03 | ± 0.85 |
| Chrysene/Triphenylene ^(a,b,d) | 47.4 | ± 1.7 |
| Benzo[<i>b</i>]fluoranthene ^(a,b,c,d,e) | 5.62 | ± 0.34 |
| Benzo[<i>e</i>]pyrene ^(a,b,c,d,e) | 10.78 | ± 0.60 |
| Benzo[<i>ghi</i>]perylene ^(a,b,c,d,e) | 2.11 | ± 0.26 |
| Dibenz[<i>a,c</i>]anthracene ^(a,h) | 2.03 | ± 0.10 |
| Dibenz[<i>a,h</i>]anthracene ^(a,c,e) | 0.574 | ± 0.091 |
| Benzo[<i>b</i>]chrysene ^(a,c) | 0.629 | ± 0.022 |

^(a) GC/MS Ia using LC fractionation followed by analysis on a DB-17MS column.

^(b) GC/MS II using SPE clean-up followed by analysis on a ZB-50 column.

^(c) GC/MS III using silica/alumina fractionation followed by analysis on an Rxi-17sil MS column.

^(d) Data from the interlaboratory study [3].

^(e) GC/MS Ib using LC fractionation followed by analysis on a LC-50 column.

Reference Values: For most of the PAHs, the reference mass fraction value is a weighted mean of the mass fractions from two to five analytical methods [4] when available. The uncertainty listed with each value is an expanded uncertainty about the mean [4,5], with coverage factor, $k = 2$, calculated by combining within method variances with a between method variance [6] following the ISO Guide [7,8] unless otherwise indicated. Sample fractionation and analysis methods are denoted by the footnotes in the table.

For dibenzofuran, 1,2-dimethylnaphthalene, 1-methylfluoranthene, 3-methylfluoranthene, and 1,6,7-trimethylnaphthalene, the reference mass fractions value are the means of results obtained using one analytical technique. The expanded uncertainty, U , is calculated as $U = ku_c$, where u_c is one standard deviation of the analyte mean, and the coverage factor, k , is determined from the Student's t -distribution corresponding to the associated degrees of freedom and a 95 % confidence level for each analyte. There are five degrees of freedom for these values except for the 1,6,7-trimethylnaphthalene (15 degrees of freedom) value and the dibenzofuran (12 degrees of freedom) value.

Table 2. Reference Mass Fraction Values for PAHs in SRM 2779

| | Mass Fraction (mg/kg) |
|--|--------------------------|
| Biphenyl ^(a,b,c,d) | 195 ± 19 |
| Acenaphthylene ^(a,b) | 8.09 ± 0.10 |
| 1,2-Dimethylnaphthalene ^(d) | 173 ± 5 |
| 1,6-Dimethylnaphthalene ^(c,d) | 1160 ± 100 |
| 1,6,7-Trimethylnaphthalene ^(e) | 306 ± 63 |
| Dibenzofuran ^(e) | 25.7 ± 3.6 |
| Fluorene ^(a,b,c,d) | 145 ± 43 |
| 2-Methylanthracene ^(a,d) | 23.3 ± 2.5 |
| 1,7-Dimethylphenanthrene ^(c,d) | 110 ± 12 |
| 1-Methylfluoranthene ^(e) | 5.77 ± 0.09 |
| 3-Methylfluoranthene ^(e) | 1.75 ± 0.17 |
| 1-Methylpyrene ^(a,c,d,e) | 12.1 ± 1.8 |
| 4-Methylpyrene ^(a,c,d,e) | 21.6 ± 1.5 |
| Chrysene ^(a,e) | 23.3 ± 5.2 |
| Triphenylene ^(a,e) | 17.7 ± 6.7 |
| 6-Methylchrysene ^(a,c,d,e) | 15.10 ± 0.56 |
| Benzo[<i>j</i>]fluoranthene ^(a,c,e) | 0.75 ± 0.29 |
| Benzo[<i>k</i>]fluoranthene ^(a,c,e) | 0.66 ± 0.28 |
| Benzo[<i>a</i>]pyrene ^(a,b,c,d,e) | 1.36 ± 0.35 |
| Perylene ^(a,c,e) | 0.71 ± 0.17 |
| Indeno[1,2,3- <i>cd</i>]pyrene ^(a,c,e) | 0.48 ± 0.14 |
| Picene ^(a,c,d) | 1.92 ± 0.37 |

^(a) GC/MS III using silica/alumina fractionation followed by analysis on an Rxi-17sil MS column.

^(b) Data from the interlaboratory study [3].

^(c) GC/MS Ia using LC fractionation followed by analysis on a DB-17MS column.

^(d) GC/MS II using SPE clean-up followed by analysis on a ZB-50 column.

^(e) GC/MS Ib using LC fractionation followed by analysis on a LC-50 column.

The reference mass fraction values for the alkylated PAH groups are the means of results obtained using one analytical technique. The data are from the interlaboratory study [3]. The expanded uncertainty, U , is calculated as $U = ku_c$, where u_c is one standard deviation of the analyte mean, and the coverage factor, k , is determined from the Student's t -distribution corresponding to the associated degrees of freedom and a 95 % confidence level for each analyte.

Table 3. Reference Mass Fraction Values for Alkylated PAH Groups in SRM 2779

| | Mass Fraction (mg/kg) | Degrees of Freedom |
|--|--------------------------|-----------------------|
| C1-Decalins | 1040 ± 410 | 5 |
| C2-Decalins | 1060 ± 470 | 5 |
| C3-Decalins | 1460 ± 600 | 5 |
| C2-Naphthalenes | 2170 ± 360 | 22 |
| C3-Naphthalenes | 1380 ± 270 | 21 |
| C4-Naphthalenes | 700 ± 130 | 22 |
| C2-Benzothiophenes | 36 ± 13 | 6 |
| C4-Benzothiophenes | 30 ± 4 | 5 |
| C1-Fluorenes | 300 ± 60 | 22 |
| C2-Fluorenes | 380 ± 30 | 19 |
| C3-Fluorenes | 270 ± 40 | 21 |
| C1-Phenanthrenes/anthracenes | 670 ± 90 | 22 |
| C2-Phenanthrenes/anthracenes | 630 ± 60 | 21 |
| C3-Phenanthrenes/anthracenes | 400 ± 50 | 20 |
| C4-Phenanthrenes/anthracenes | 200 ± 30 | 19 |
| C1-Dibenzothiophenes | 130 ± 20 | 21 |
| C2-Dibenzothiophenes | 160 ± 20 | 21 |
| C3-Dibenzothiophenes | 110 ± 10 | 19 |
| C4-Dibenzothiophenes | 56 ± 10 | 17 |
| C1-Fluoranthenes/pyrenes | 67 ± 7 | 19 |
| C2-Fluoranthenes/pyrenes | 130 ± 20 | 18 |
| C3-Fluoranthenes/pyrenes | 120 ± 20 | 19 |
| C4-Fluoranthenes/pyrenes | 87 ± 21 | 11 |
| C1-Naphthobenzothiophenes | 57 ± 15 | 7 |
| C2-Naphthobenzothiophenes | 70 ± 19 | 7 |
| C3-Naphthobenzothiophenes | 48 ± 12 | 7 |
| C4-Naphthobenzothiophenes | 31 ± 10 | 6 |
| C1-Benzanthracenes/chrysenes/triphenylenes | 110 ± 7 | 20 |
| C2-Benzanthracenes/chrysenes/triphenylenes | 130 ± 10 | 18 |
| C3-Benzanthracenes/chrysenes/triphenylenes | 93 ± 12 | 17 |
| C4-Benzanthracenes/chrysenes/triphenylenes | 71 ± 16 | 12 |

The reference mass fraction values for hopanes and steranes, where data are available from three analytical methods, are weighted means [4]. The uncertainty listed with each value is an expanded uncertainty about the mean [4,5], with coverage factor, $k=2$, calculated by combining within-method variances with a between-method variance [6] following the ISO Guide [7,8].

For analytes where the only available data are from the interlaboratory study, the reference mass fractions and associated uncertainties are calculated using the method means. The expanded uncertainty, U , is calculated as $U = ku_c$, where u_c is one standard deviation of the analyte mean, and the coverage factor, k , is determined from the Student's t -distribution corresponding to eight degrees of freedom and a 95 % confidence level for each analyte.

Table 4. Reference Mass Fraction Values for Hopanes and Steranes in SRM 2779

| | Mass Fraction (mg/kg) |
|---|--------------------------|
| 17 α (H),21 β (H)-30-Norhopane ^(a,b,c) | 17.0 \pm 4.6 |
| 17 α (H)-22,29,30-Trisnorhopane ^(a,b,c) | 7.29 \pm 0.79 |
| 18 α (H)-22,29,30-Trisnorhopane ^(c) | 6.9 \pm 1.1 |
| 17 α (H),21 β (H)-30-Hopane ^(a,b,c) | 42.1 \pm 9.9 |
| 17 α (H),21 β (H)-22R-Homohopane ^(a,b,c) | 13.8 \pm 3.6 |
| 17 α (H),21 β (H)-22S-Homohopane ^(a,b,c) | 17.3 \pm 4.3 |
| 17 α (H)-Diahopane ^(c) | 4.5 \pm 1.2 |
| 5 α (H), 14 β (H),17 β (H)-Cholestane 20S ^(c) | 22.3 \pm 7.5 |
| 5 α (H), 14 β (H),17 β (H)-Cholestane 20R ^(a,b,c) | 23.7 \pm 2.7 |
| 13 β (H),17 α (H)-Diacholestane 20S ^(c) | 41.2 \pm 6.7 |
| 5 α (H), 14 α (H),17 α (H)-24-Ethylcholestane 20R ^(a,b,c) | 16.9 \pm 5.0 |
| 5 α (H), 14 β (H),17 β (H)-24-Ethylcholestane 20R ^(a,b,c) | 21.3 \pm 8.2 |
| 5 α (H), 14 β (H),17 β (H)-24-Ethylcholestane 20S ^(c) | 23.1 \pm 6.4 |

^(a) GC/MS Ia using LC fractionation followed by analysis on a DB-17MS column.

^(b) GC/MS III using silica/alumina fractionation followed by analysis on an Rxi-17sil MS column.

^(c) Data from the interlaboratory study [3].

The laboratories listed below participated in the interlaboratory comparison exercise for the determination of PAHs, hopanes, and steranes in SRM 2779 [3].

Alpha Analytical, Inc., Mansfield, MA
 ALS Environmental Division, Edmonton, AB, Canada
 Battelle Analytical & Environmental Chemistry Laboratory, Duxbury, MA
 Columbia Analytical Services at Jacksonville, FL, Rochester, NY, and Kelso, WA
 Florida International University, North Miami, FL
 New York State Department of Health, Albany, NY
 NOAA/NCCOS/NOS, Charleston, SC
 NOAA/NMFS/Alaska Fisheries Science Center, Juneau, AK
 NOAA/NMFS/NW Fisheries Science Center, Seattle, WA
 Pace Analytical Services, Inc., Minneapolis, MN
 RJ Lee Group, Inc., at Monroeville, PA and Pasco, WA
 TDI/B&B Laboratories, Inc., College Station, TX
 TestAmerica Laboratories at Mobile, AL, West Sacramento, CA, University Park, IL, Pittsburgh, PA,
 Knoxville, TN, South Burlington, VT, and Tacoma, WA
 Texas A&M University, College Station, TX
 University of Iowa, Iowa City, IA

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- [8] JCGM 101:2008; *Evaluation of Measurement Data – Supplement 1 to the Guide to the Expression of Uncertainty in Measurement – Propagation of Distributions Using a Monte Carlo Method*; Joint Committee for Guides in Metrology (JCGM) (2008); available at http://www.bipm.org/utis/common/documents/jcgm/JCGM_101_2008_E.pdf (accessed June 2012).

| |
|---|
| Certificate Revision History: 04 June 2012 (Editorial changes); 22 May 2012 (Corrected names in Table 4; editorial changes); 30 January 2012 (Original certificate date) |
|---|

Users of this SRM should ensure that the Certificate of Analysis in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srminfo@nist.gov; or via the Internet at <http://www.nist.gov/srm>.

Method 8270D SIM

Semivolatile Organic Compounds
(GC/MS SIM) by Method 8270D

FORM II
GC/MS SEMI VOA SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Rxi-5SilMS ID: 0.25 (mm)

| Client Sample ID | Lab Sample ID | NBZ # | FBP # | TPHL # |
|-------------------------------|-----------------------|-------|-------|--------|
| 22T-VB-01-RB-BRL_2 0190718 | 580-87761-28 | 110 | 83 | 97 |
| 22T-SG-01-RB-CR_20 190718 | 580-87761-29 | 109 | 81 | 94 |
| | MB 140-32029/1-A | 92 | 73 | 91 |
| | LCS 140-32029/2-A | 109 | 82 | 98 |
| | LCSD 140-32029/3-A | 101 | 75 | 94 |

NBZ = Nitrobenzene-d5
FBP = 2-Fluorobiphenyl (Surr)
TPHL = Terphenyl-d14

QC LIMITS
20-116
48-145
55-150

Column to be used to flag recovery values

FORM II 8270D SIM

FORM III
GC/MS SEMI VOA LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Matrix: Water Level: Low Lab File ID: LCS 140-32029-2-A.D

Lab ID: LCS 140-32029/2-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS CONCENTRATION (ng/L) | LCS % REC | QC LIMITS REC | # |
|------------------------|--------------------------|--------------------------------|-----------------|---------------------|---|
| Acenaphthene | 500 | 430 | 86 | 50-150 | |
| Acenaphthylene | 500 | 505 | 101 | 50-150 | |
| Anthracene | 500 | 501 | 100 | 50-150 | |
| Benzo[a]anthracene | 500 | 559 | 112 | 50-150 | |
| Benzo[a]pyrene | 500 | 497 | 99 | 50-150 | |
| Benzo[b]fluoranthene | 500 | 514 | 103 | 50-150 | |
| Benzo[e]pyrene | 500 | 453 | 91 | 50-150 | |
| Benzo[g,h,i]perylene | 500 | 451 | 90 | 50-150 | |
| Benzo[k]fluoranthene | 500 | 415 | 83 | 50-150 | |
| Chrysene | 500 | 436 | 87 | 50-150 | |
| Dibenz(a,h)anthracene | 500 | 463 | 93 | 50-150 | |
| Dibenzothiophene | 500 | 438 | 88 | 50-150 | |
| Fluoranthene | 500 | 499 | 100 | 50-150 | |
| Fluorene | 500 | 443 | 89 | 50-150 | |
| Indeno[1,2,3-cd]pyrene | 500 | 478 | 96 | 50-150 | |
| 1-Methylnaphthalene | 500 | 447 | 89 | 50-150 | |
| 2-Methylnaphthalene | 500 | 452 | 90 | 50-150 | |
| Naphthalene | 500 | 440 | 88 | 50-150 | |
| Perylene | 500 | 422 | 84 | 50-150 | |
| Phenanthrene | 500 | 441 | 88 | 50-150 | |
| Pyrene | 500 | 492 | 98 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM III
GC/MS SEMI VOA LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: LCS D 140-32029-3-A.D
 Lab ID: LCS D 140-32029/3-A Client ID: _____

| COMPOUND | SPIKE ADDED (ng/L) | LCS D CONCENTRATION (ng/L) | LCS D % REC | % RPD | QC LIMITS | | # |
|------------------------|--------------------------|----------------------------------|-------------------|----------|-----------|--------|---|
| | | | | | RPD | REC | |
| Acenaphthene | 500 | 406 | 81 | 6 | 35 | 50-150 | |
| Acenaphthylene | 500 | 472 | 94 | 7 | 35 | 50-150 | |
| Anthracene | 500 | 484 | 97 | 3 | 35 | 50-150 | |
| Benzo[a]anthracene | 500 | 533 | 107 | 5 | 35 | 50-150 | |
| Benzo[a]pyrene | 500 | 479 | 96 | 4 | 35 | 50-150 | |
| Benzo[b]fluoranthene | 500 | 499 | 100 | 3 | 35 | 50-150 | |
| Benzo[e]pyrene | 500 | 441 | 88 | 3 | 35 | 50-150 | |
| Benzo[g,h,i]perylene | 500 | 438 | 88 | 3 | 35 | 50-150 | |
| Benzo[k]fluoranthene | 500 | 403 | 81 | 3 | 35 | 50-150 | |
| Chrysene | 500 | 418 | 84 | 4 | 35 | 50-150 | |
| Dibenz(a,h)anthracene | 500 | 449 | 90 | 3 | 35 | 50-150 | |
| Dibenzothiophene | 500 | 425 | 85 | 3 | 35 | 50-150 | |
| Fluoranthene | 500 | 485 | 97 | 3 | 35 | 50-150 | |
| Fluorene | 500 | 429 | 86 | 3 | 35 | 50-150 | |
| Indeno[1,2,3-cd]pyrene | 500 | 463 | 93 | 3 | 35 | 50-150 | |
| 1-Methylnaphthalene | 500 | 419 | 84 | 7 | 35 | 50-150 | |
| 2-Methylnaphthalene | 500 | 420 | 84 | 7 | 35 | 50-150 | |
| Naphthalene | 500 | 403 | 81 | 9 | 35 | 50-150 | |
| Perylene | 500 | 403 | 81 | 4 | 35 | 50-150 | |
| Phenanthrene | 500 | 427 | 85 | 3 | 35 | 50-150 | |
| Pyrene | 500 | 473 | 95 | 4 | 35 | 50-150 | |

Column to be used to flag recovery and RPD values

FORM IV
GC/MS SEMI VOA METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Lab File ID: MB 140-32029-1-A.D Lab Sample ID: MB 140-32029/1-A
 Matrix: Water Date Extracted: 07/25/2019 11:50
 Instrument ID: MP Date Analyzed: 08/01/2019 20:20
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

| CLIENT SAMPLE ID | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---------------------------|--------------------|-----------------------------|------------------|
| | LCS 140-32029/2-A | LCS 140-32029-2 -A.D | 08/01/2019 21:10 |
| | LCSD 140-32029/3-A | LCSD 140-32029-3 -A.D | 08/01/2019 21:36 |
| 22T-VB-01-RB-BRL_20190718 | 580-87761-28 | 580-87761-D -28-A.D | 08/01/2019 22:01 |
| 22T-SG-01-RB-CR_20190718 | 580-87761-29 | 580-87761-D -29-A.D | 08/01/2019 22:26 |

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Sample No.: ICIS 140-32163/5 Date Analyzed: 07/21/2019 13:11
 Instrument ID: MP GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)
 Lab File ID (Standard): icis 4X.D Heated Purge: (Y/N) N
 Calibration ID: 2060

| | NPT | | ANT | | PHN | |
|-------------------------------|------------------|--------|--------|-------|--------|--------|
| | AREA # | RT # | AREA # | RT # | AREA # | RT # |
| INITIAL CALIBRATION MID-POINT | 213911 | 4.89 | 105890 | 6.34 | 180526 | 7.59 |
| UPPER LIMIT | 427822 | 5.39 | 211780 | 6.84 | 361052 | 8.09 |
| LOWER LIMIT | 106956 | 4.39 | 52945 | 5.84 | 90263 | 7.09 |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| ICV 140-32163/10 | | 198727 | 4.90 | 97779 | 6.35 | 165088 |

NPT = Naphthalene-d8
 ANT = Acenaphthene-d10
 PHN = Phenanthrene-d10

Area Limit = 50%-200% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Sample No.: ICIS 140-32163/5 Date Analyzed: 07/21/2019 13:11
 Instrument ID: MP GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)
 Lab File ID (Standard): icis 4X.D Heated Purge: (Y/N) N
 Calibration ID: 2060

| | CRY | | PRY | | AREA # | RT # |
|-------------------------------|------------------|-------|--------|-------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| INITIAL CALIBRATION MID-POINT | 158085 | 10.15 | 149512 | 11.75 | | |
| UPPER LIMIT | 316170 | 10.65 | 299024 | 12.25 | | |
| LOWER LIMIT | 79043 | 9.65 | 74756 | 11.25 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| ICV 140-32163/10 | 144275 | 10.15 | 115957 | 11.75 | | |

CRY = Chrysene-d12
 PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Sample No.: CCVIS 140-32296/2 Date Analyzed: 08/01/2019 18:13
 Instrument ID: MP GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)
 Lab File ID (Standard): CCVIS.D Heated Purge: (Y/N) N
 Calibration ID: 2060

| | NPT | | ANT | | PHN | | |
|--------------------|-------------------------------|--------|--------|--------|--------|--------|------|
| | AREA # | RT # | AREA # | RT # | AREA # | RT # | |
| 12/24 HOUR STD | 239453 | 4.89 | 116527 | 6.34 | 194000 | 7.59 | |
| UPPER LIMIT | 478906 | 5.39 | 233054 | 6.84 | 388000 | 8.09 | |
| LOWER LIMIT | 119727 | 4.39 | 58264 | 5.84 | 97000 | 7.09 | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | | |
| MB 140-32029/1-A | | 255322 | 4.89 | 137505 | 6.34 | 246998 | 7.59 |
| LCS 140-32029/2-A | | 243244 | 4.89 | 129363 | 6.34 | 227905 | 7.59 |
| LCSD 140-32029/3-A | | 231027 | 4.89 | 126333 | 6.34 | 223784 | 7.59 |
| 580-87761-28 | 22T-VB-01-RB-BRL_2019 0718 | 240470 | 4.89 | 131587 | 6.34 | 225324 | 7.59 |
| 580-87761-29 | 22T-SG-01-RB-CR_20190 718 | 248328 | 4.89 | 135681 | 6.34 | 226997 | 7.59 |

NPT = Naphthalene-d8
 ANT = Acenaphthene-d10
 PHN = Phenanthrene-d10

Area Limit = 50%-200% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
GC/MS SEMI VOA INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Sample No.: CCVIS 140-32296/2 Date Analyzed: 08/01/2019 18:13
 Instrument ID: MP GC Column: Rxi-5SilMS 25 ID: 0.25 (mm)
 Lab File ID (Standard): CCVIS.D Heated Purge: (Y/N) N
 Calibration ID: 2060

| | CRY | | PRY | | AREA # | RT # |
|--------------------|-------------------------------|--------|--------|--------|--------|------|
| | AREA # | RT # | AREA # | RT # | | |
| 12/24 HOUR STD | 159044 | 10.15 | 148447 | 11.74 | | |
| UPPER LIMIT | 318088 | 10.65 | 296894 | 12.24 | | |
| LOWER LIMIT | 79522 | 9.65 | 74224 | 11.24 | | |
| LAB SAMPLE ID | CLIENT SAMPLE ID | | | | | |
| MB 140-32029/1-A | | 216281 | 10.15 | 217337 | 11.75 | |
| LCS 140-32029/2-A | | 200595 | 10.15 | 204303 | 11.74 | |
| LCSD 140-32029/3-A | | 197719 | 10.15 | 199562 | 11.75 | |
| 580-87761-28 | 22T-VB-01-RB-BRL_2019 0718 | 201531 | 10.15 | 204529 | 11.75 | |
| 580-87761-29 | 22T-SG-01-RB-CR_20190 718 | 210015 | 10.15 | 200085 | 11.75 | |

CRY = Chrysene-d12
 PRY = Perylene-d12

Area Limit = 50%-200% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: 22T-VB-01-RB-BRL_20190718 Lab Sample ID: 580-87761-28
 Matrix: Water Lab File ID: 580-87761-D-28-A.D
 Analysis Method: 8270D SIM Date Collected: 07/18/2019 07:30
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 1049.2 (mL) Date Analyzed: 08/01/2019 22:01
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------------|--------|---|-----|-----|
| 83-32-9 | Acenaphthene | 22 | | 9.5 | 3.8 |
| 208-96-8 | Acenaphthylene | 1.3 | J | 9.5 | 1.1 |
| 120-12-7 | Anthracene | ND | | 9.5 | 6.5 |
| 56-55-3 | Benzo[a]anthracene | ND | | 9.5 | 2.2 |
| 50-32-8 | Benzo[a]pyrene | ND | | 9.5 | 1.8 |
| 205-99-2 | Benzo[b]fluoranthene | ND | | 9.5 | 4.2 |
| 192-97-2 | Benzo[e]pyrene | ND | | 9.5 | 2.0 |
| 191-24-2 | Benzo[g,h,i]perylene | ND | | 9.5 | 2.8 |
| 207-08-9 | Benzo[k]fluoranthene | ND | | 9.5 | 1.8 |
| STL00905 | C1-Chrysenes | ND | | 9.5 | 2.9 |
| STL00906 | C2-Chrysenes | ND | | 9.5 | 4.6 |
| STL00907 | C3-Chrysenes | ND | | 9.5 | 3.9 |
| STL00908 | C4-Chrysenes | ND | | 9.5 | 3.7 |
| STL00909 | C1-Dibenzothiophenes | ND | | 9.5 | 3.1 |
| STL00910 | C2-Dibenzothiophenes | ND | | 9.5 | 6.6 |
| STL00911 | C3-Dibenzothiophenes | ND | | 19 | 12 |
| STL00967 | C4-Dibenzothiophenes | ND | | 19 | 10 |
| STL00912 | C1-Fluoranthenes/pyrene | ND | | 9.5 | 5.1 |
| STL00968 | C2-Fluoranthenes/Pyrene | ND | | 9.5 | 7.1 |
| STL00969 | C3-Fluoranthenes/Pyrene | ND | | 9.5 | 7.7 |
| STL01791 | C4-Fluoranthenes/Pyrene | ND | | 9.5 | 6.0 |
| STL00913 | C1-Fluorenes | ND | | 19 | 8.6 |
| STL00914 | C2-Fluorenes | ND | | 9.5 | 8.0 |
| STL00915 | C3-Fluorenes | ND | | 9.5 | 7.5 |
| 218-01-9 | Chrysene | ND | | 9.5 | 2.3 |
| STL00916 | C1-Naphthalenes | ND | | 9.5 | 5.3 |
| STL00917 | C2-Naphthalenes | ND | | 9.5 | 4.8 |
| STL00918 | C3-Naphthalenes | ND | | 9.5 | 6.1 |
| STL00919 | C4-Naphthalenes | ND | | 38 | 19 |
| STL00901 | C1-Phenanthrenes/Anthracenes | ND | | 19 | 9.5 |
| STL00902 | C2-Phenanthrenes/Anthracenes | ND | | 19 | 11 |
| STL00903 | C3-Phenanthrenes/Anthracenes | ND | | 19 | 15 |
| STL00904 | C4-Phenanthrenes/Anthracenes | ND | | 19 | 17 |
| 53-70-3 | Dibenz(a,h)anthracene | ND | | 9.5 | 3.4 |

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: 22T-VB-01-RB-BRL_20190718 Lab Sample ID: 580-87761-28
 Matrix: Water Lab File ID: 580-87761-D-28-A.D
 Analysis Method: 8270D SIM Date Collected: 07/18/2019 07:30
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 1049.2 (mL) Date Analyzed: 08/01/2019 22:01
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------|--------|---|-----|-----|
| 132-65-0 | Dibenzothiophene | ND | | 9.5 | 6.2 |
| 206-44-0 | Fluoranthene | ND | | 19 | 11 |
| 86-73-7 | Fluorene | 5.0 | J | 9.5 | 3.9 |
| 193-39-5 | Indeno[1,2,3-cd]pyrene | ND | | 9.5 | 3.8 |
| 90-12-0 | 1-Methylnaphthalene | ND | | 9.5 | 3.4 |
| 91-57-6 | 2-Methylnaphthalene | ND | | 19 | 5.4 |
| 91-20-3 | Naphthalene | 14 | J | 48 | 9.7 |
| 198-55-0 | Perylene | ND | | 19 | 11 |
| 85-01-8 | Phenanthrene | ND | | 38 | 19 |
| 129-00-0 | Pyrene | ND | | 9.5 | 7.0 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|-----------|-------------------------|------|---|--------|
| 321-60-8 | 2-Fluorobiphenyl (Surr) | 83 | | 48-145 |
| 4165-60-0 | Nitrobenzene-d5 | 110 | | 20-116 |
| 1718-51-0 | Terphenyl-d14 | 97 | | 55-150 |

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D
 Lims ID: 580-87761-D-28-A
 Client ID: 22T-VB-01-RB-BRL_20190717
 Sample Type: Client
 Inject. Date: 01-Aug-2019 22:01:30 ALS Bottle#: 11 Worklist Smp#: 11
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-011
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym Date: 02-Aug-2019 08:30:02

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | OnCol Amt ug/ml | Flags |
|------------------------------|-----|-----------|---------------|---------------|-----|----------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.311 | 0.005 | 94 | 154710 | 1.10 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 240470 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.902 | 0.007 | 92 | 15962 | 0.0302 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 88 | 354028 | 0.8320 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.221 | 0.004 | 31 | 1244 | 0.002747 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 98 | 131587 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.368 | 6.368 | 0.000 | 58 | 16091 | 0.0460 | |
| 16 Fluorene | 166 | 6.800 | 6.800 | 0.000 | 86 | 4081 | 0.0105 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 69 | 2436 | 0.004529 | 7a |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 225324 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 89 | 12652 | 0.0218 | |
| 20 Anthracene | 178 | 7.654 | 7.654 | 0.000 | 57 | 1627 | 0.003361 | 7a |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 318930 | 0.9676 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 88 | 201531 | 0.5000 | |
| 29 Benzo[b]fluoranthene | 252 | 11.294 | 11.286 | 0.008 | 100 | 2096 | 0.003753 | 7a |
| 30 Benzo[k]fluoranthene | 252 | 11.324 | 11.316 | 0.008 | 100 | 1235 | 0.001950 | 7a |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 741 | 0.001542 | 7a |
| * 33 Perylene-d12 | 264 | 11.752 | 11.744 | 0.008 | 100 | 204529 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 0 | 548 | 0.001010 | 7a |
| A 41 C4-Naphthalenes | 184 | 6.948 | (6.492-7.423) | | 0 | 12546 | 0.0237 | |

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

a - User Assigned ID

Reagents:

60x8270simis_00003

Amount Added: 0.01

Units: mL

Run Reagent

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D

Injection Date: 01-Aug-2019 22:01:30

Instrument ID: MP

Operator ID: 11211

Lims ID: 580-87761-D-28-A

Lab Sample ID: 140-87761-28

Worklist Smp#: 11

Client ID: 22T-VB-01-RB-BRL_20190717

Injection Vol: 1.0 ul

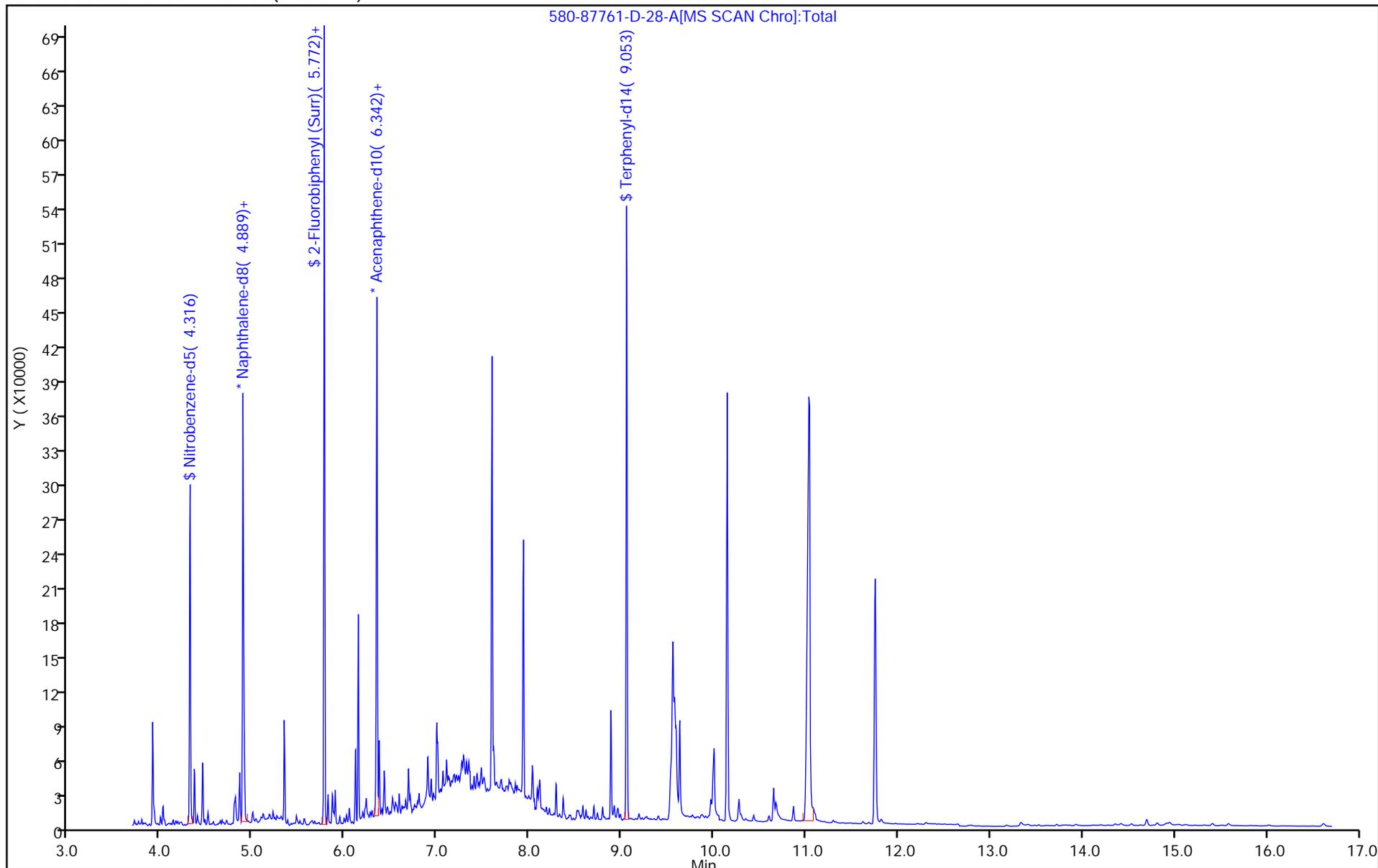
Dil. Factor: 1.0000

ALS Bottle#: 11

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Recovery Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D
 Lims ID: 580-87761-D-28-A
 Client ID: 22T-VB-01-RB-BRL_20190717
 Sample Type: Client
 Inject. Date: 01-Aug-2019 22:01:30 ALS Bottle#: 11 Worklist Smp#: 11
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-011
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym Date: 02-Aug-2019 08:30:02

| Compound | Amount Added | Amount Recovered | % Rec. |
|------------------------------|--------------|------------------|--------|
| \$ 1 Nitrobenzene-d5 | 1.00 | 1.10 | 110.20 |
| \$ 8 2-Fluorobiphenyl (Surr) | 1.00 | 0.8320 | 83.20 |
| \$ 24 Terphenyl-d14 | 1.00 | 0.9676 | 96.76 |

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D

Injection Date: 01-Aug-2019 22:01:30

Instrument ID: MP

Lims ID: 580-87761-D-28-A

Lab Sample ID: 140-87761-28

Client ID: 22T-VB-01-RB-BRL_20190717

Operator ID: 11211

ALS Bottle#: 11

Worklist Smp#: 11

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

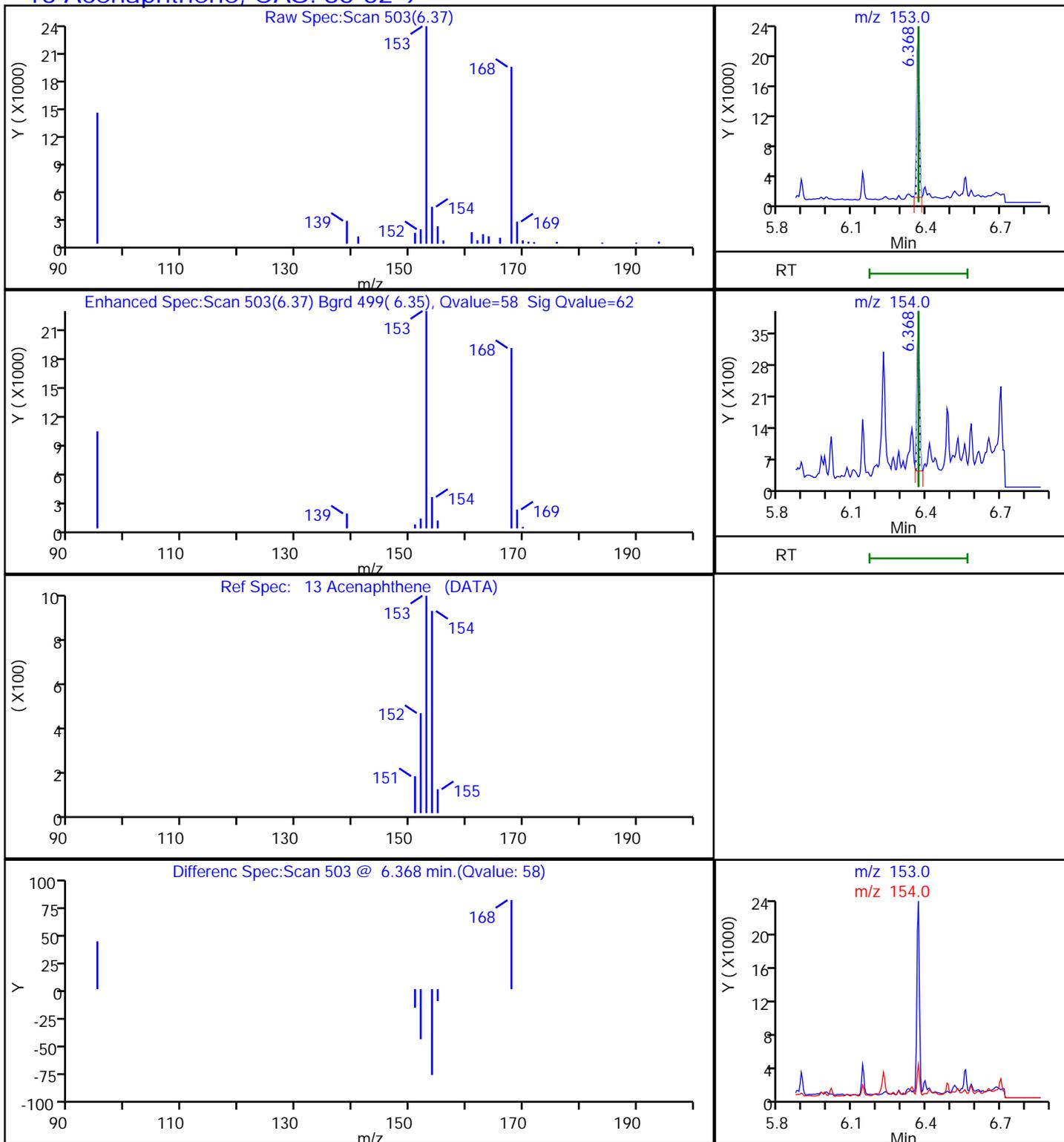
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

13 Acenaphthene, CAS: 83-32-9



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D

Injection Date: 01-Aug-2019 22:01:30

Instrument ID: MP

Lims ID: 580-87761-D-28-A

Lab Sample ID: 140-87761-28

Client ID: 22T-VB-01-RB-BRL_20190717

Operator ID: 11211

ALS Bottle#: 11

Worklist Smp#: 11

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

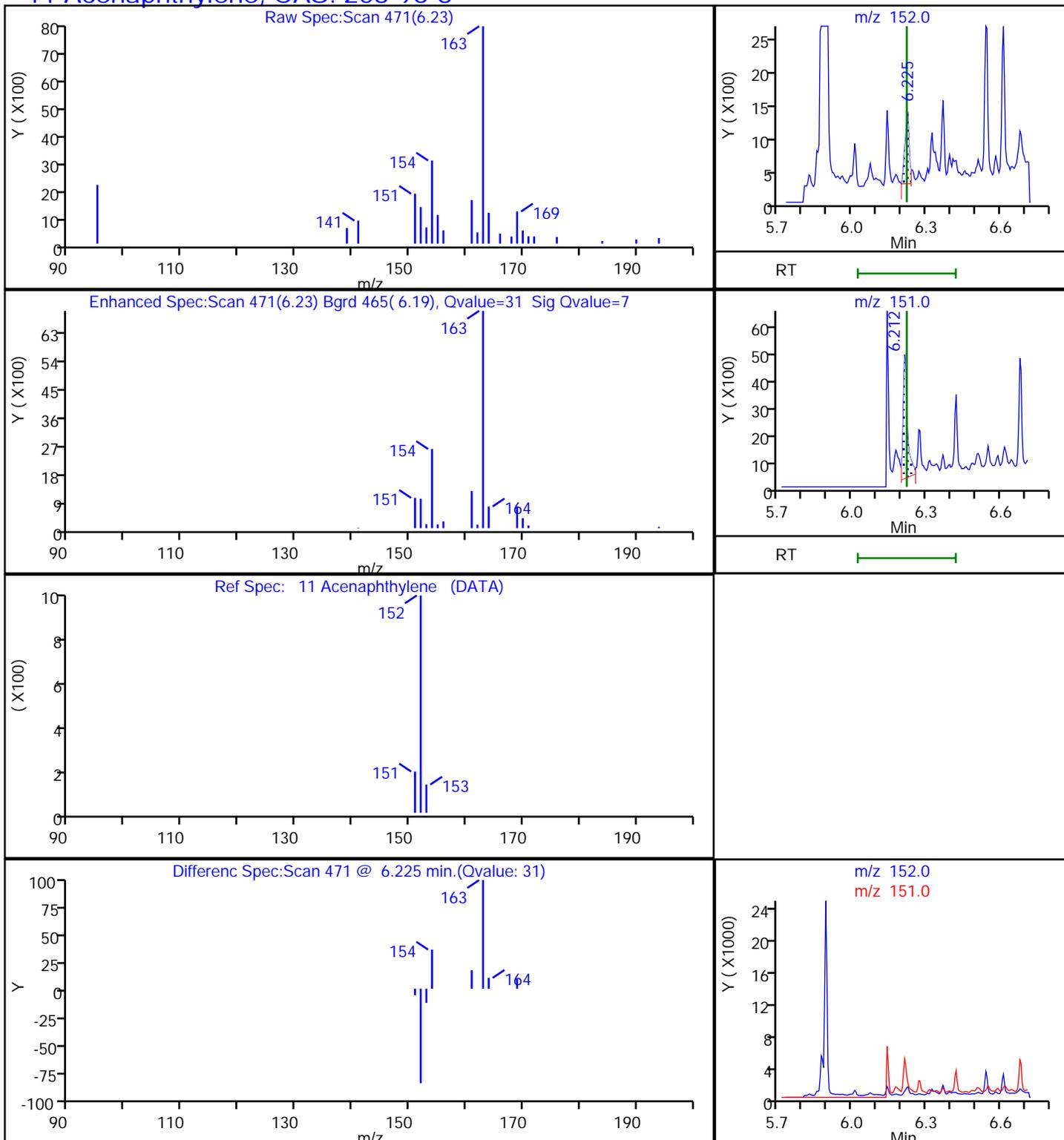
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

11 Acenaphthylene, CAS: 208-96-8



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D

Injection Date: 01-Aug-2019 22:01:30

Instrument ID: MP

Lims ID: 580-87761-D-28-A

Lab Sample ID: 140-87761-28

Client ID: 22T-VB-01-RB-BRL_20190717

Operator ID: 11211

ALS Bottle#: 11

Worklist Smp#: 11

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

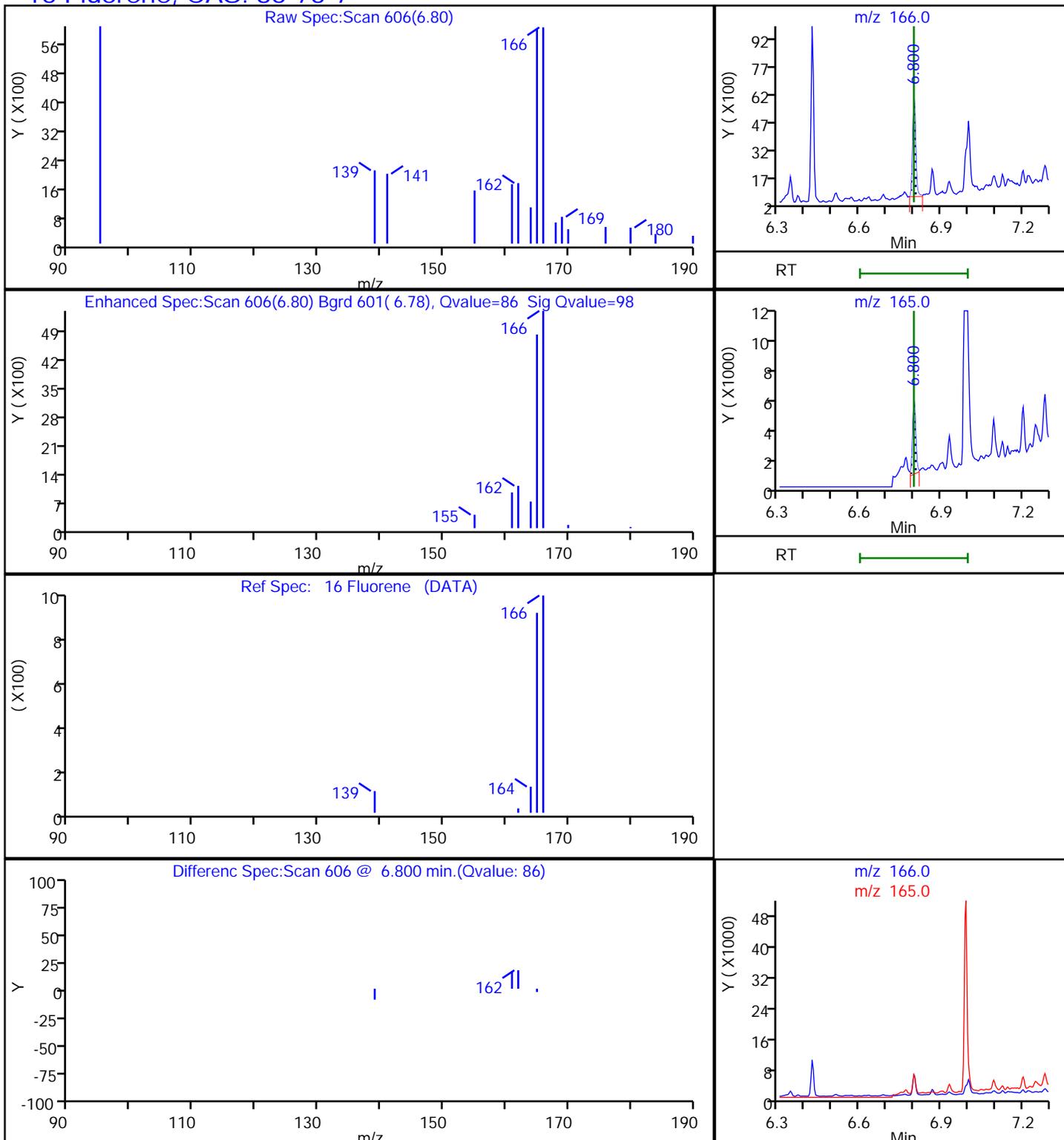
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

16 Fluorene, CAS: 86-73-7



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D

Injection Date: 01-Aug-2019 22:01:30

Instrument ID: MP

Lims ID: 580-87761-D-28-A

Lab Sample ID: 140-87761-28

Client ID: 22T-VB-01-RB-BRL_20190717

Operator ID: 11211

ALS Bottle#: 11

Worklist Smp#: 11

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

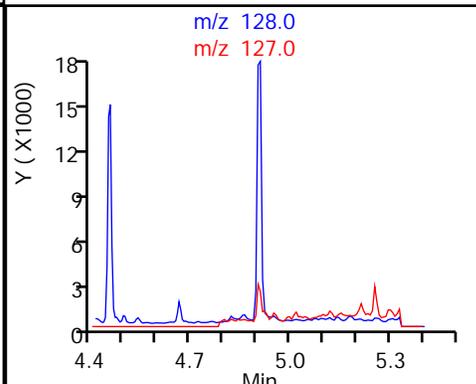
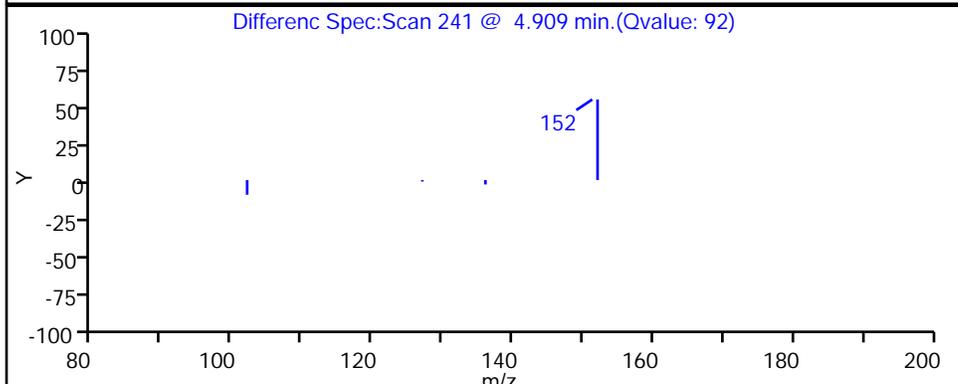
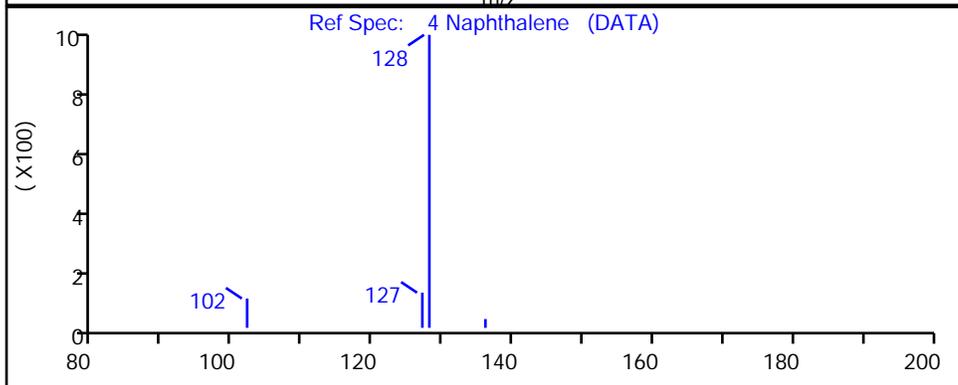
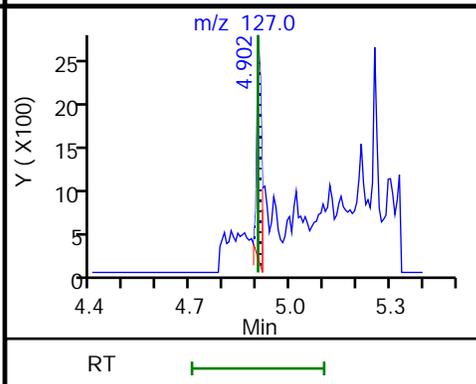
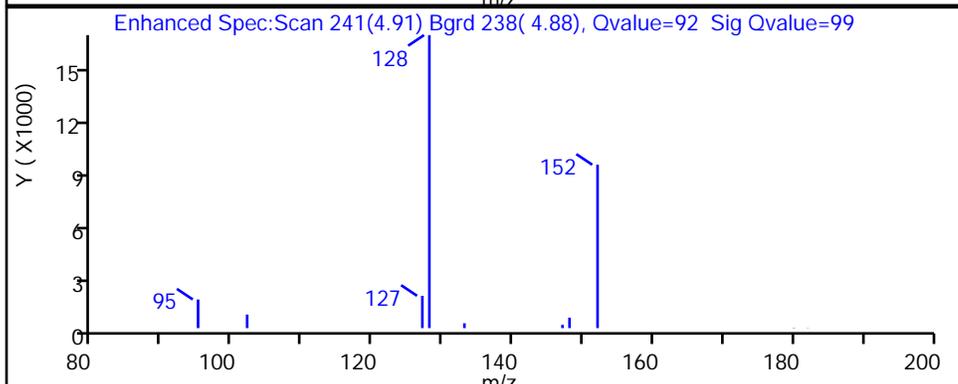
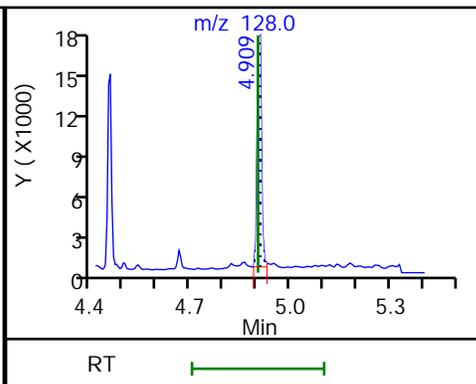
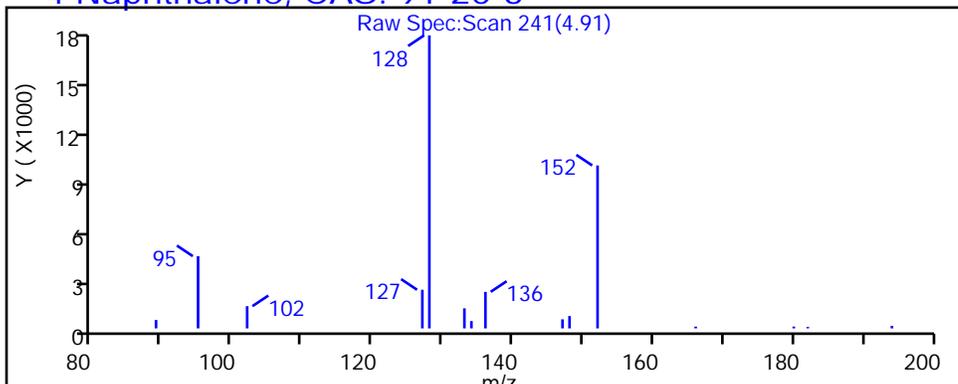
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

4 Naphthalene, CAS: 91-20-3



Euofins TestAmerica, Knoxville

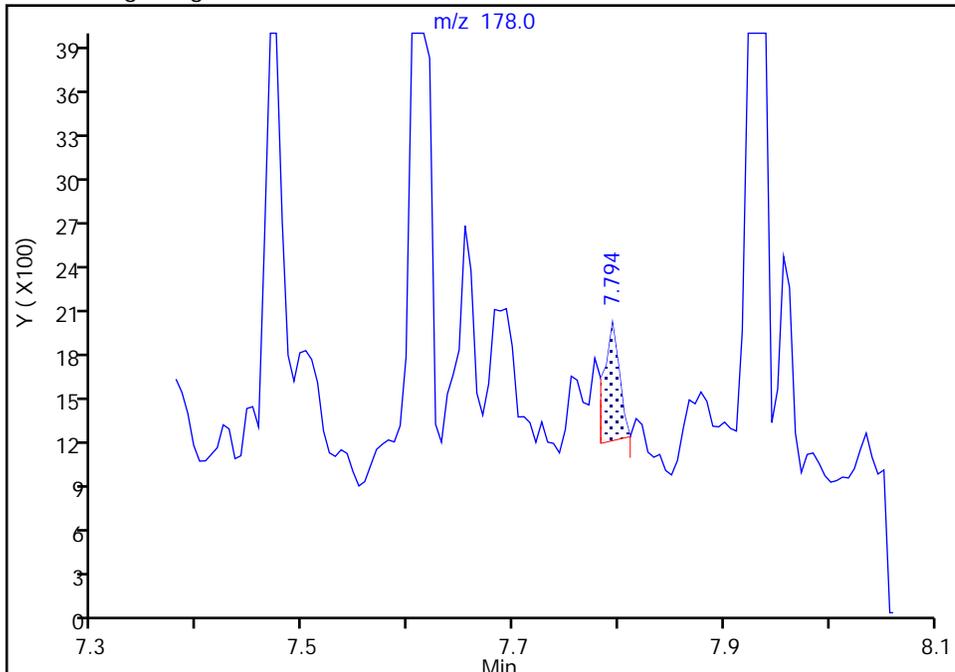
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D
Injection Date: 01-Aug-2019 22:01:30 Instrument ID: MP
Lims ID: 580-87761-D-28-A Lab Sample ID: 140-87761-28
Client ID: 22T-VB-01-RB-BRL_20190717
Operator ID: 11211 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

20 Anthracene, CAS: 120-12-7

Signal: 1

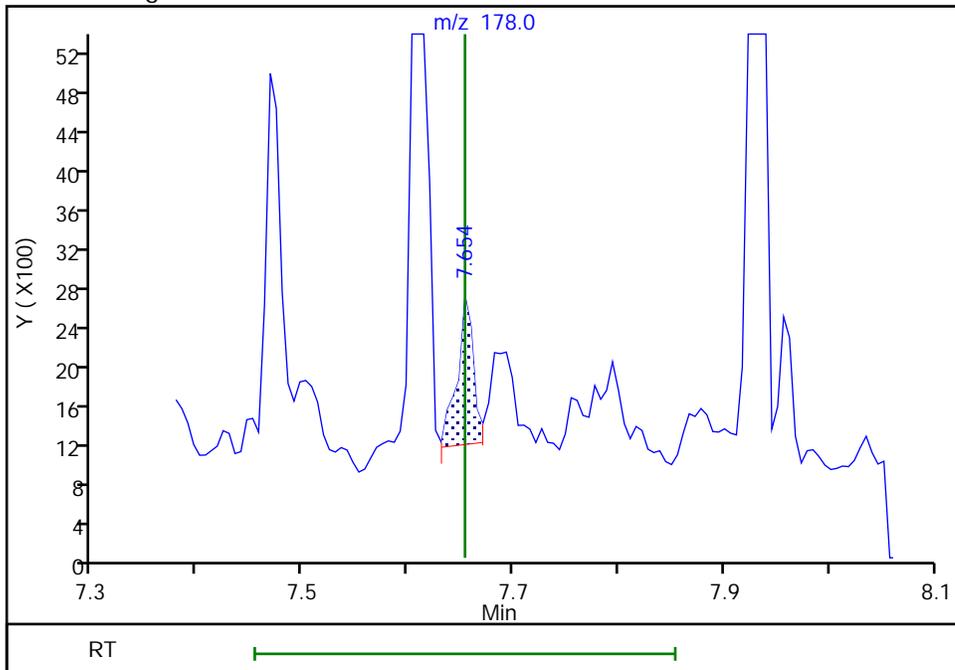
RT: 7.79
Area: 829
Amount: 0.001713
Amount Units: ug/ml

Processing Integration Results



RT: 7.65
Area: 1627
Amount: 0.003361
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:22:16
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Euofins TestAmerica, Knoxville

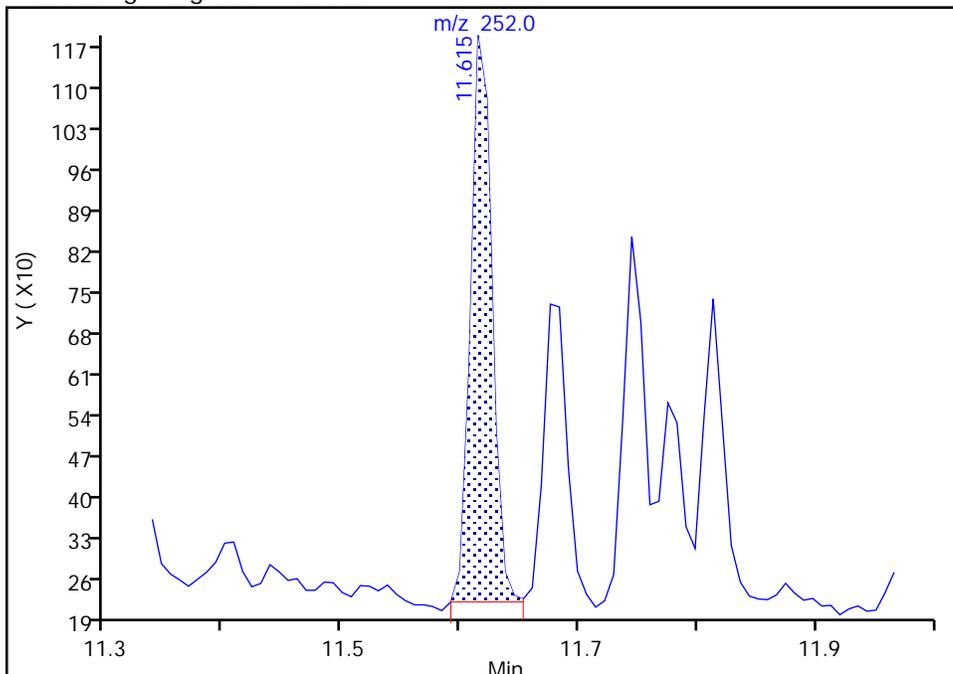
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D
Injection Date: 01-Aug-2019 22:01:30 Instrument ID: MP
Lims ID: 580-87761-D-28-A Lab Sample ID: 140-87761-28
Client ID: 22T-VB-01-RB-BRL_20190717
Operator ID: 11211 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

32 Benzo[a]pyrene, CAS: 50-32-8

Signal: 1

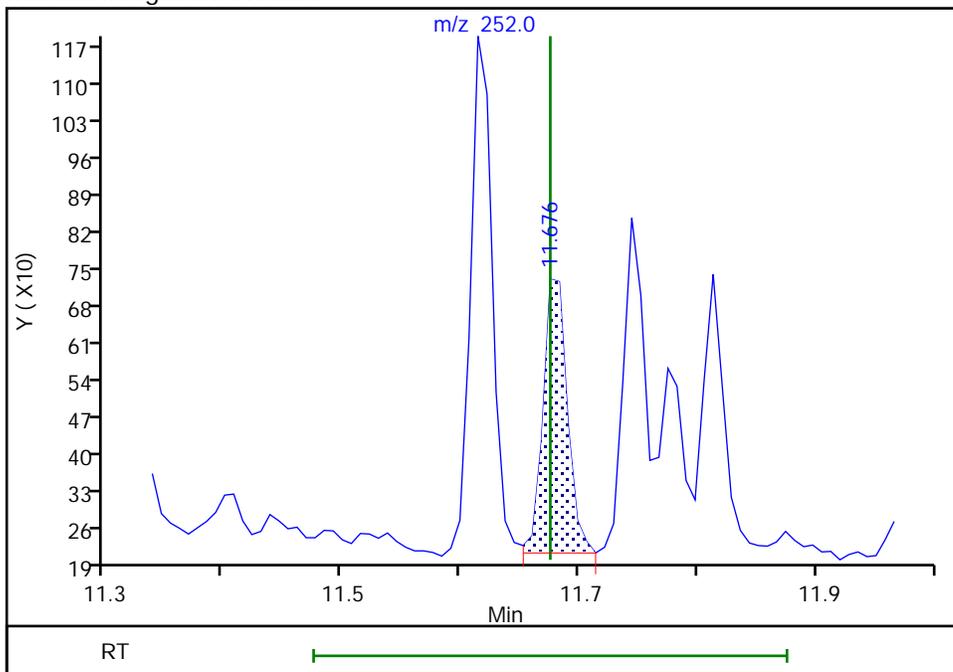
RT: 11.61
Area: 1218
Amount: 0.002535
Amount Units: ug/ml

Processing Integration Results



RT: 11.68
Area: 741
Amount: 0.001542
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:22:44
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville

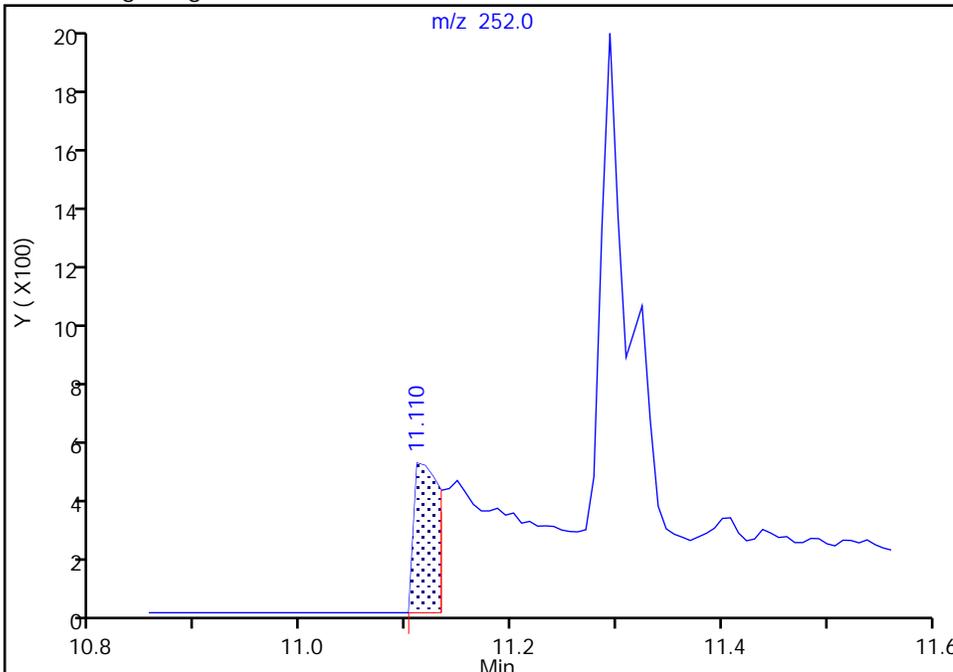
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D
Injection Date: 01-Aug-2019 22:01:30 Instrument ID: MP
Lims ID: 580-87761-D-28-A Lab Sample ID: 140-87761-28
Client ID: 22T-VB-01-RB-BRL_20190717
Operator ID: 11211 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

29 Benzo[b]fluoranthene, CAS: 205-99-2

Signal: 1

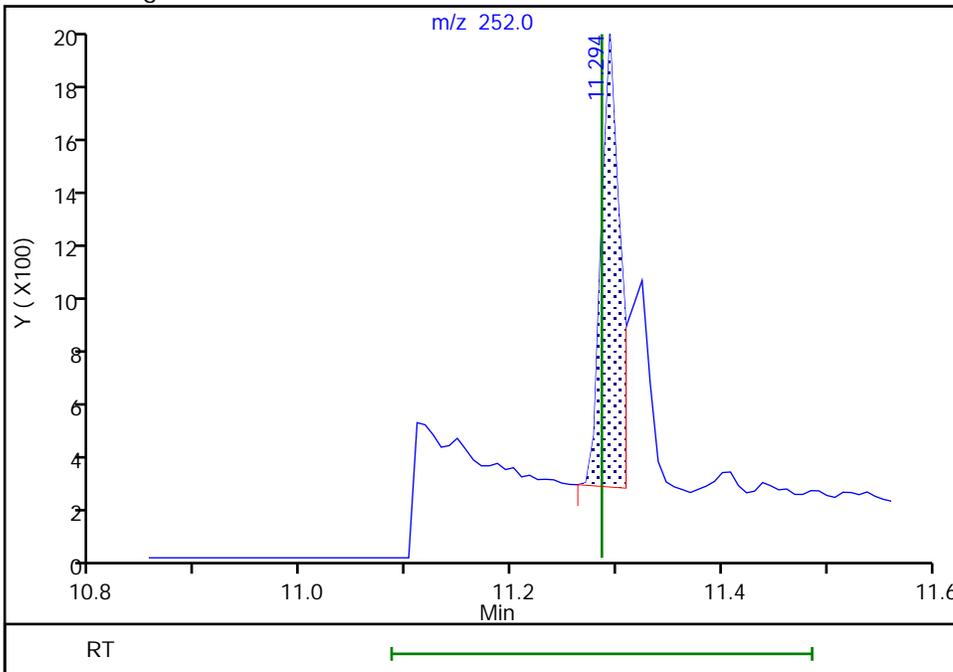
RT: 11.11
Area: 863
Amount: 0.001545
Amount Units: ug/ml

Processing Integration Results



RT: 11.29
Area: 2096
Amount: 0.003753
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:22:31
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville

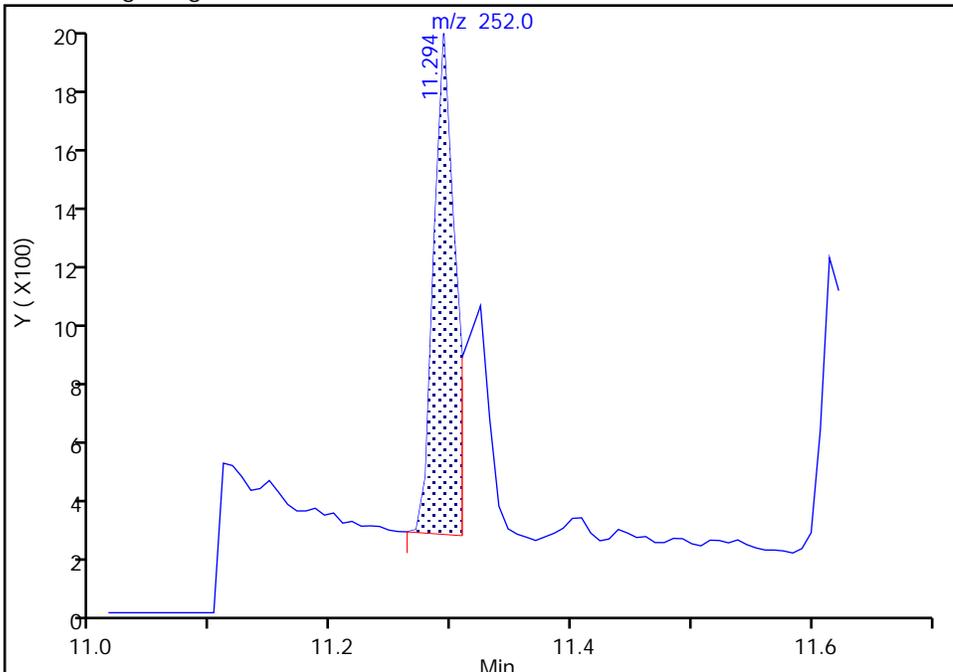
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D
Injection Date: 01-Aug-2019 22:01:30 Instrument ID: MP
Lims ID: 580-87761-D-28-A Lab Sample ID: 140-87761-28
Client ID: 22T-VB-01-RB-BRL_20190717
Operator ID: 11211 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

30 Benzo[k]fluoranthene, CAS: 207-08-9

Signal: 1

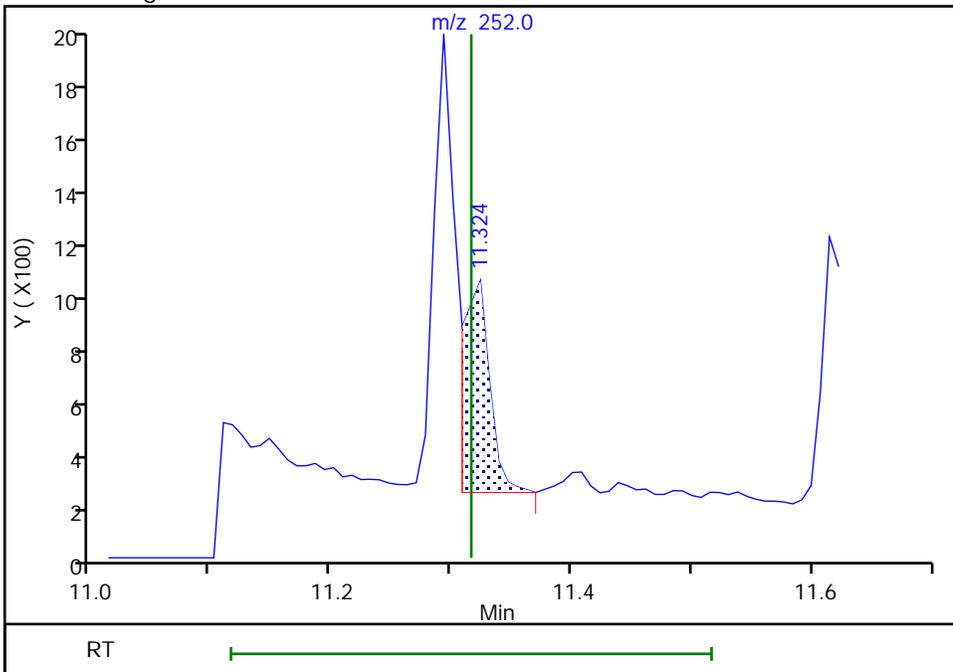
RT: 11.29
Area: 2096
Amount: 0.003309
Amount Units: ug/ml

Processing Integration Results



RT: 11.32
Area: 1235
Amount: 0.001950
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:22:37
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville

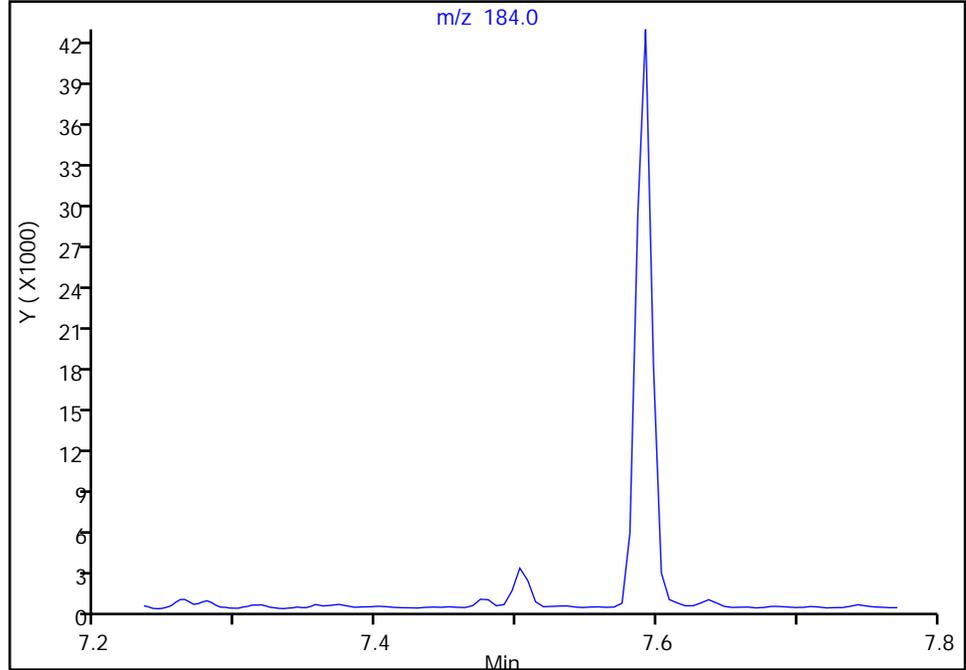
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-28-A.D
Injection Date: 01-Aug-2019 22:01:30 Instrument ID: MP
Lims ID: 580-87761-D-28-A Lab Sample ID: 140-87761-28
Client ID: 22T-VB-01-RB-BRL_20190717
Operator ID: 11211 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

17 Dibenzothiophene, CAS: 132-65-0

Signal: 1

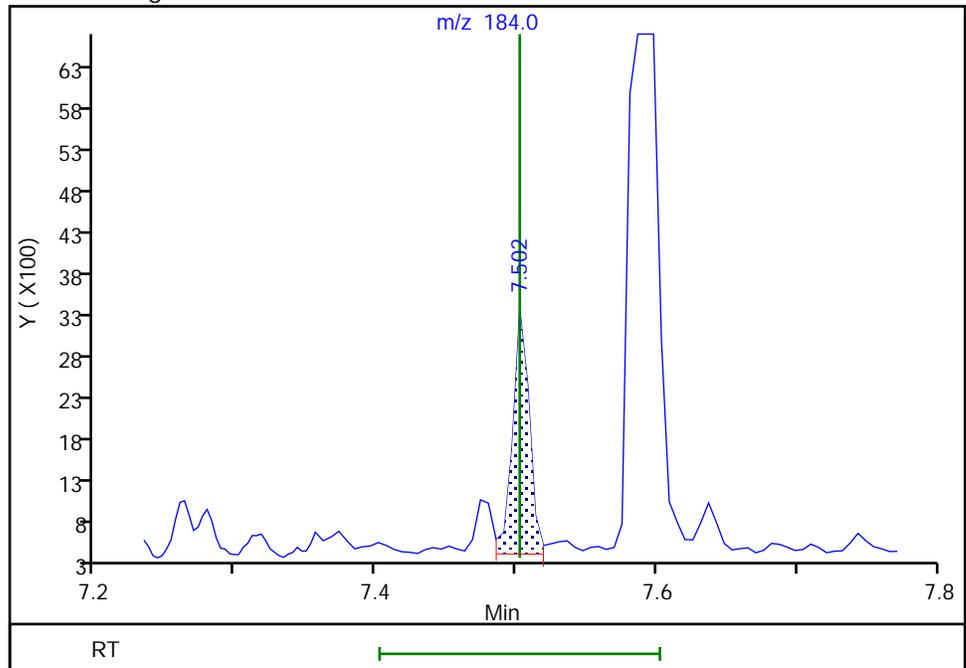
Not Detected
Expected RT: 7.50

Processing Integration Results



Manual Integration Results

RT: 7.50
Area: 2436
Amount: 0.004529
Amount Units: ug/ml



Eurofins TestAmerica, Knoxville

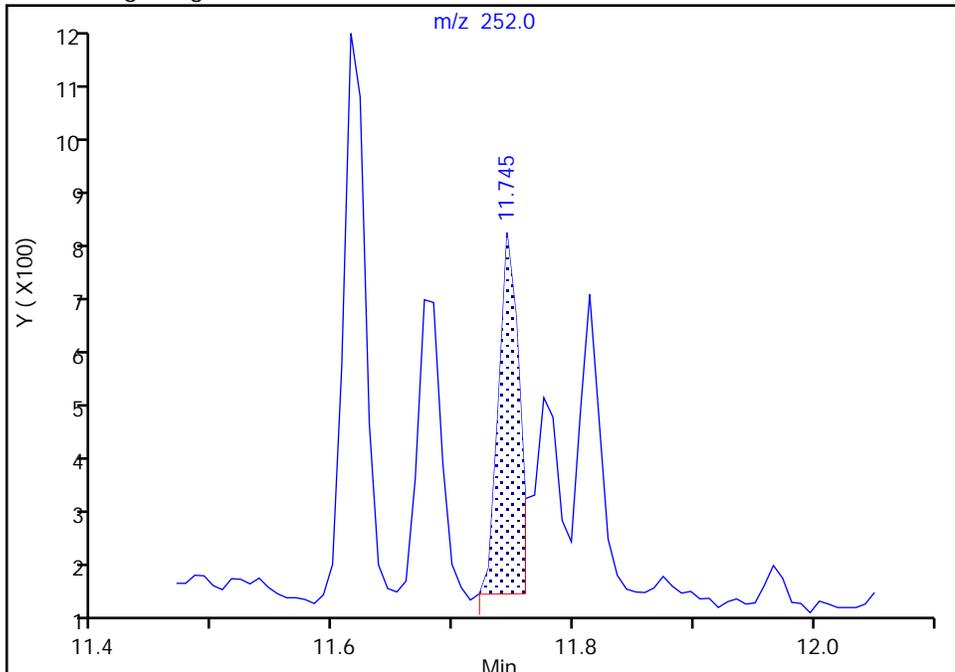
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Injection Date: 01-Aug-2019 22:01:30 Instrument ID: MP
Lims ID: 580-87761-D-28-A Lab Sample ID: 140-87761-28
Client ID: 22T-VB-01-RB-BRL_20190717
Operator ID: 11211 ALS Bottle#: 11 Worklist Smp#: 11
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

34 Perylene, CAS: 198-55-0

Signal: 1

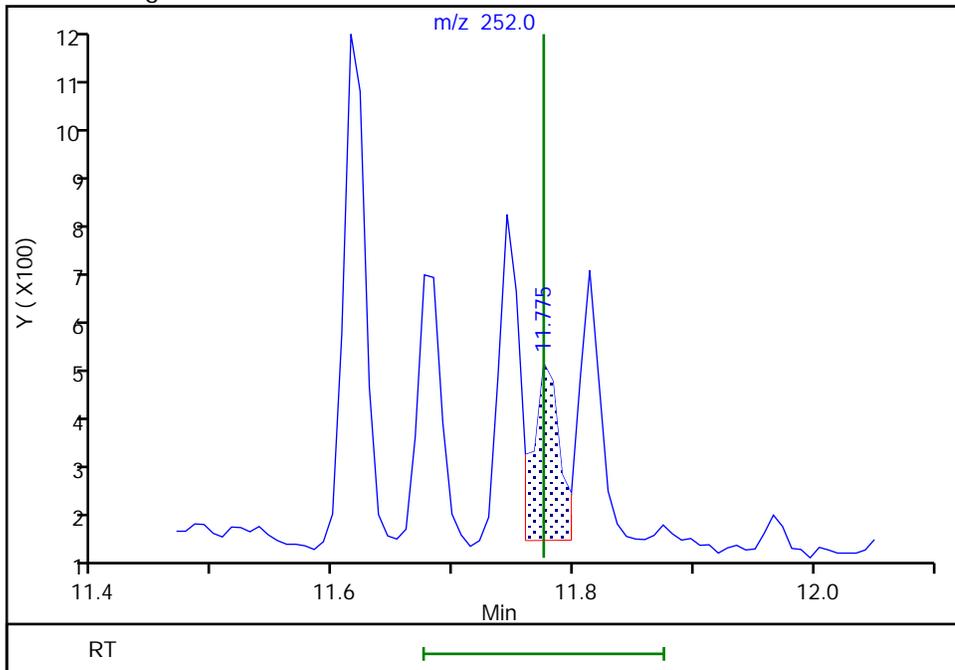
RT: 11.74
Area: 748
Amount: 0.001379
Amount Units: ug/ml

Processing Integration Results



RT: 11.78
Area: 548
Amount: 0.001010
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:22:51
Audit Action: Assigned Compound ID

Audit Reason: Other

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: 22T-SG-01-RB-CR_20190718 Lab Sample ID: 580-87761-29
 Matrix: Water Lab File ID: 580-87761-D-29-A.D
 Analysis Method: 8270D SIM Date Collected: 07/18/2019 12:00
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 877.5 (mL) Date Analyzed: 08/01/2019 22:26
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------------|--------|---|----|-----|
| 83-32-9 | Acenaphthene | 19 | | 11 | 4.5 |
| 208-96-8 | Acenaphthylene | 1.5 | J | 11 | 1.3 |
| 120-12-7 | Anthracene | ND | | 11 | 7.8 |
| 56-55-3 | Benzo[a]anthracene | ND | | 11 | 2.7 |
| 50-32-8 | Benzo[a]pyrene | ND | | 11 | 2.2 |
| 205-99-2 | Benzo[b]fluoranthene | ND | | 11 | 5.0 |
| 192-97-2 | Benzo[e]pyrene | ND | | 11 | 2.4 |
| 191-24-2 | Benzo[g,h,i]perylene | ND | | 11 | 3.3 |
| 207-08-9 | Benzo[k]fluoranthene | ND | | 11 | 2.1 |
| STL00905 | C1-Chrysenes | ND | | 11 | 3.5 |
| STL00906 | C2-Chrysenes | ND | | 11 | 5.5 |
| STL00907 | C3-Chrysenes | ND | | 11 | 4.7 |
| STL00908 | C4-Chrysenes | ND | | 11 | 4.4 |
| STL00909 | C1-Dibenzothiophenes | ND | | 11 | 3.7 |
| STL00910 | C2-Dibenzothiophenes | ND | | 11 | 7.8 |
| STL00911 | C3-Dibenzothiophenes | ND | | 23 | 15 |
| STL00967 | C4-Dibenzothiophenes | ND | | 23 | 12 |
| STL00912 | C1-Fluoranthenes/pyrene | ND | | 11 | 6.0 |
| STL00968 | C2-Fluoranthenes/Pyrene | ND | | 11 | 8.4 |
| STL00969 | C3-Fluoranthenes/Pyrene | ND | | 11 | 9.3 |
| STL01791 | C4-Fluoranthenes/Pyrene | ND | | 11 | 7.2 |
| STL00913 | C1-Fluorenes | ND | | 23 | 10 |
| STL00914 | C2-Fluorenes | ND | | 11 | 9.5 |
| STL00915 | C3-Fluorenes | ND | | 11 | 9.0 |
| 218-01-9 | Chrysene | ND | | 11 | 2.7 |
| STL00916 | C1-Naphthalenes | 7.8 | J | 11 | 6.4 |
| STL00917 | C2-Naphthalenes | 6.8 | J | 11 | 5.7 |
| STL00918 | C3-Naphthalenes | 10 | J | 11 | 7.3 |
| STL00919 | C4-Naphthalenes | ND | | 46 | 23 |
| STL00901 | C1-Phenanthrenes/Anthracenes | ND | | 23 | 11 |
| STL00902 | C2-Phenanthrenes/Anthracenes | ND | | 23 | 13 |
| STL00903 | C3-Phenanthrenes/Anthracenes | ND | | 23 | 18 |
| STL00904 | C4-Phenanthrenes/Anthracenes | ND | | 23 | 20 |
| 53-70-3 | Dibenz(a,h)anthracene | ND | | 11 | 4.1 |

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: 22T-SG-01-RB-CR_20190718 Lab Sample ID: 580-87761-29
 Matrix: Water Lab File ID: 580-87761-D-29-A.D
 Analysis Method: 8270D SIM Date Collected: 07/18/2019 12:00
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 877.5 (mL) Date Analyzed: 08/01/2019 22:26
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------|--------|---|----|-----|
| 132-65-0 | Dibenzothiophene | ND | | 11 | 7.4 |
| 206-44-0 | Fluoranthene | ND | | 23 | 13 |
| 86-73-7 | Fluorene | 7.9 | J | 11 | 4.7 |
| 193-39-5 | Indeno[1,2,3-cd]pyrene | ND | | 11 | 4.5 |
| 90-12-0 | 1-Methylnaphthalene | 4.7 | J | 11 | 4.1 |
| 91-57-6 | 2-Methylnaphthalene | 7.5 | J | 23 | 6.5 |
| 91-20-3 | Naphthalene | 19 | J | 57 | 12 |
| 198-55-0 | Perylene | ND | | 23 | 13 |
| 85-01-8 | Phenanthrene | ND | | 46 | 23 |
| 129-00-0 | Pyrene | ND | | 11 | 8.4 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|-----------|-------------------------|------|---|--------|
| 321-60-8 | 2-Fluorobiphenyl (Surr) | 81 | | 48-145 |
| 4165-60-0 | Nitrobenzene-d5 | 109 | | 20-116 |
| 1718-51-0 | Terphenyl-d14 | 94 | | 55-150 |

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D
 Lims ID: 580-87761-D-29-A
 Client ID: 22T-SG-01-RB-CR_20190718
 Sample Type: Client
 Inject. Date: 01-Aug-2019 22:26:30 ALS Bottle#: 12 Worklist Smp#: 12
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-012
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym

Date: 02-Aug-2019 09:06:59

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | OnCol Amt ug/ml | Flags |
|------------------------------|-----|-----------|---------------|---------------|-----|----------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.311 | 4.311 | 0.000 | 100 | 157499 | 1.09 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 248328 | 0.5000 | |
| 4 Naphthalene | 128 | 4.902 | 4.902 | 0.000 | 39 | 18242 | 0.0334 | |
| 6 2-Methylnaphthalene | 142 | 5.470 | 5.469 | 0.001 | 98 | 4685 | 0.0131 | M |
| 7 1-Methylnaphthalene | 142 | 5.551 | 5.551 | 0.000 | 99 | 2841 | 0.008326 | M |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 354751 | 0.8086 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.221 | 0.004 | 26 | 1252 | 0.002681 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 98 | 135681 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.369 | 6.368 | 0.001 | 67 | 11854 | 0.0328 | |
| 16 Fluorene | 166 | 6.800 | 6.800 | 0.000 | 98 | 5563 | 0.0139 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 69 | 3006 | 0.005548 | 7a |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 226997 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 96 | 17450 | 0.0298 | |
| 23 Pyrene | 202 | 8.917 | 8.916 | 0.001 | 100 | 7068 | 0.0111 | 7M |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 322696 | 0.9395 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 95 | 210015 | 0.5000 | |
| * 33 Perylene-d12 | 264 | 11.745 | 11.744 | 0.001 | 100 | 200085 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 63 | 259 | 0.000488 | 7a |
| 36 Dibenz(a,h)anthracene | 278 | 13.178 | 13.178 | 0.000 | 56 | 232 | 0.000473 | 7a |
| A 38 C1-Naphthalenes | 142 | 5.520 | (5.454-5.583) | | 0 | 7449 | 0.0136 | |
| A 39 C2-Naphthalenes | 156 | 6.076 | (5.923-6.247) | | 0 | 6494 | 0.0119 | |
| A 40 C3-Naphthalenes | 170 | 6.454 | (6.323-6.820) | | 0 | 9808 | 0.0179 | |
| A 41 C4-Naphthalenes | 184 | 6.939 | (6.492-7.423) | | 0 | 15592 | 0.0285 | |

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

M - Manually Integrated

a - User Assigned ID

Reagents:

60xx8270simis_00003

Amount Added: 0.01

Units: mL

Run Reagent

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Operator ID: 11211

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Worklist Smp#: 12

Client ID: 22T-SG-01-RB-CR_20190718

Injection Vol: 1.0 ul

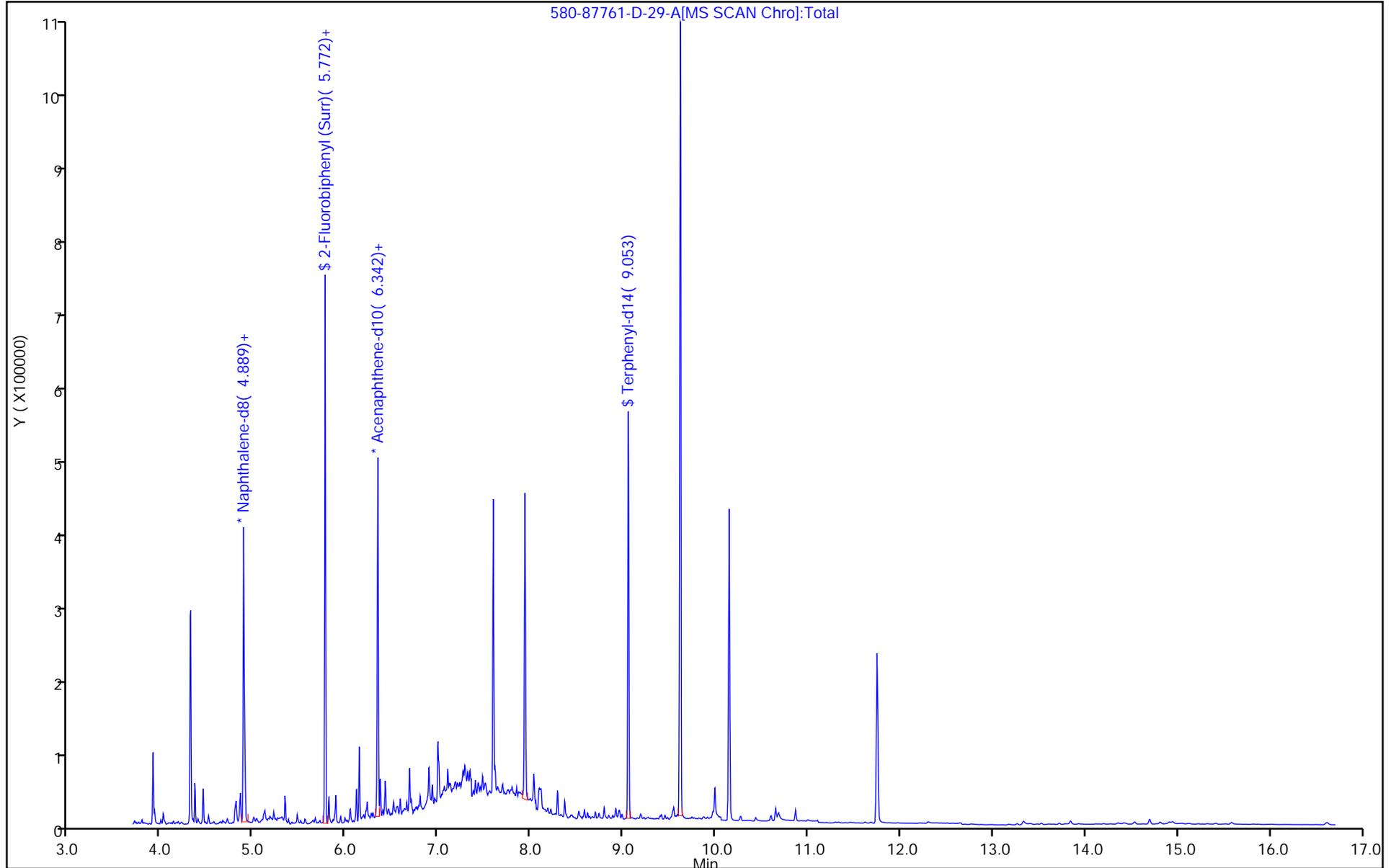
Dil. Factor: 1.0000

ALS Bottle#: 12

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Recovery Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D
 Lims ID: 580-87761-D-29-A
 Client ID: 22T-SG-01-RB-CR_20190718
 Sample Type: Client
 Inject. Date: 01-Aug-2019 22:26:30 ALS Bottle#: 12 Worklist Smp#: 12
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-012
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym

Date: 02-Aug-2019 09:06:59

| Compound | Amount Added | Amount Recovered | % Rec. |
|------------------------------|--------------|------------------|--------|
| \$ 1 Nitrobenzene-d5 | 1.00 | 1.09 | 108.64 |
| \$ 8 2-Fluorobiphenyl (Surr) | 1.00 | 0.8086 | 80.86 |
| \$ 24 Terphenyl-d14 | 1.00 | 0.9395 | 93.95 |

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

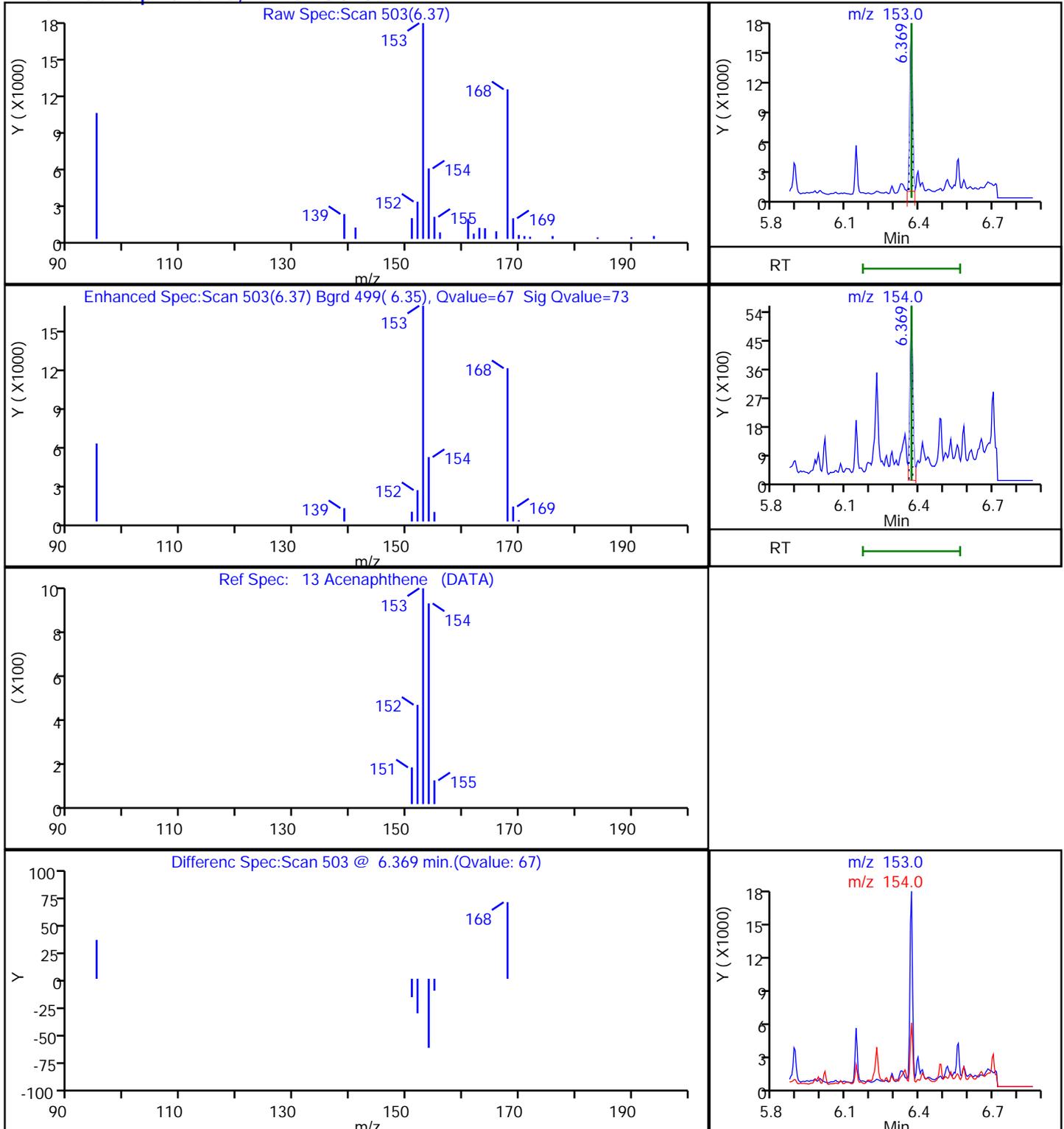
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

13 Acenaphthene, CAS: 83-32-9



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

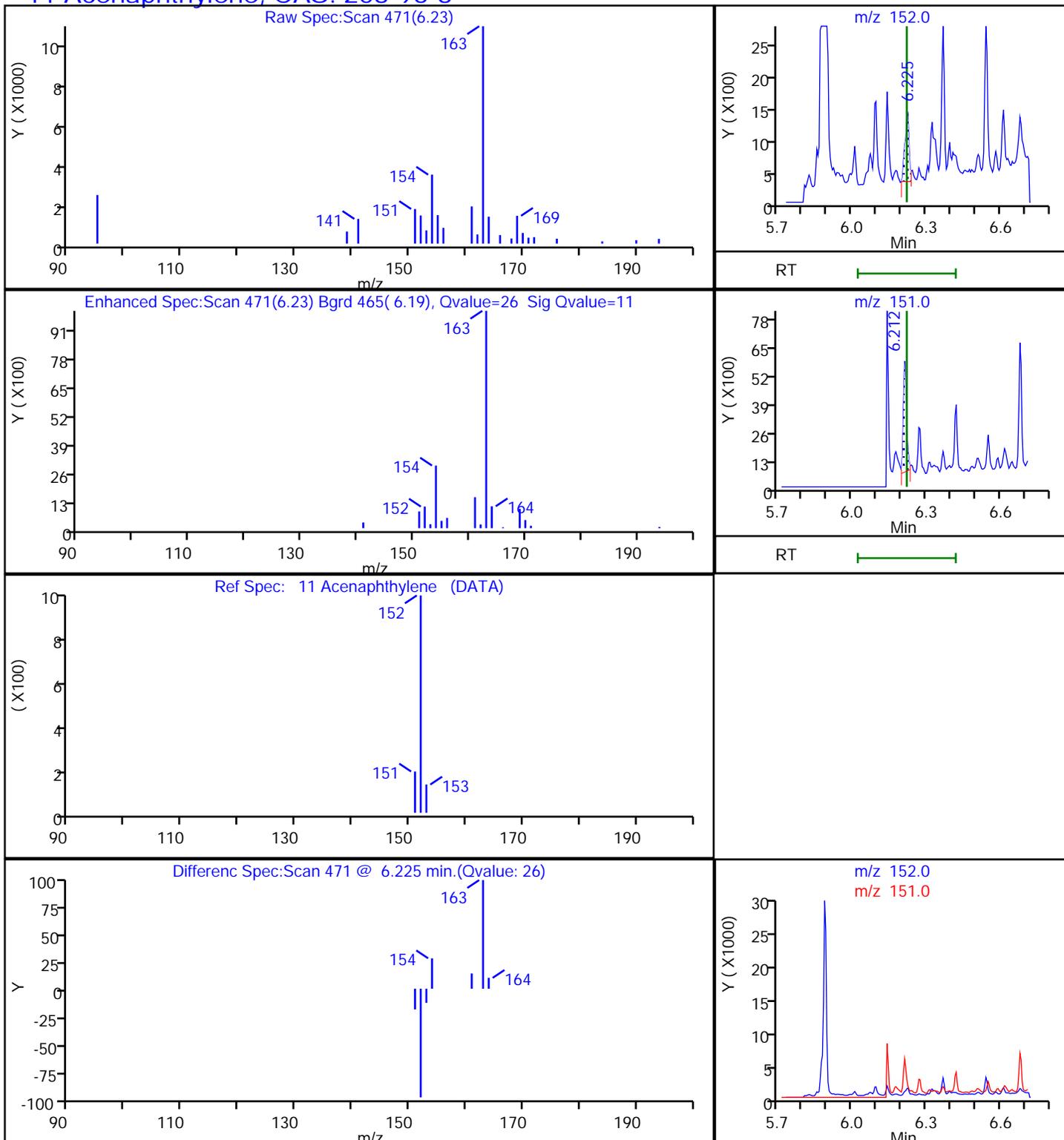
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Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

11 Acenaphthylene, CAS: 208-96-8



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 8270D_SIM_MP

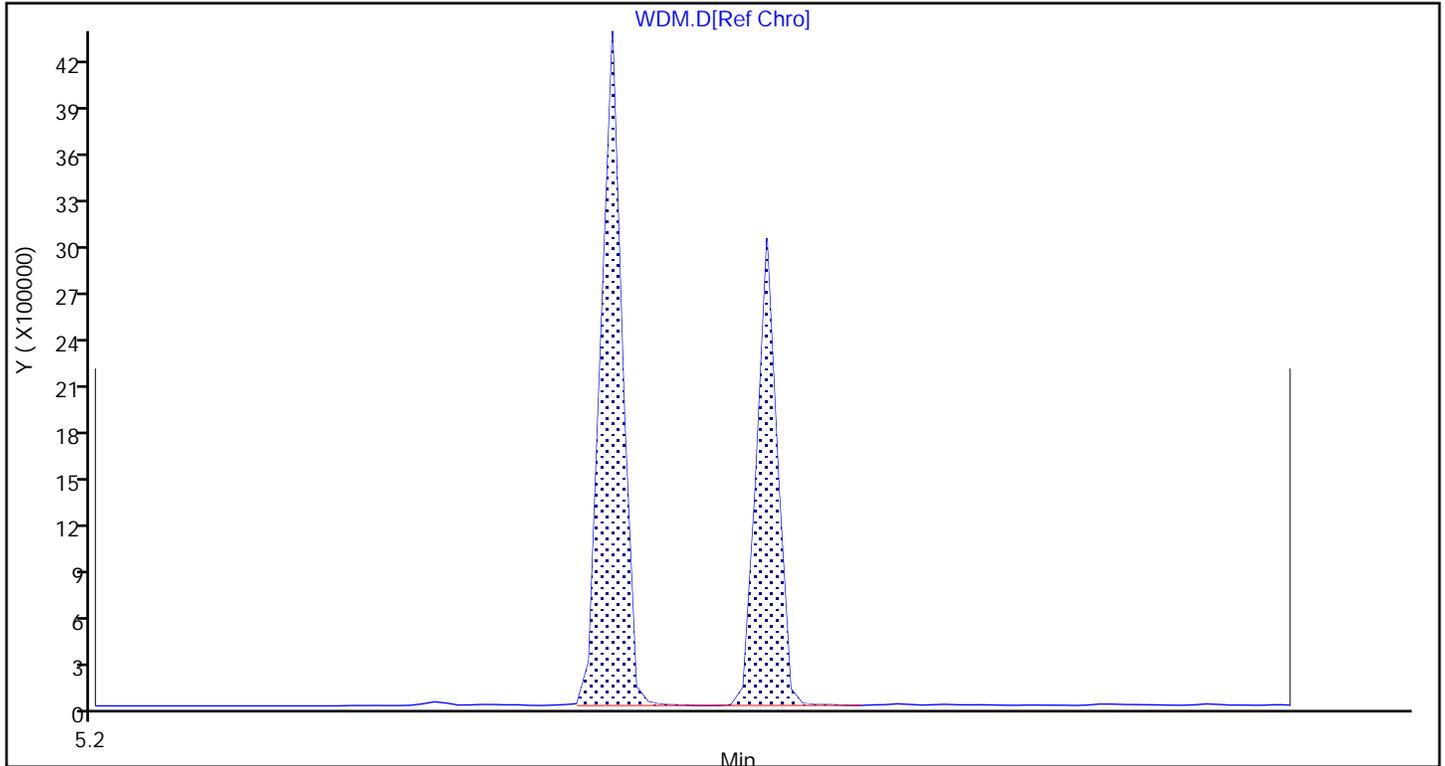
Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

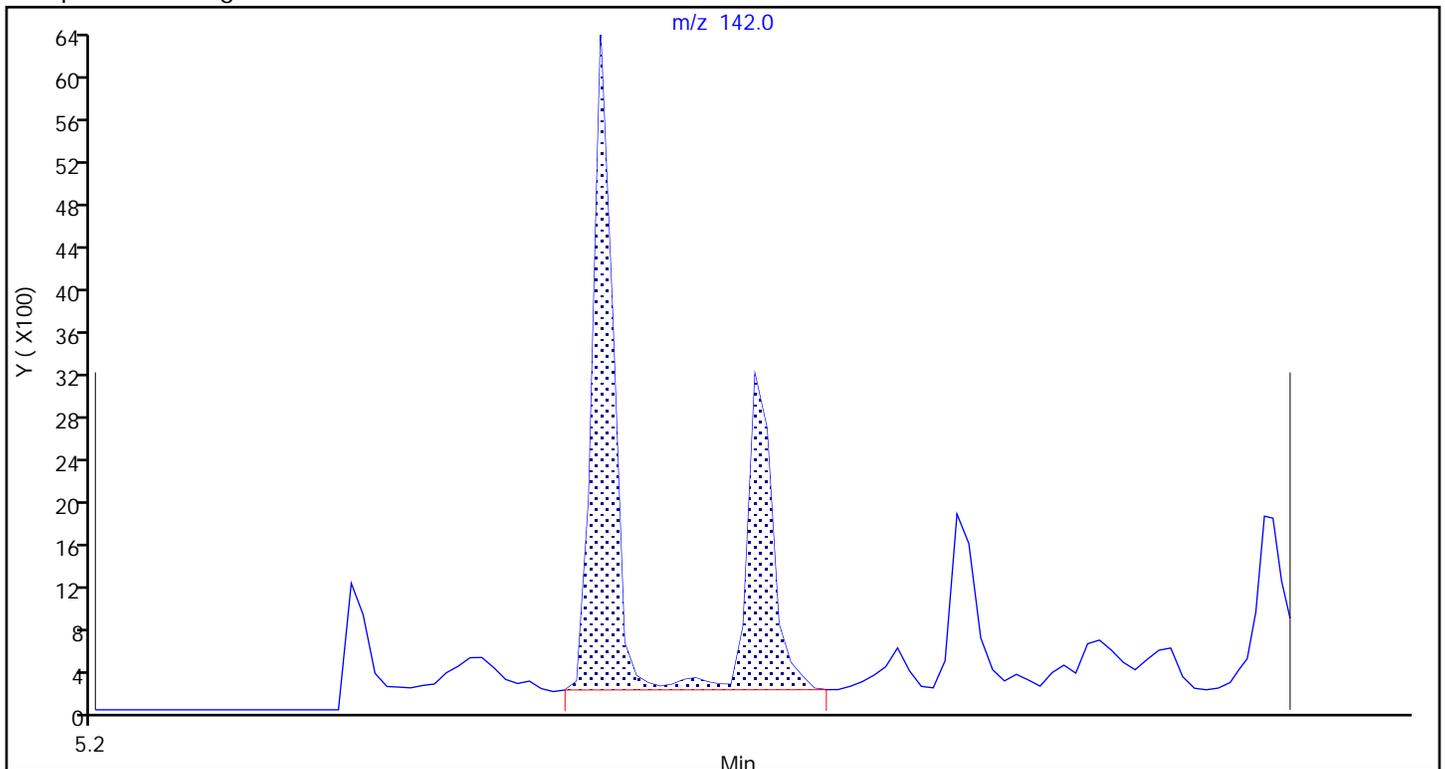
Detector: MS SCAN

A 38 C1-Naphthalenes, CAS: STL00916

Reference Chromatogram



Sample Chromatogram



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 8270D_SIM_MP

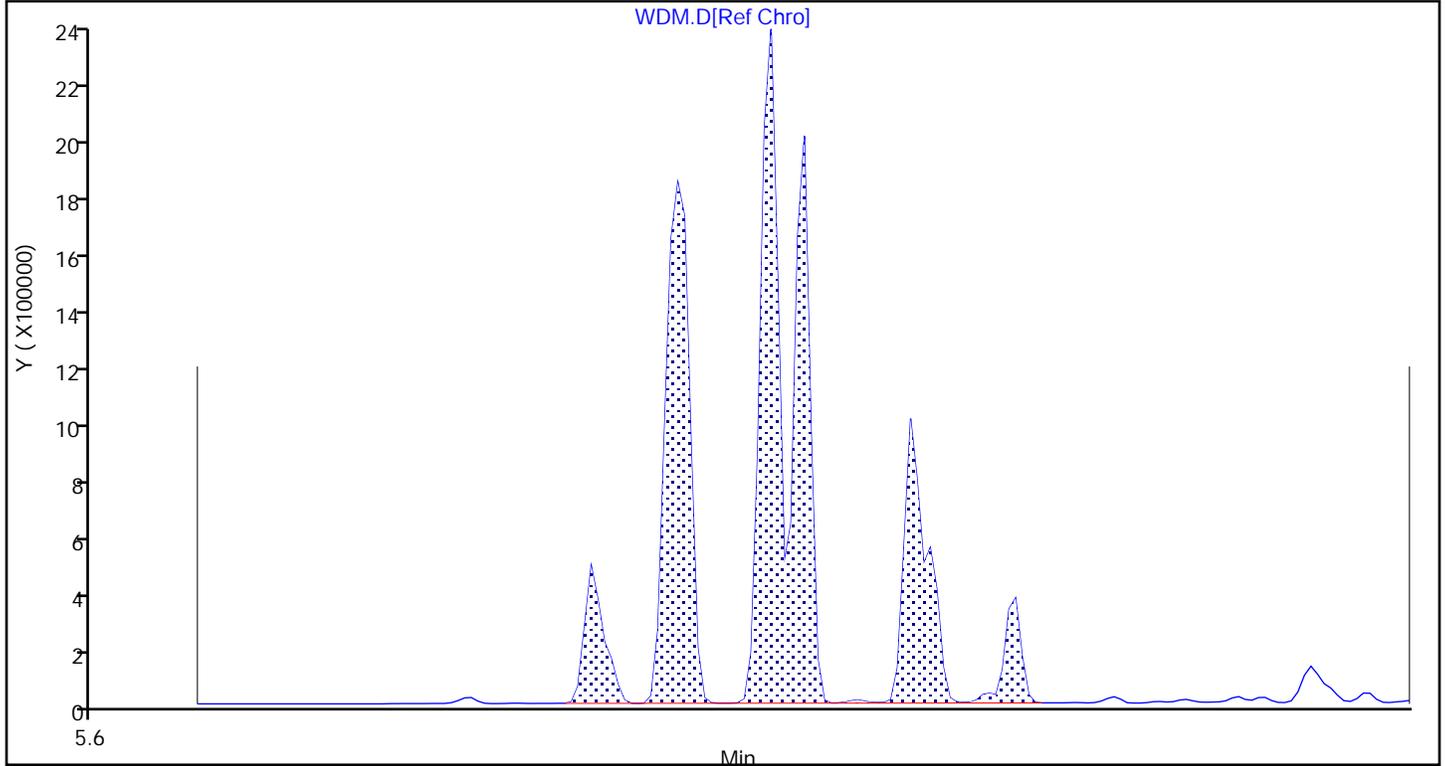
Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

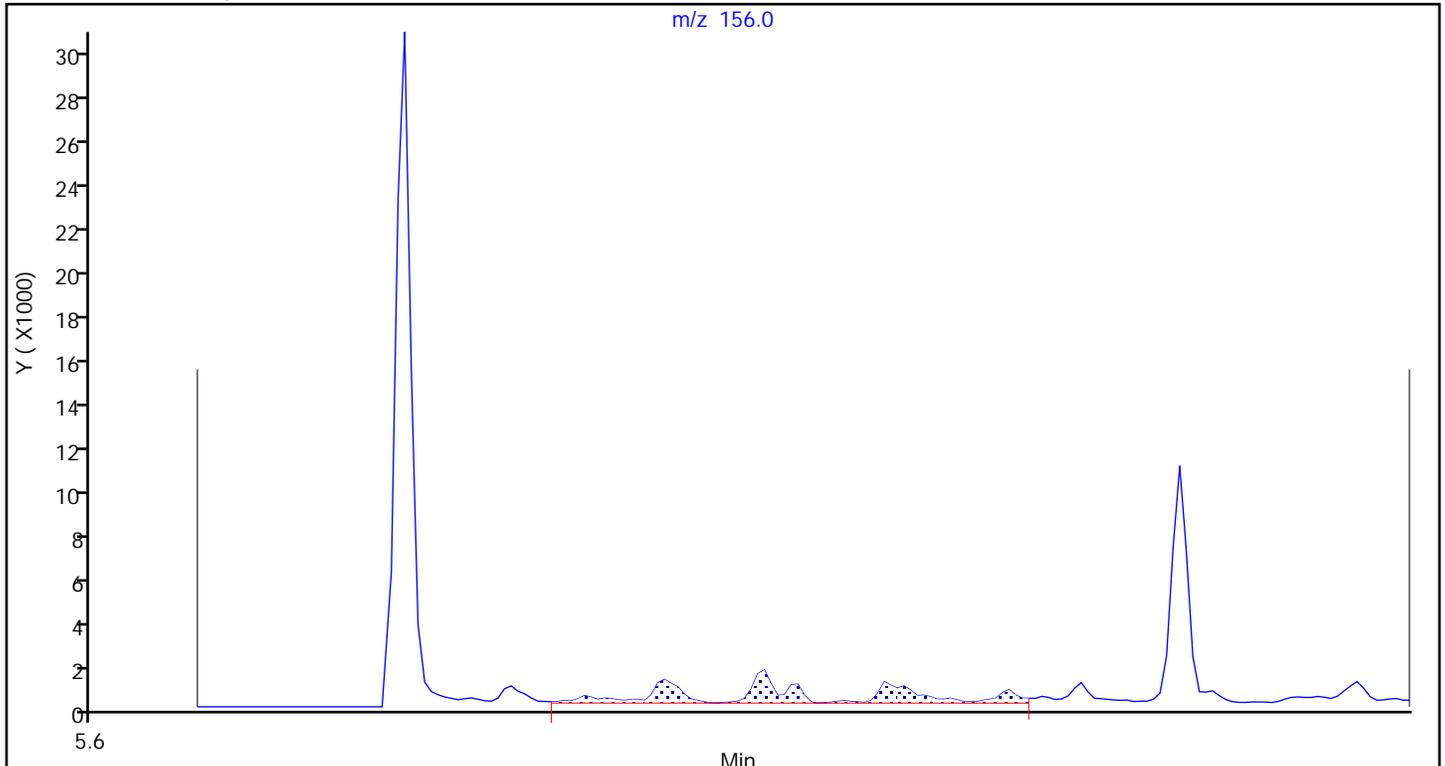
Detector: MS SCAN

A 39 C2-Naphthalenes, CAS: STL00917

Reference Chromatogram



Sample Chromatogram



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 8270D_SIM_MP

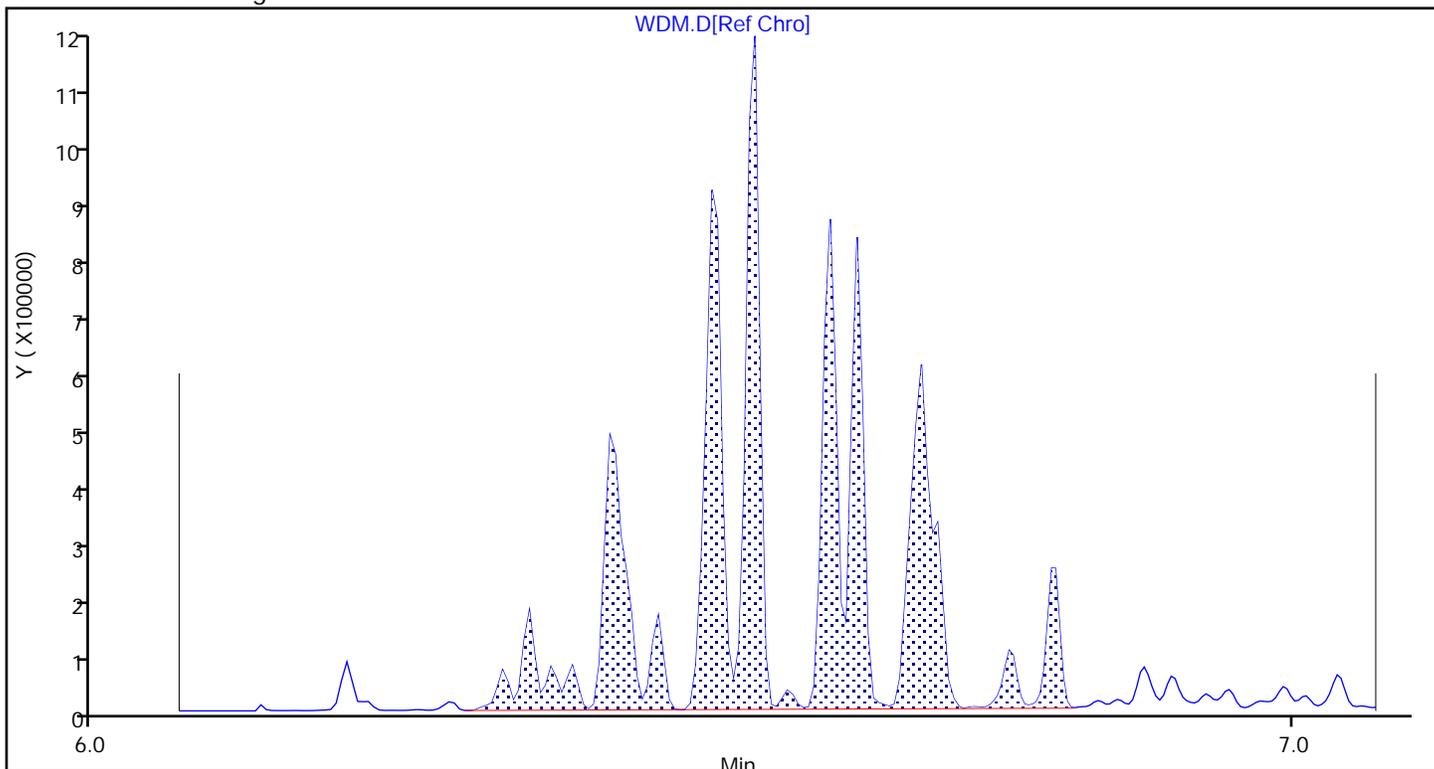
Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

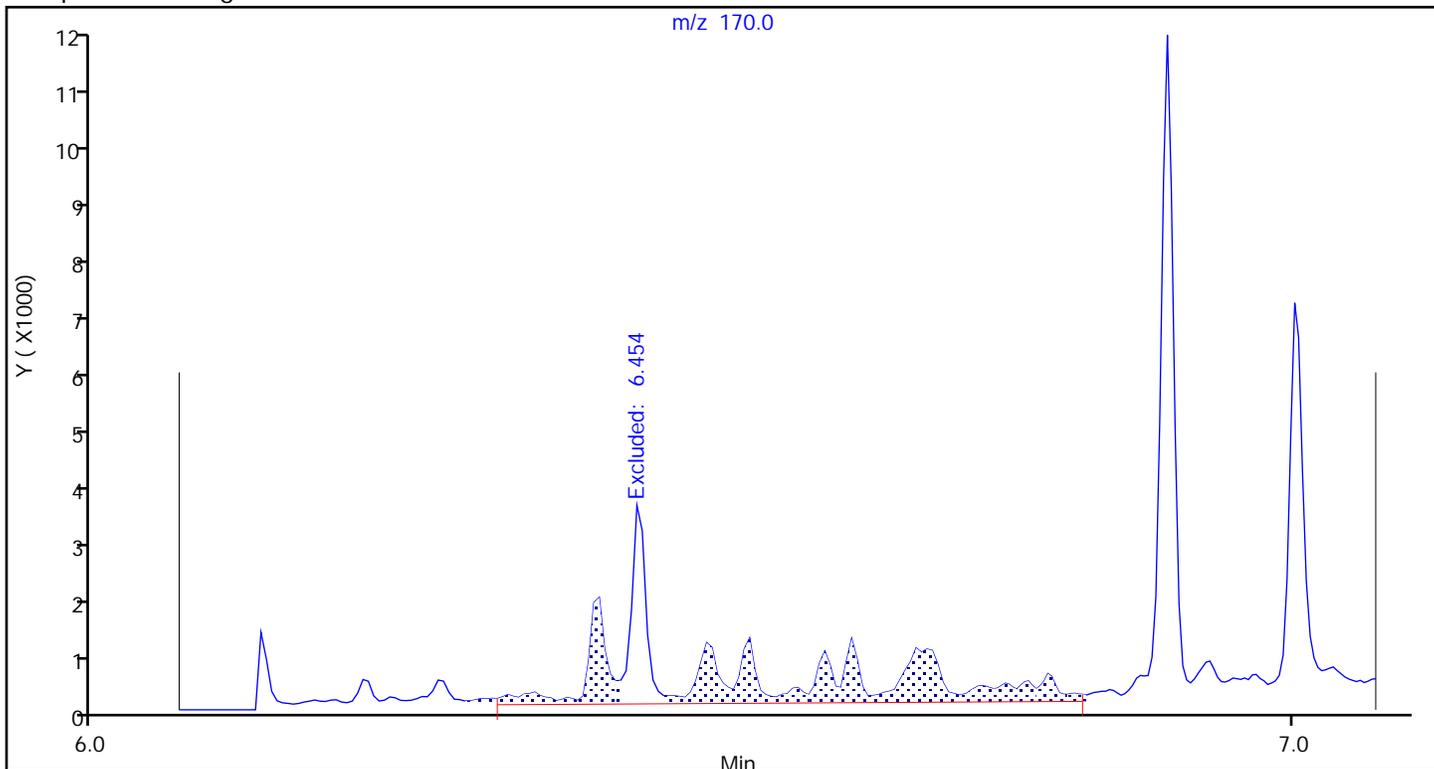
Detector: MS SCAN

A 40 C3-Naphthalenes, CAS: STL00918

Reference Chromatogram



Sample Chromatogram



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

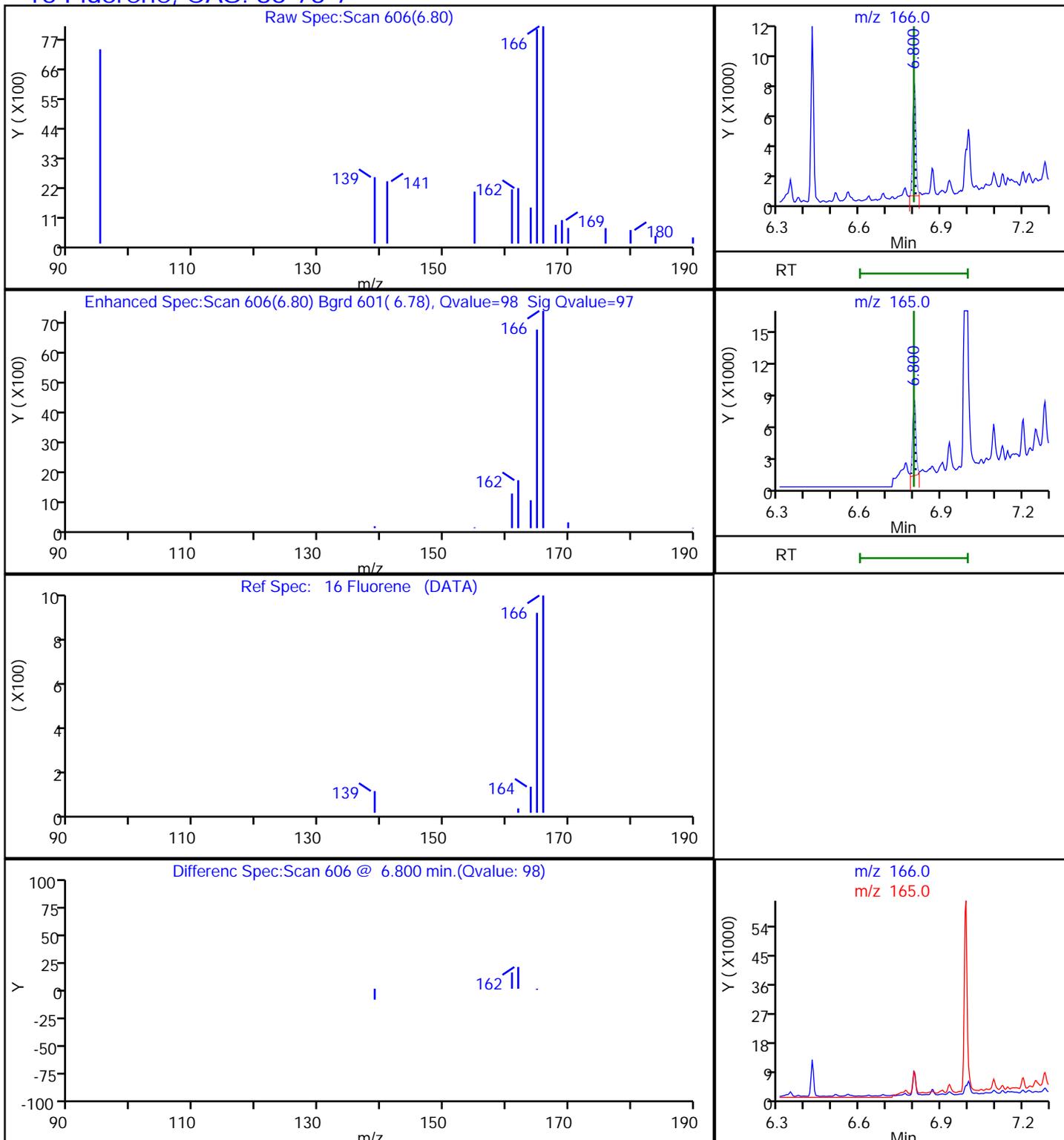
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

16 Fluorene, CAS: 86-73-7



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

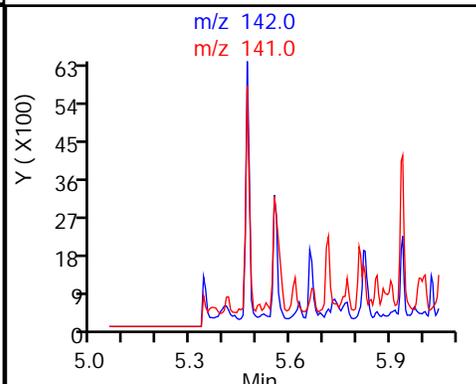
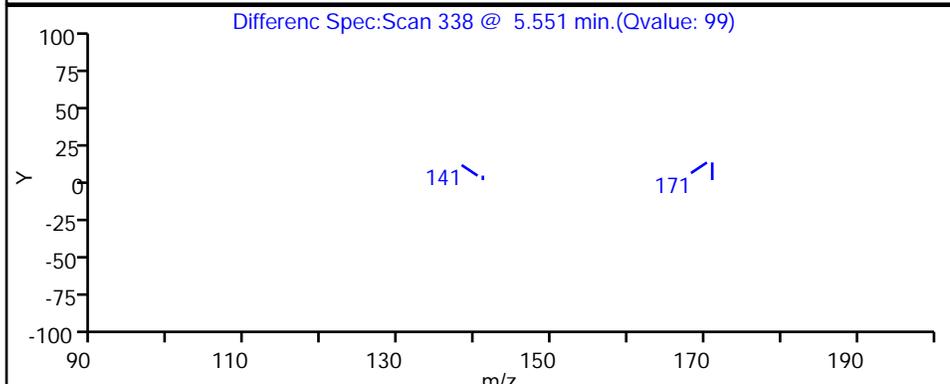
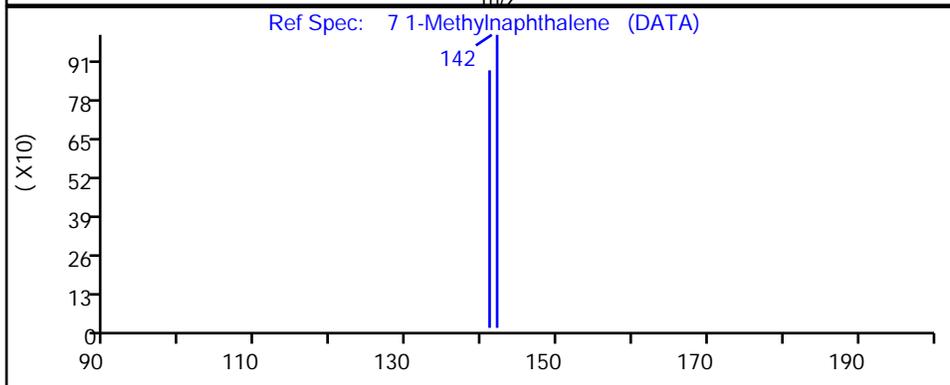
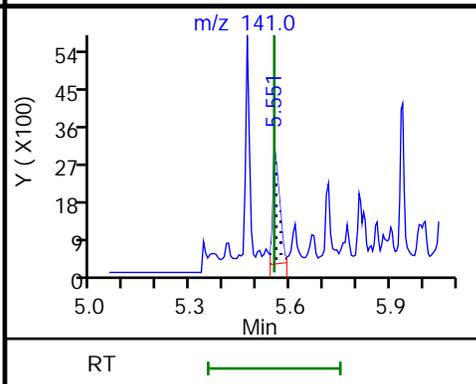
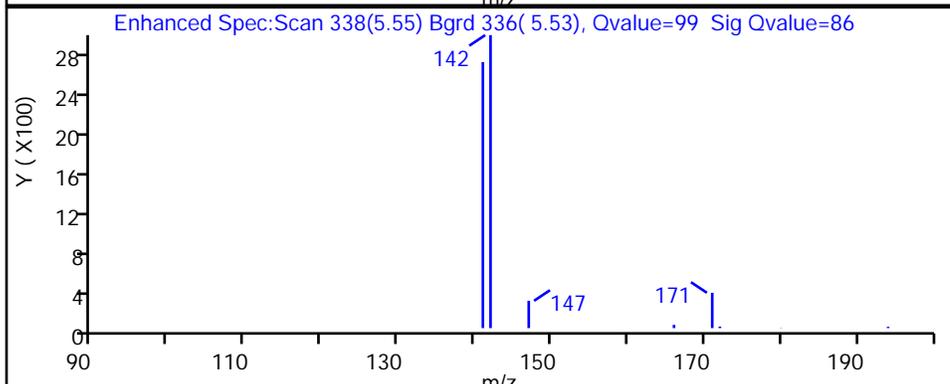
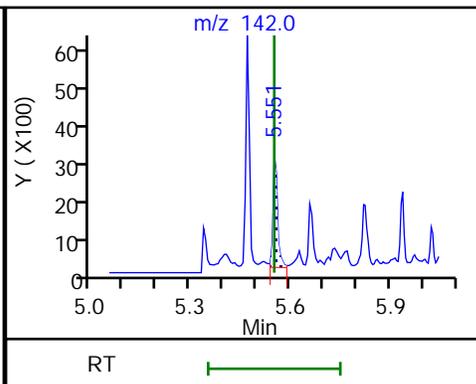
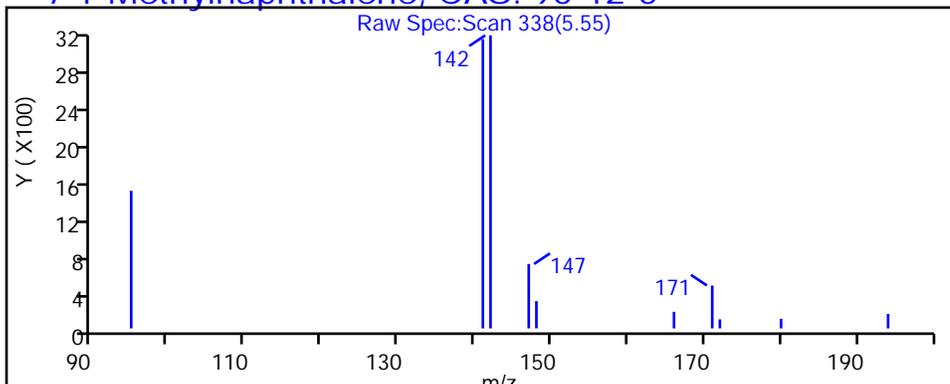
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

7 1-Methylnaphthalene, CAS: 90-12-0



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

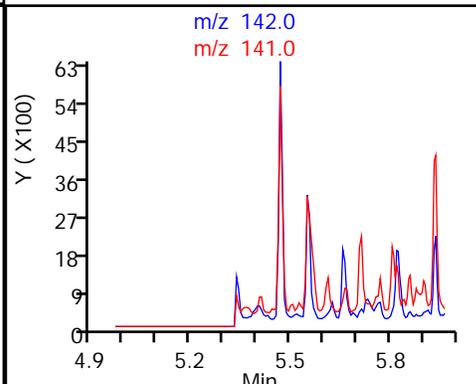
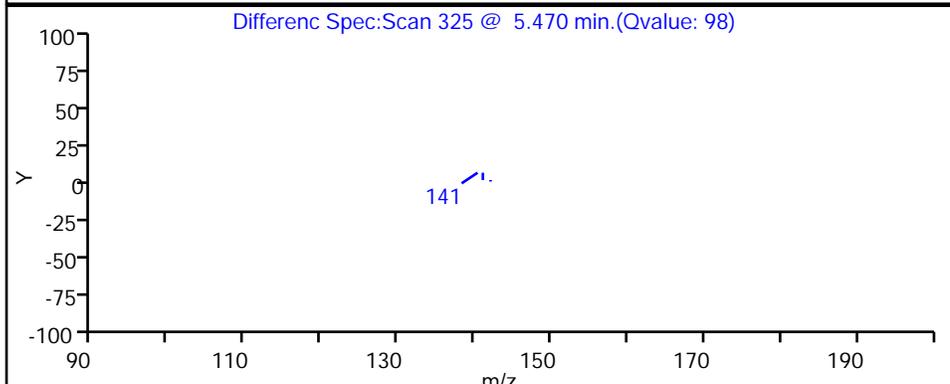
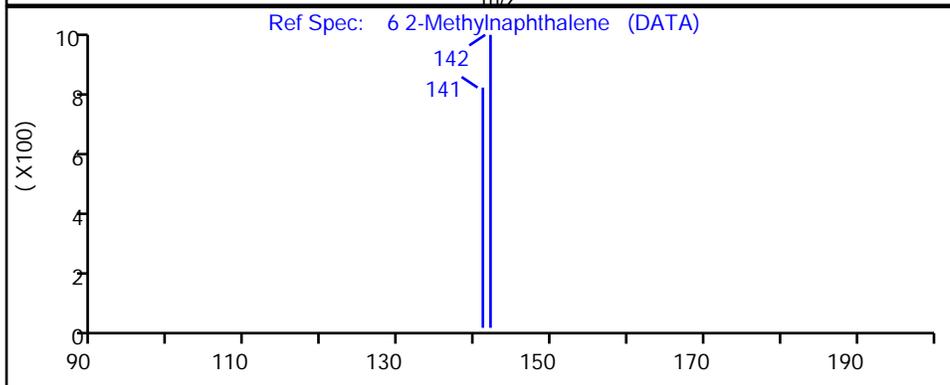
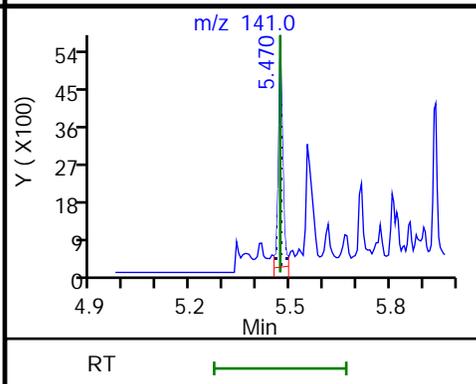
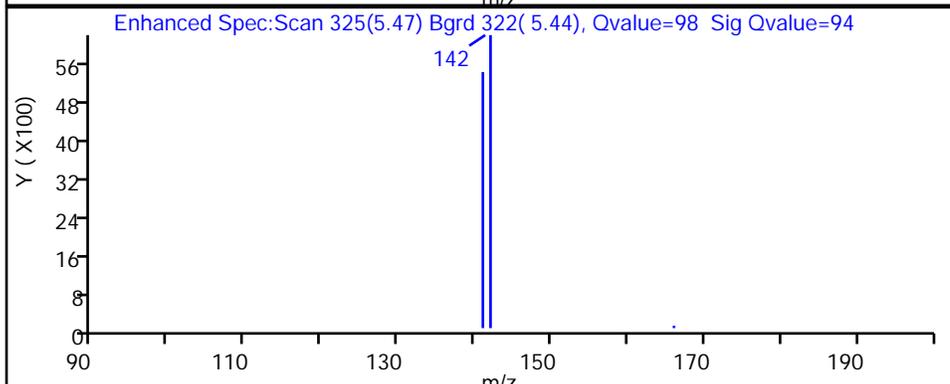
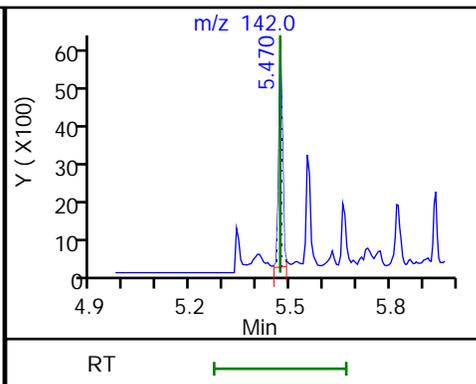
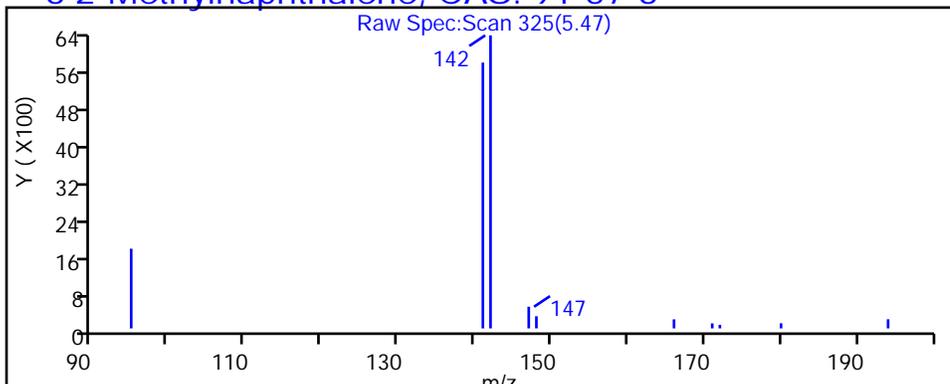
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

6 2-Methylnaphthalene, CAS: 91-57-6



Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D

Injection Date: 01-Aug-2019 22:26:30

Instrument ID: MP

Lims ID: 580-87761-D-29-A

Lab Sample ID: 140-87761-29

Client ID: 22T-SG-01-RB-CR_20190718

Operator ID: 11211

ALS Bottle#: 12

Worklist Smp#: 12

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

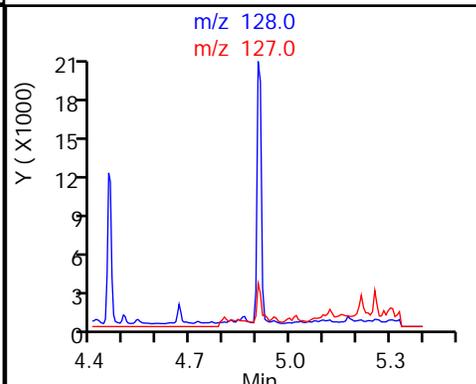
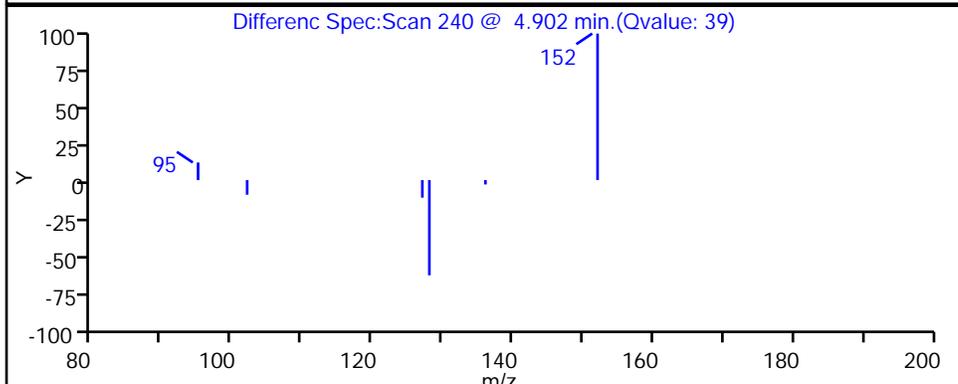
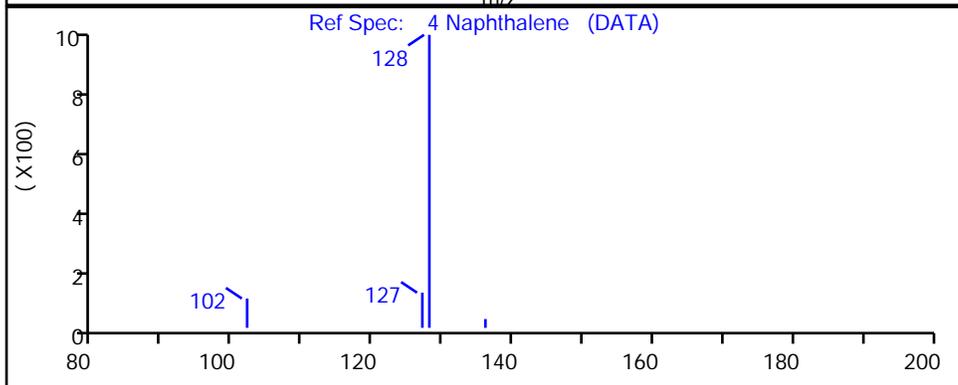
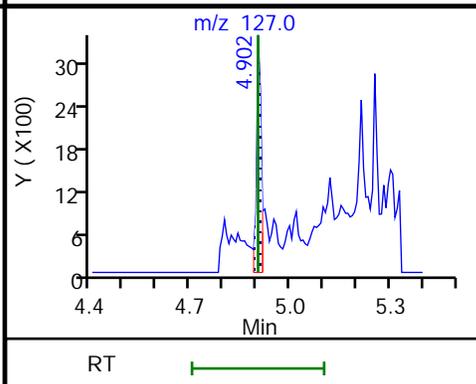
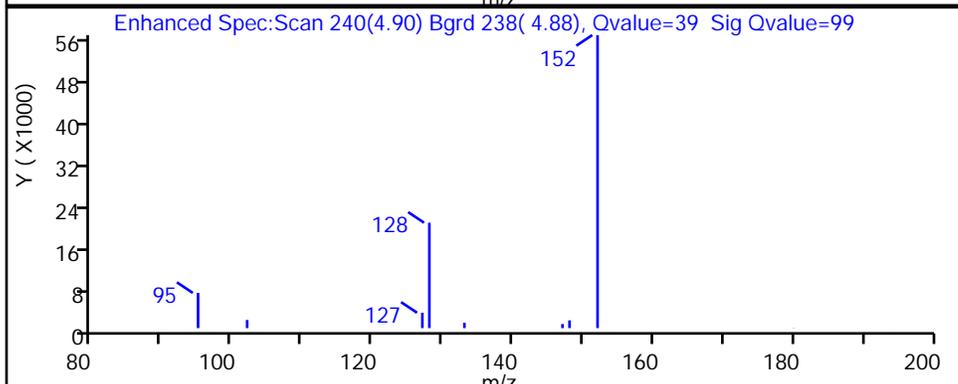
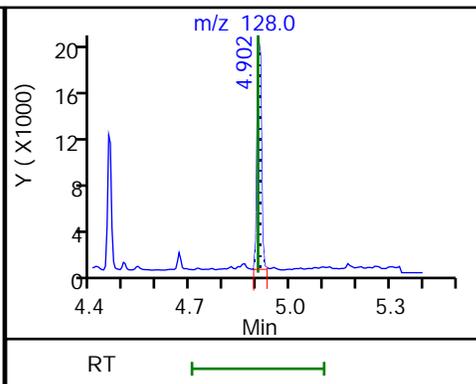
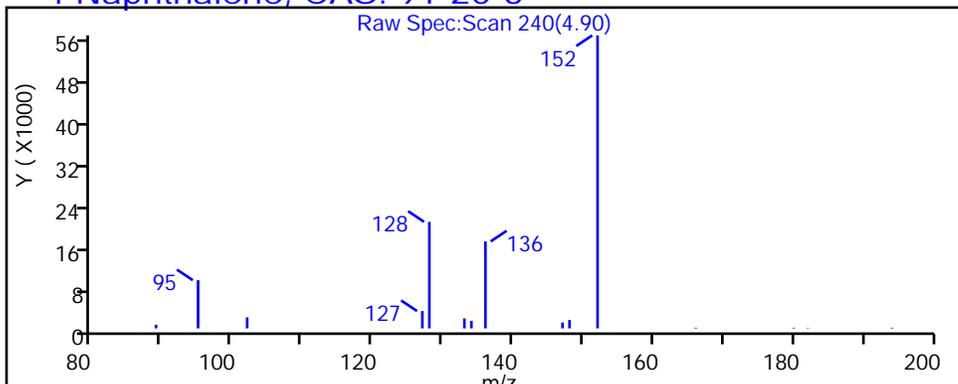
Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

Detector: MS SCAN

4 Naphthalene, CAS: 91-20-3



Euofins TestAmerica, Knoxville

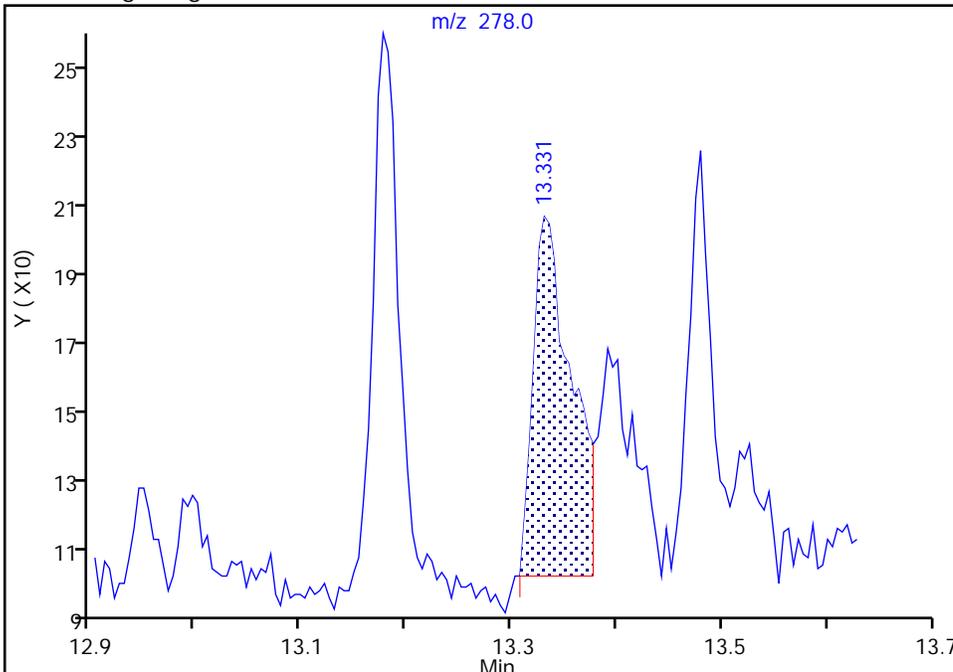
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Injection Date: 01-Aug-2019 22:26:30 Instrument ID: MP
Lims ID: 580-87761-D-29-A Lab Sample ID: 140-87761-29
Client ID: 22T-SG-01-RB-CR_20190718
Operator ID: 11211 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

36 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

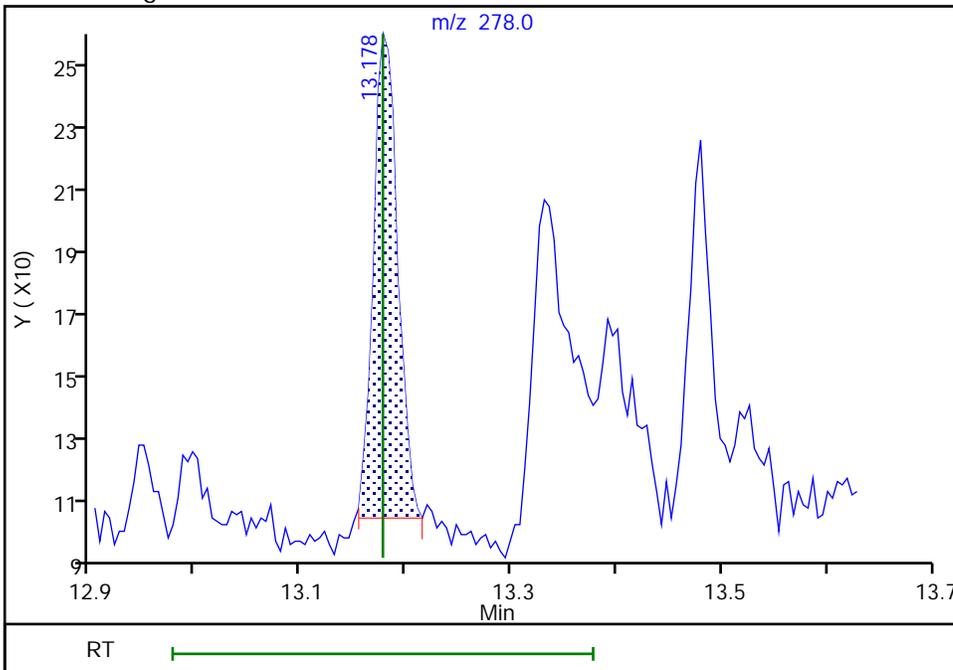
RT: 13.33
Area: 248
Amount: 0.000506
Amount Units: ug/ml

Processing Integration Results



RT: 13.18
Area: 232
Amount: 0.000473
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:32:44
Audit Action: Assigned Compound ID

Audit Reason: Baseline

Eurofins TestAmerica, Knoxville

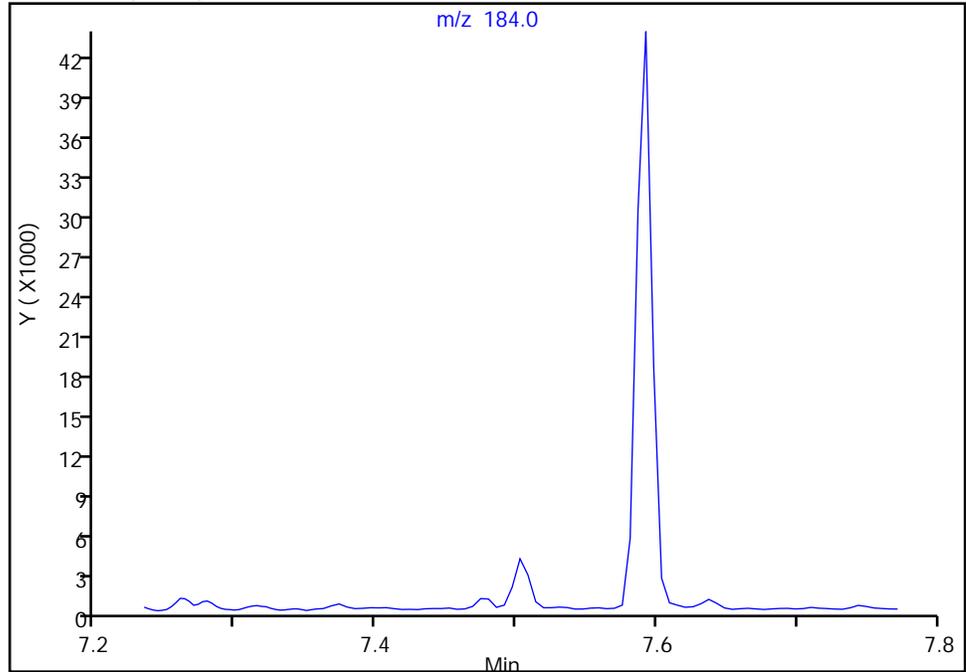
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Injection Date: 01-Aug-2019 22:26:30 Instrument ID: MP
Lims ID: 580-87761-D-29-A Lab Sample ID: 140-87761-29
Client ID: 22T-SG-01-RB-CR_20190718
Operator ID: 11211 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

17 Dibenzothiophene, CAS: 132-65-0

Signal: 1

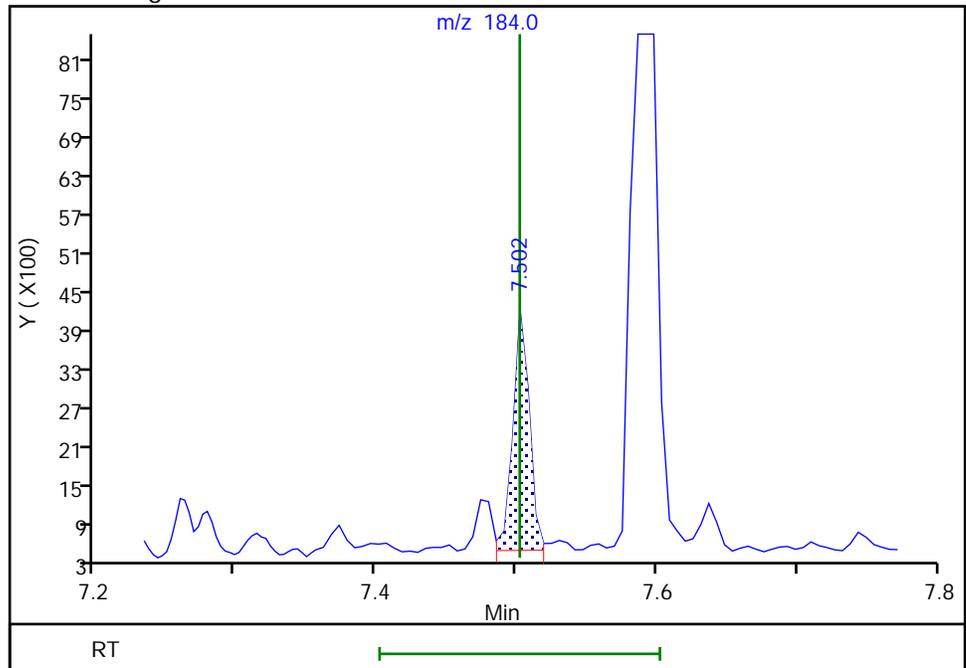
Not Detected
Expected RT: 7.50

Processing Integration Results



Manual Integration Results

RT: 7.50
Area: 3006
Amount: 0.005548
Amount Units: ug/ml



Reviewer: pattym, 02-Aug-2019 08:31:58
Audit Action: Assigned Compound ID

Audit Reason: Baseline

Eurofins TestAmerica, Knoxville

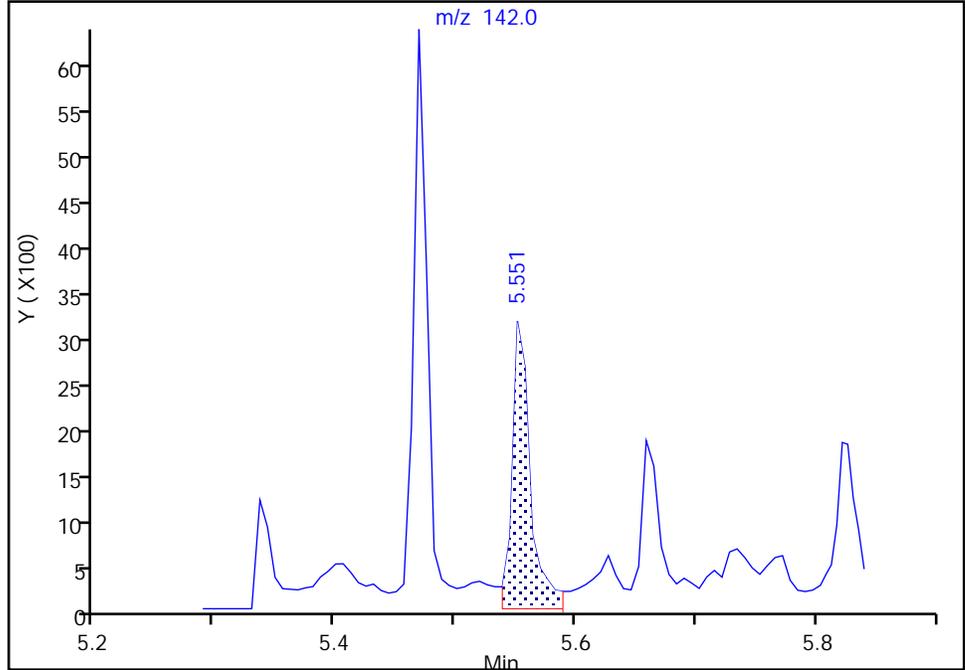
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Injection Date: 01-Aug-2019 22:26:30 Instrument ID: MP
Lims ID: 580-87761-D-29-A Lab Sample ID: 140-87761-29
Client ID: 22T-SG-01-RB-CR_20190718
Operator ID: 11211 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

7 1-Methylnaphthalene, CAS: 90-12-0

Signal: 1

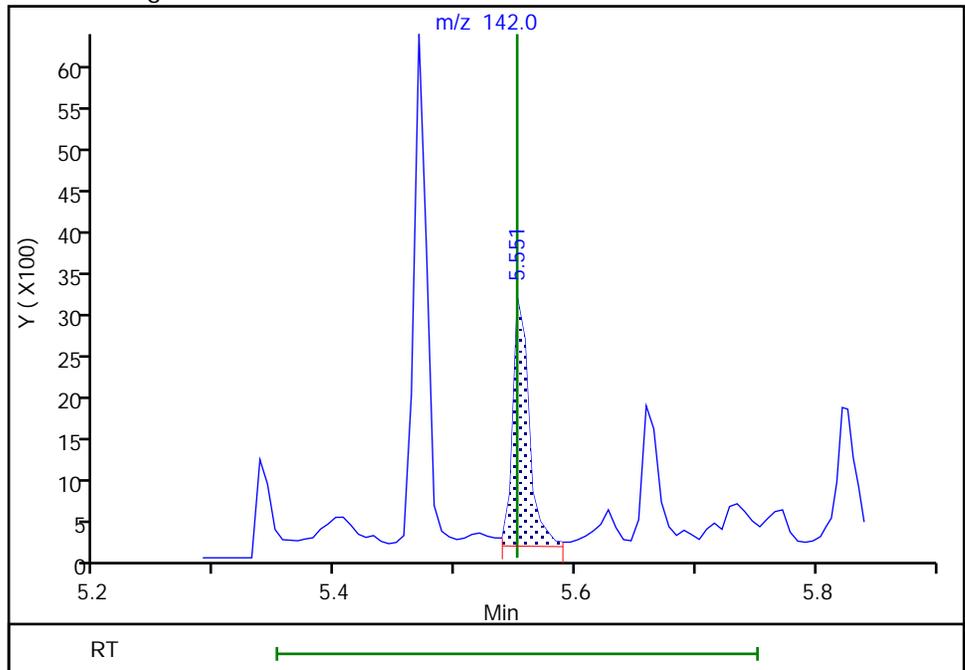
RT: 5.55
Area: 3316
Amount: 0.009719
Amount Units: ug/ml

Processing Integration Results



RT: 5.55
Area: 2841
Amount: 0.008326
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:31:44
Audit Action: Manually Integrated

Eurofins TestAmerica, Knoxville

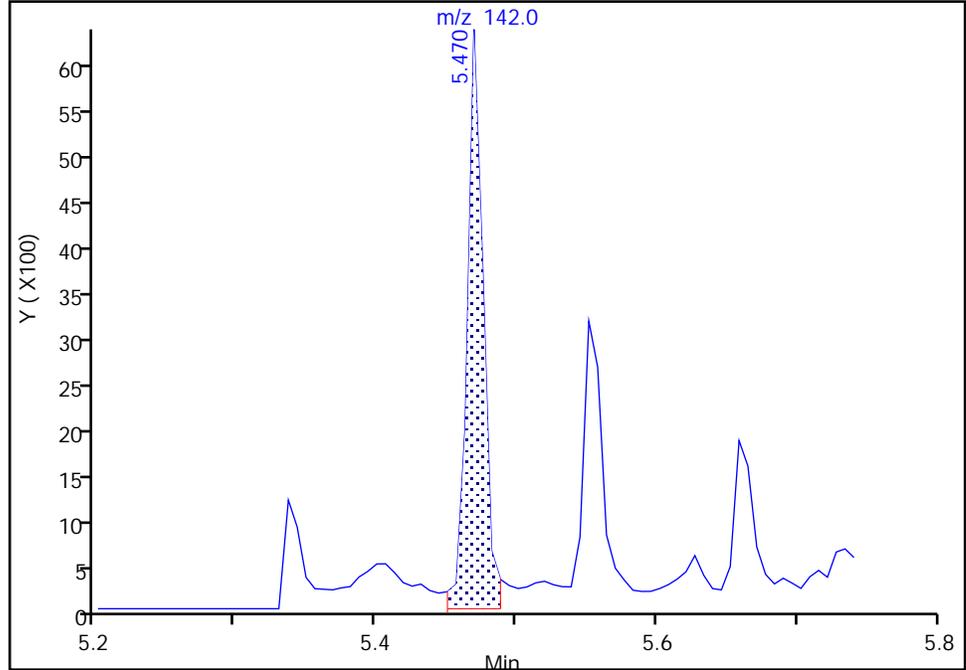
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D
Injection Date: 01-Aug-2019 22:26:30 Instrument ID: MP
Lims ID: 580-87761-D-29-A Lab Sample ID: 140-87761-29
Client ID: 22T-SG-01-RB-CR_20190718
Operator ID: 11211 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

6 2-Methylnaphthalene, CAS: 91-57-6

Signal: 1

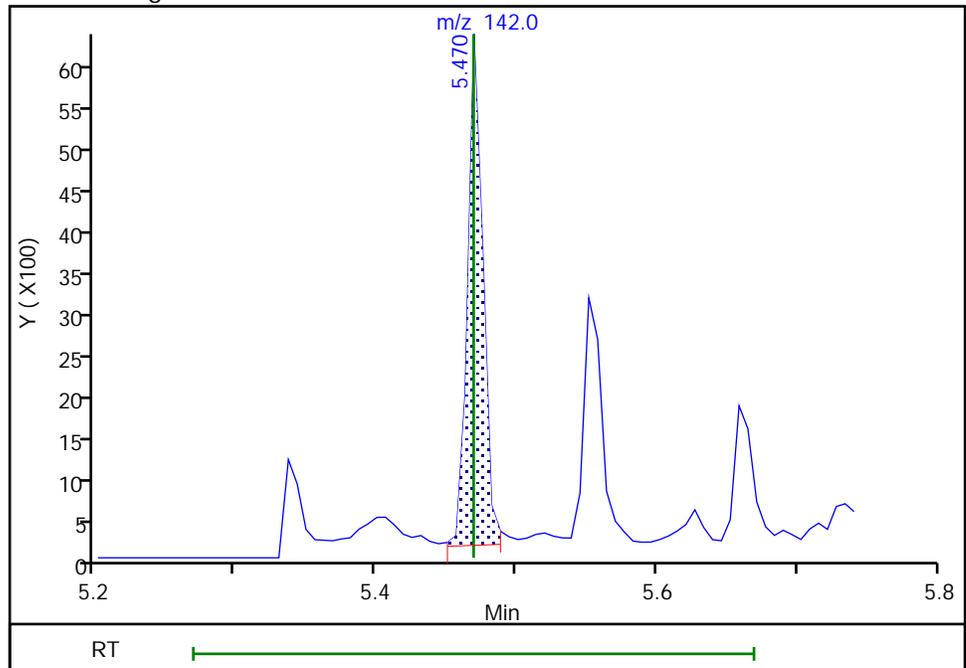
RT: 5.47
Area: 5085
Amount: 0.014200
Amount Units: ug/ml

Processing Integration Results



RT: 5.47
Area: 4685
Amount: 0.013083
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:31:32
Audit Action: Manually Integrated

Euofins TestAmerica, Knoxville

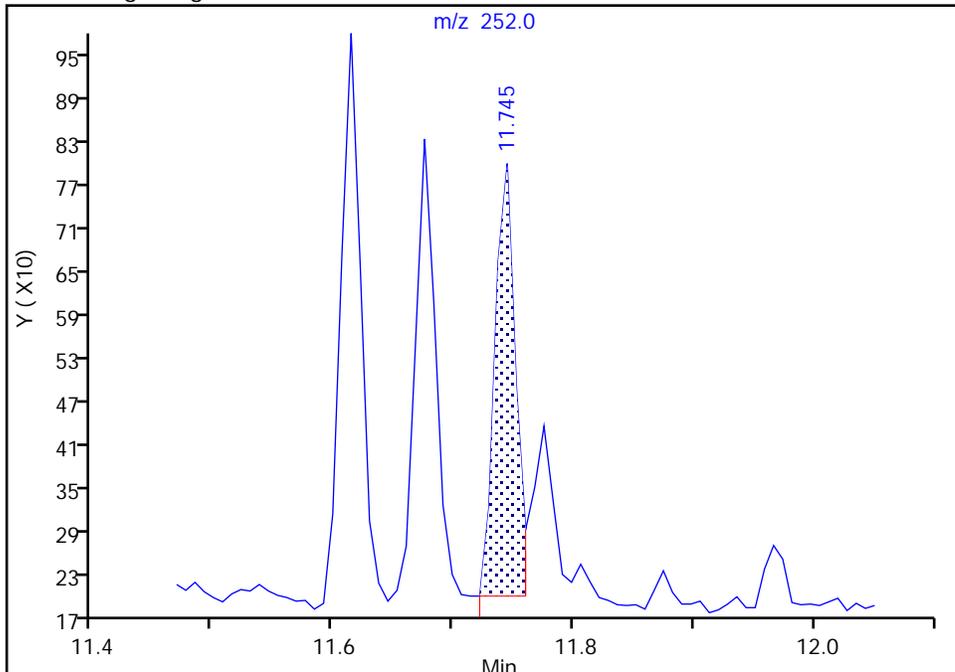
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Injection Date: 01-Aug-2019 22:26:30 Instrument ID: MP
Lims ID: 580-87761-D-29-A Lab Sample ID: 140-87761-29
Client ID: 22T-SG-01-RB-CR_20190718
Operator ID: 11211 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

34 Perylene, CAS: 198-55-0

Signal: 1

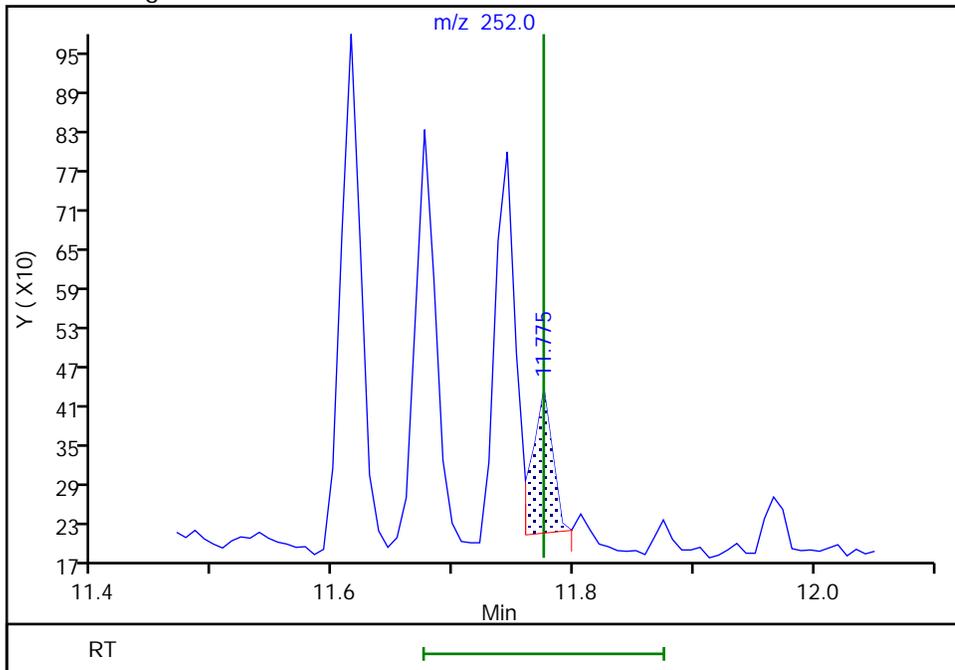
RT: 11.74
Area: 717
Amount: 0.001351
Amount Units: ug/ml

Processing Integration Results



RT: 11.78
Area: 259
Amount: 0.000488
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:32:38
Audit Action: Assigned Compound ID

Audit Reason: Baseline
Page 186 of 395

Euofins TestAmerica, Knoxville

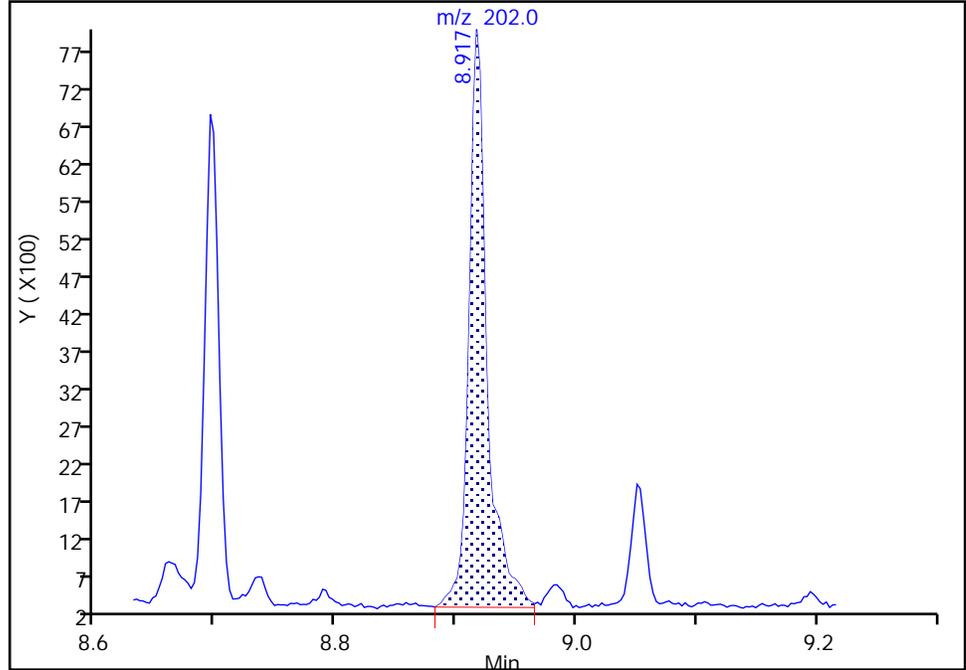
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\580-87761-D-29-A.D
Injection Date: 01-Aug-2019 22:26:30 Instrument ID: MP
Lims ID: 580-87761-D-29-A Lab Sample ID: 140-87761-29
Client ID: 22T-SG-01-RB-CR_20190718
Operator ID: 11211 ALS Bottle#: 12 Worklist Smp#: 12
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

23 Pyrene, CAS: 129-00-0

Signal: 1

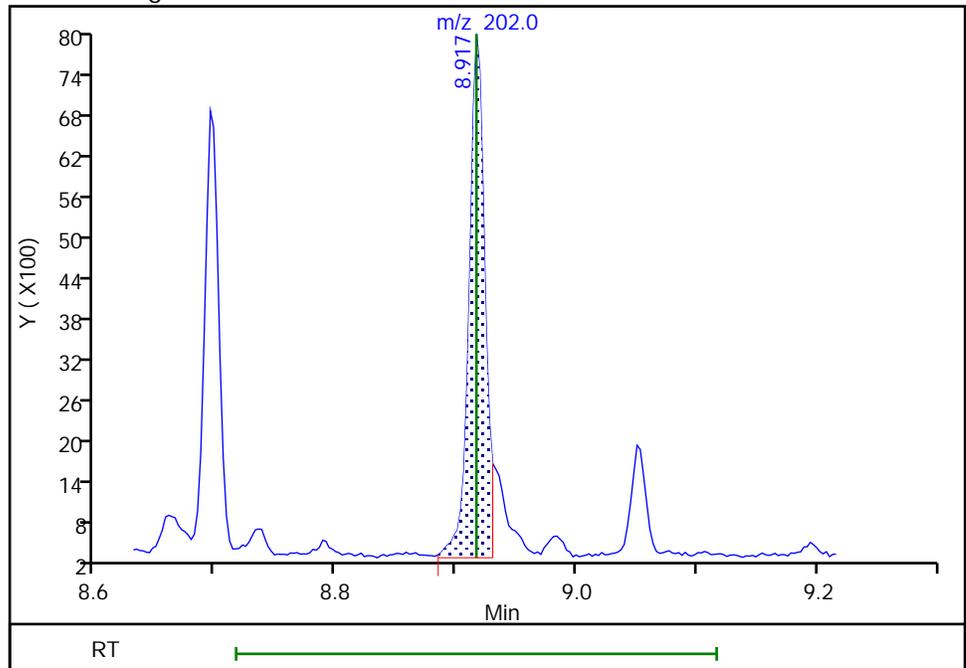
RT: 8.92
Area: 8025
Amount: 0.012627
Amount Units: ug/ml

Processing Integration Results



RT: 8.92
Area: 7068
Amount: 0.011121
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 08:32:20
Audit Action: Manually Integrated

Audit Reason: Baseline

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2 Analy Batch No.: 32163

SDG No.: _____

Instrument ID: MP GC Column: Rxi-5SilMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2019 11:55 Calibration End Date: 07/21/2019 14:26 Calibration ID: 2060

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|------------------|--------------|
| Level 1 | IC 140-32163/2 | ic 1XC.D |
| Level 2 | IC 140-32163/3 | ic 2X.D |
| Level 3 | IC 140-32163/4 | ic 3X.D |
| Level 4 | ICIS 140-32163/5 | icis 4X.D |
| Level 5 | IC 140-32163/6 | ic 5X.D |
| Level 6 | IC 140-32163/7 | ic 6X.D |
| Level 7 | IC 140-32163/8 | ic 7X.D |

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R ² OR COD | # | MIN R ² OR COD |
|----------------------------|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|--------|---------|------|------|----------|-----------------------|---|---------------------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| cis-Decalin | 0.1811 0.1636 | 0.1561 0.1556 | 0.1621 | 0.1660 | 0.1659 | Ave | | 0.1643 | | | 5.2 | | 20.0 | | | | |
| Naphthalene | 1.2007 1.0653 | 1.1375 0.9625 | 1.1127 | 1.1218 | 1.1030 | Ave | | 1.1005 | | 0.7000 | 6.7 | | 20.0 | | | | |
| Benzo(b)thiophene | 1.0487 0.9012 | 0.8972 0.8337 | 0.9228 | 0.9387 | 0.9320 | Ave | | 0.9249 | | | 7.0 | | 20.0 | | | | |
| 2-Methylnaphthalene | 0.7710 0.7069 | 0.7285 0.6501 | 0.7254 | 0.7332 | 0.7319 | Ave | | 0.7210 | | 0.4000 | 5.1 | | 20.0 | | | | |
| 1-Methylnaphthalene | 0.7309 0.6710 | 0.7029 0.6189 | 0.6968 | 0.7025 | 0.6860 | Ave | | 0.6870 | | | 5.1 | | 20.0 | | | | |
| 1,1'-Biphenyl | 1.9450 1.7421 | 1.8654 1.5885 | 1.8143 | 1.8403 | 1.8080 | Ave | | 1.8005 | | | 6.2 | | 20.0 | | | | |
| 2,6-Dimethylnaphthalene | 1.2582 1.1980 | 1.1988 1.1190 | 1.1855 | 1.2166 | 1.2122 | Ave | | 1.1983 | | | 3.5 | | 20.0 | | | | |
| Acenaphthylene | 1.8082 1.8700 | 1.6332 1.8244 | 1.5357 | 1.6621 | 1.7122 | Ave | | 1.7208 | | 0.9000 | 7.0 | | 20.0 | | | | |
| Acenaphthene | 1.4357 1.2993 | 1.3620 1.1922 | 1.3358 | 1.3520 | 1.3357 | Ave | | 1.3304 | | 0.9000 | 5.5 | | 20.0 | | | | |
| Dibenzofuran | 2.1400 1.9699 | 2.0319 1.8198 | 2.0166 | 2.0379 | 2.0137 | Ave | | 2.0042 | | 0.8000 | 4.8 | | 20.0 | | | | |
| 2,3,5-Trimethylnaphthalene | 1.0750 1.1000 | 0.9911 1.0371 | 1.0517 | 1.0917 | 1.0926 | Ave | | 1.0627 | | | 3.7 | | 20.0 | | | | |
| Fluorene | 1.5516 1.4718 | 1.4684 1.3738 | 1.4571 | 1.4879 | 1.4904 | Ave | | 1.4716 | | 0.9000 | 3.6 | | 20.0 | | | | |
| Dibenzothiophene | 1.2619 1.1955 | 1.1906 1.1140 | 1.1733 | 1.2024 | 1.2162 | Ave | | 1.1934 | | | 3.8 | | 20.0 | | | | |
| Phenanthrene | 1.4130 1.2515 | 1.3144 1.1550 | 1.2827 | 1.3052 | 1.2932 | Ave | | 1.2878 | | 0.7000 | 6.0 | | 20.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2 Analy Batch No.: 32163

SDG No.: _____

Instrument ID: MP GC Column: Rxi-5SilMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2019 11:55 Calibration End Date: 07/21/2019 14:26 Calibration ID: 2060

| ANALYTE | RRF | | | | | CURVE TYPE | COEFFICIENT | | | # | MIN RRF | %RSD | # | MAX %RSD | R^2 OR COD | # | MIN R^2 OR COD |
|-------------------------|------------------|------------------|--------|--------|--------|------------|-------------|--------|----|--------|---------|------|------|----------|------------|---|----------------|
| | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | | B | M1 | M2 | | | | | | | | |
| | LVL 6 | LVL 7 | | | | | | | | | | | | | | | |
| Anthracene | 1.0921 1.1524 | 0.9959 1.0947 | 0.9963 | 1.0756 | 1.1116 | Ave | | 1.0741 | | 0.7000 | 5.4 | | 20.0 | | | | |
| 1-Methylphenanthrene | 0.8508 0.8745 | 0.8095 0.8217 | 0.8193 | 0.8551 | 0.8719 | Ave | | 0.8433 | | | 3.1 | | 20.0 | | | | |
| Fluoranthene | 1.2567 1.3377 | 1.1689 1.2666 | 1.1779 | 1.2561 | 1.3029 | Ave | | 1.2524 | | 0.6000 | 4.9 | | 20.0 | | | | |
| Pyrene | 1.6186 1.5458 | 1.4831 1.4520 | 1.4585 | 1.5190 | 1.5148 | Ave | | 1.5131 | | 0.6000 | 3.8 | | 20.0 | | | | |
| Naphthobenzothiophene | 0.9909 0.9156 | 0.8150 0.9094 | 0.8290 | 0.8486 | 0.8836 | Ave | | 0.8846 | | | 6.9 | | 20.0 | | | | |
| Benzo[a]anthracene | 1.3037 1.2733 | 1.1187 1.2247 | 1.0639 | 1.1396 | 1.1988 | Ave | | 1.1889 | | 0.8000 | 7.3 | | 20.0 | | | | |
| Chrysene | 1.6602 1.3486 | 1.4602 1.2462 | 1.4267 | 1.4240 | 1.3865 | Ave | | 1.4218 | | 0.7000 | 8.9 | | 20.0 | | | | |
| Benzo[b]fluoranthene | 1.3442 1.4996 | 1.2601 1.3297 | 1.2142 | 1.3324 | 1.5764 | Ave | | 1.3652 | | 0.7000 | 9.4 | | 20.0 | | | | |
| Benzo[k]fluoranthene | 1.5633 1.5427 | 1.4725 1.4880 | 1.5913 | 1.6185 | 1.5618 | Ave | | 1.5483 | | 0.7000 | 3.4 | | 20.0 | | | | |
| Benzo[e]pyrene | 1.2881 1.3519 | 1.1949 1.2495 | 1.2545 | 1.2730 | 1.3630 | Ave | | 1.2821 | | | 4.6 | | 20.0 | | | | |
| Benzo[a]pyrene | 1.1265 1.3334 | 1.0329 1.2880 | 1.0017 | 1.1997 | 1.2397 | Ave | | 1.1746 | | 0.7000 | 10.7 | | 20.0 | | | | |
| Perylene | 1.3122 1.3903 | 1.2741 1.2996 | 1.2992 | 1.3169 | 1.3932 | Ave | | 1.3265 | | | 3.5 | | 20.0 | | | | |
| Indeno[1,2,3-cd]pyrene | 1.4633 1.5302 | 1.3403 1.4372 | 1.3612 | 1.4386 | 1.5388 | Ave | | 1.4442 | | 0.5000 | 5.2 | | 20.0 | | | | |
| Dibenz(a,h)anthracene | 1.2101 1.2820 | 1.1481 1.1933 | 1.1963 | 1.2352 | 1.3153 | Ave | | 1.2258 | | 0.4000 | 4.6 | | 20.0 | | | | |
| Benzo[g,h,i]perylene | 1.5311 1.3490 | 1.3231 1.2685 | 1.2739 | 1.3335 | 1.3816 | Ave | | 1.3515 | | 0.5000 | 6.6 | | 20.0 | | | | |
| Nitrobenzene-d5 | 0.3323 0.3070 | 0.2694 0.3049 | 0.2618 | 0.2792 | 0.2889 | Ave | | 0.2919 | | | 8.4 | | 20.0 | | | | |
| 2-Fluorobiphenyl (Surr) | 1.8616 1.5574 | 1.6040 1.4332 | 1.6154 | 1.6307 | 1.6154 | Ave | | 1.6168 | | | 7.9 | | 20.0 | | | | |
| Terphenyl-d14 | 0.9399 0.7952 | 0.8033 0.7406 | 0.8091 | 0.8234 | 0.8128 | Ave | | 0.8177 | | | 7.4 | | 20.0 | | | | |

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2 Analy Batch No.: 32163

SDG No.: _____

Instrument ID: MP GC Column: Rxi-5SilMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2019 11:55 Calibration End Date: 07/21/2019 14:26 Calibration ID: 2060

Calibration Files:

| LEVEL: | LAB SAMPLE ID: | LAB FILE ID: |
|---------|------------------|--------------|
| Level 1 | IC 140-32163/2 | ic 1XC.D |
| Level 2 | IC 140-32163/3 | ic 2X.D |
| Level 3 | IC 140-32163/4 | ic 3X.D |
| Level 4 | ICIS 140-32163/5 | icis 4X.D |
| Level 5 | IC 140-32163/6 | ic 5X.D |
| Level 6 | IC 140-32163/7 | ic 6X.D |
| Level 7 | IC 140-32163/8 | ic 7X.D |

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (UG/ML) | | | | |
|----------------------------|--------|------------|------------------|------------------|--------|--------|--------|-----------------------|---------------|-------|-------|-------|
| | | | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 | LVL 1 | LVL 2 | LVL 3 | LVL 4 | LVL 5 |
| | | | LVL 6 | LVL 7 | | | | LVL 6 | LVL 7 | | | |
| cis-Decalin | NPT | Ave | 1515 174790 | 6855 341828 | 18083 | 35517 | 72025 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Naphthalene | NPT | Ave | 10043 1138352 | 49952 2114072 | 124160 | 239975 | 478933 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Benzo(b)thiophene | NPT | Ave | 8771 962993 | 39401 1831105 | 102966 | 200794 | 404704 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| 2-Methylnaphthalene | NPT | Ave | 6449 755402 | 31992 1427865 | 80935 | 156847 | 317802 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| 1-Methylnaphthalene | NPT | Ave | 6113 717030 | 30870 1359311 | 77744 | 150276 | 297864 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| 1,1'-Biphenyl | ANT | Ave | 8088 937053 | 40741 1753733 | 100883 | 194867 | 390720 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| 2,6-Dimethylnaphthalene | ANT | Ave | 5232 644421 | 26182 1235396 | 65921 | 128831 | 261961 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Acenaphthylene | ANT | Ave | 7519 1005879 | 35669 2014135 | 85393 | 176002 | 370007 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Acenaphthene | ANT | Ave | 5970 698905 | 29745 1316249 | 74278 | 143164 | 288656 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Dibenzofuran | ANT | Ave | 8899 1059581 | 44376 2009087 | 112131 | 215794 | 435159 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| 2,3,5-Trimethylnaphthalene | ANT | Ave | 4470 591687 | 21645 1145006 | 58477 | 115603 | 236115 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Fluorene | ANT | Ave | 6452 791685 | 32069 1516700 | 81020 | 157549 | 322076 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Dibenzothiophene | PHN | Ave | 8922 1098885 | 43885 2115730 | 111190 | 217069 | 445228 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Phenanthrene | PHN | Ave | 9990 1150340 | 48449 2193728 | 121561 | 235615 | 473402 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Anthracene | PHN | Ave | 7721 1059249 | 36710 2079069 | 94415 | 194178 | 406940 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2 Analy Batch No.: 32163

SDG No.: _____

Instrument ID: MP GC Column: Rxi-5SilMS ID: 0.25 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/21/2019 11:55 Calibration End Date: 07/21/2019 14:26 Calibration ID: 2060

| ANALYTE | IS REF | CURVE TYPE | RESPONSE | | | | | CONCENTRATION (UG/ML) | | | | |
|-------------------------|--------|------------|-----------------|------------------|--------|--------|--------|-----------------------|----------------|-------|-------|-------|
| | | | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 | LVL 1 LVL 6 | LVL 2 LVL 7 | LVL 3 | LVL 4 | LVL 5 |
| 1-Methylphenanthrene | PHN | Ave | 6015 803844 | 29838 1560700 | 77645 | 154372 | 319197 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Fluoranthene | PHN | Ave | 8885 1229602 | 43087 2405679 | 111627 | 226763 | 476969 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Pyrene | CRY | Ave | 9329 1286874 | 45374 2501407 | 117477 | 240127 | 503278 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Naphthobenzothiophene | CRY | Ave | 5711 762257 | 24933 1566646 | 66774 | 134156 | 293581 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Benzo[a]anthracene | CRY | Ave | 7514 1059968 | 34225 2109714 | 85690 | 180154 | 398285 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Chrysene | CRY | Ave | 9569 1122677 | 44673 2146798 | 114916 | 225110 | 460660 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Benzo[b]fluoranthene | PRY | Ave | 7687 1148803 | 37758 2168983 | 88756 | 199208 | 459515 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Benzo[k]fluoranthene | PRY | Ave | 8940 1181881 | 44122 2427192 | 116322 | 241982 | 455269 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Benzo[e]pyrene | PRY | Ave | 7366 1035672 | 35804 2038126 | 91702 | 190336 | 397305 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Benzo[a]pyrene | PRY | Ave | 6442 1021484 | 30951 2100916 | 73223 | 179370 | 361370 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Perylene | PRY | Ave | 7504 1065065 | 38177 2119821 | 94970 | 196892 | 406114 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Indeno[1,2,3-cd]pyrene | PRY | Ave | 8368 1172244 | 40160 2344306 | 99498 | 215083 | 448572 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Dibenz(a,h)anthracene | PRY | Ave | 6920 982147 | 34402 1946519 | 87445 | 184681 | 383410 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Benzo[g,h,i]perylene | PRY | Ave | 8756 1033468 | 39646 2069141 | 93120 | 199375 | 402739 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Nitrobenzene-d5 | NPT | Ave | 2779 328062 | 11829 669758 | 29211 | 59715 | 125430 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| 2-Fluorobiphenyl (Surr) | ANT | Ave | 7741 837706 | 35031 1582268 | 89825 | 172674 | 349096 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |
| Terphenyl-d14 | CRY | Ave | 5417 661955 | 24577 1275914 | 65167 | 130168 | 270035 | 0.0200 2.50 | 0.100 5.00 | 0.250 | 0.500 | 1.00 |

Curve Type Legend:

Ave = Average ISTD

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 1XC.D
 Lims ID: ic 1
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 21-Jul-2019 11:55:30 ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-002
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5
 Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:32 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: cochranj

Date: 29-Jul-2019 14:33:19

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 99 | 2779 | 0.0200 | 0.0228 | |
| 2 cis-Decalin | 138 | 4.465 | 4.465 | 0.000 | 95 | 1515 | 0.0200 | 0.0220 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 209099 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 92 | 10043 | 0.0200 | 0.0218 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 8771 | 0.0200 | 0.0227 | |
| 6 2-Methylnaphthalene | 142 | 5.470 | 5.469 | 0.001 | 98 | 6449 | 0.0200 | 0.0214 | |
| 7 1-Methylnaphthalene | 142 | 5.552 | 5.558 | -0.006 | 97 | 6113 | 0.0200 | 0.0213 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 7741 | 0.0200 | 0.0230 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 8088 | 0.0200 | 0.0216 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 98 | 5232 | 0.0200 | 0.0210 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 7519 | 0.0200 | 0.0210 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 98 | 103958 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.369 | 6.368 | 0.001 | 99 | 5970 | 0.0200 | 0.0216 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 98 | 8899 | 0.0200 | 0.0214 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.687 | 0.000 | 91 | 4470 | 0.0200 | 0.0202 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 100 | 6452 | 0.0200 | 0.0211 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 8922 | 0.0200 | 0.0211 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 176754 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 98 | 9990 | 0.0200 | 0.0219 | |
| 20 Anthracene | 178 | 7.660 | 7.659 | 0.001 | 100 | 7721 | 0.0200 | 0.0203 | |
| 21 1-Methylphenanthrene | 192 | 8.158 | 8.157 | 0.001 | 100 | 6015 | 0.0200 | 0.0202 | |
| 22 Fluoranthene | 202 | 8.698 | 8.698 | 0.000 | 99 | 8885 | 0.0200 | 0.0201 | |
| 23 Pyrene | 202 | 8.917 | 8.917 | 0.000 | 99 | 9329 | 0.0200 | 0.0214 | |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 5417 | 0.0200 | 0.0230 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 5711 | 0.0200 | 0.0224 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 31 | 7514 | 0.0200 | 0.0219 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 144091 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 9569 | 0.0200 | 0.0234 | M |
| 29 Benzo[b]fluoranthene | 252 | 11.286 | 11.286 | 0.000 | 100 | 7687 | 0.0200 | 0.0197 | |
| 30 Benzo[k]fluoranthene | 252 | 11.317 | 11.316 | 0.001 | 100 | 8940 | 0.0200 | 0.0202 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 1XC.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 7366 | 0.0200 | 0.0201 | |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 6442 | 0.0200 | 0.0192 | |
| * 33 Perylene-d12 | 264 | 11.745 | 11.745 | 0.000 | 100 | 142965 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 7504 | 0.0200 | 0.0198 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.165 | 13.165 | 0.000 | 97 | 8368 | 0.0200 | 0.0203 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.179 | 13.175 | 0.004 | 96 | 6920 | 0.0200 | 0.0197 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.519 | 13.518 | 0.001 | 98 | 8756 | 0.0200 | 0.0227 | |

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

60L18270SIM_00005

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 1XC.D

Injection Date: 21-Jul-2019 11:55:30

Instrument ID: MP

Operator ID: 11211

Lims ID: ic 1

Worklist Smp#: 2

Client ID:

Injection Vol: 1.0 ul

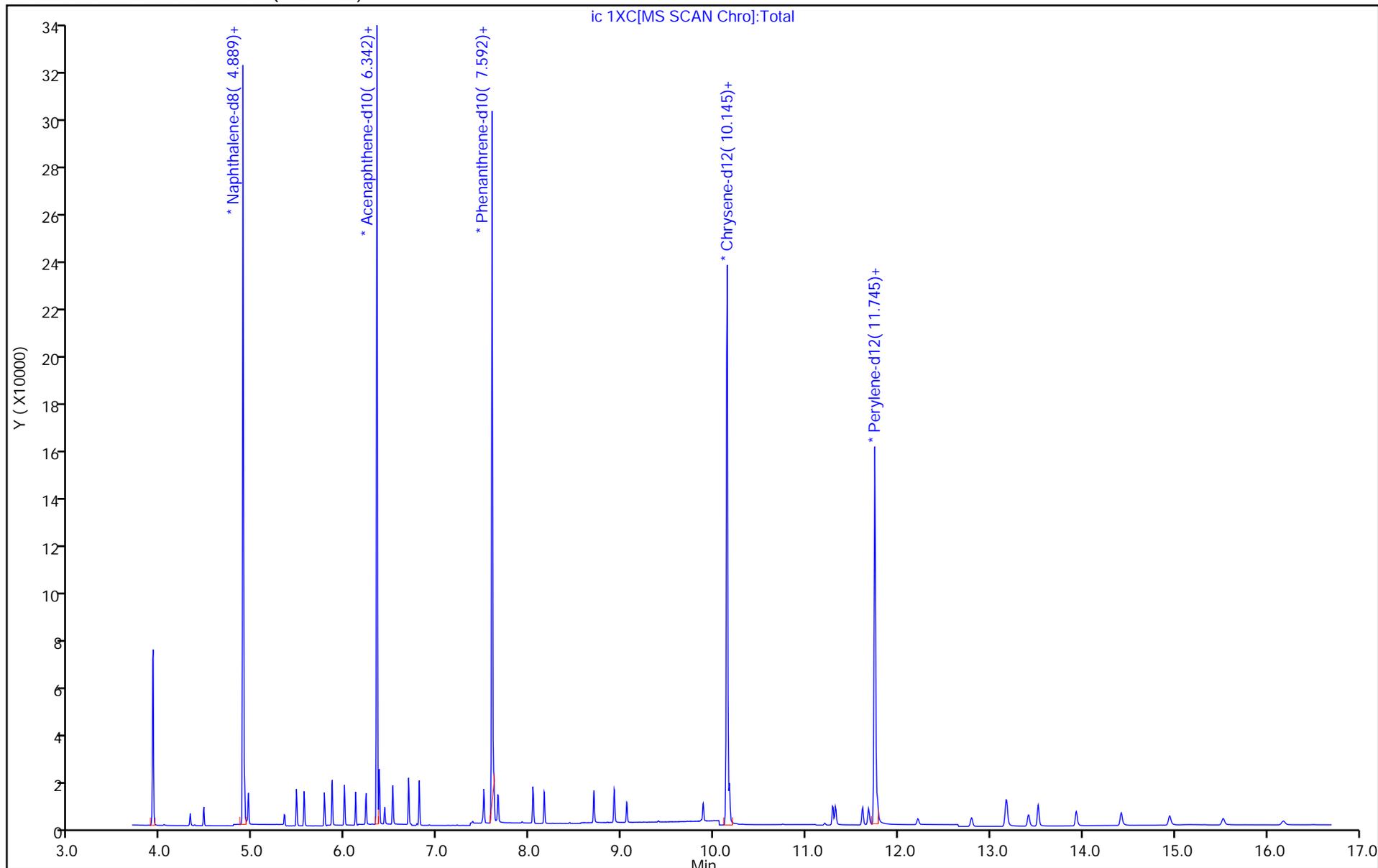
Dil. Factor: 1.0000

ALS Bottle#: 2

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville

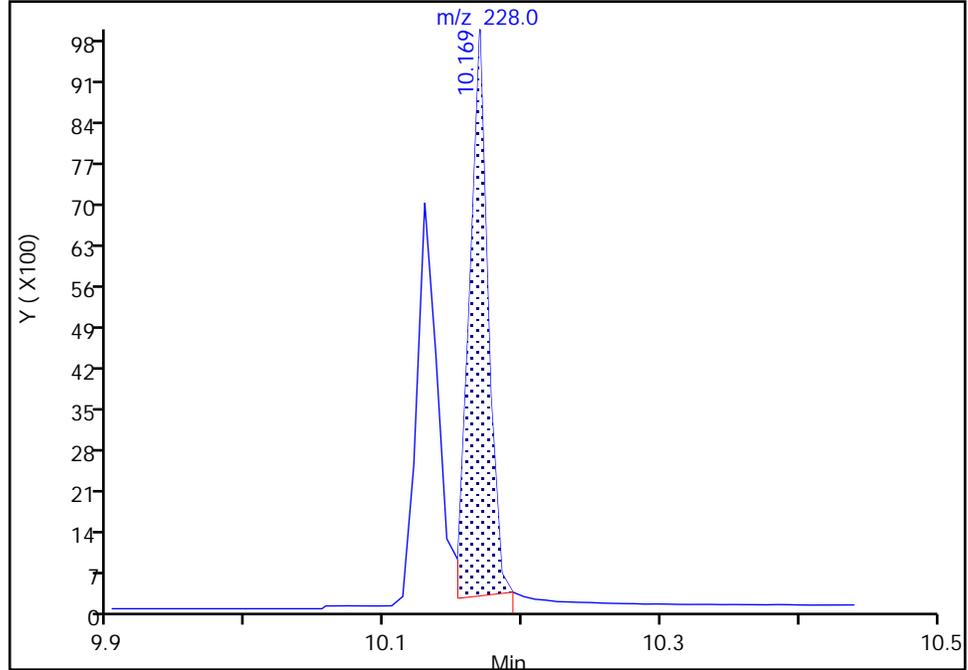
Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 1XC.D
Injection Date: 21-Jul-2019 11:55:30 Instrument ID: MP
Lims ID: ic 1
Client ID:
Operator ID: 11211 ALS Bottle#: 2 Worklist Smp#: 2
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

28 Chrysene, CAS: 218-01-9

Signal: 1

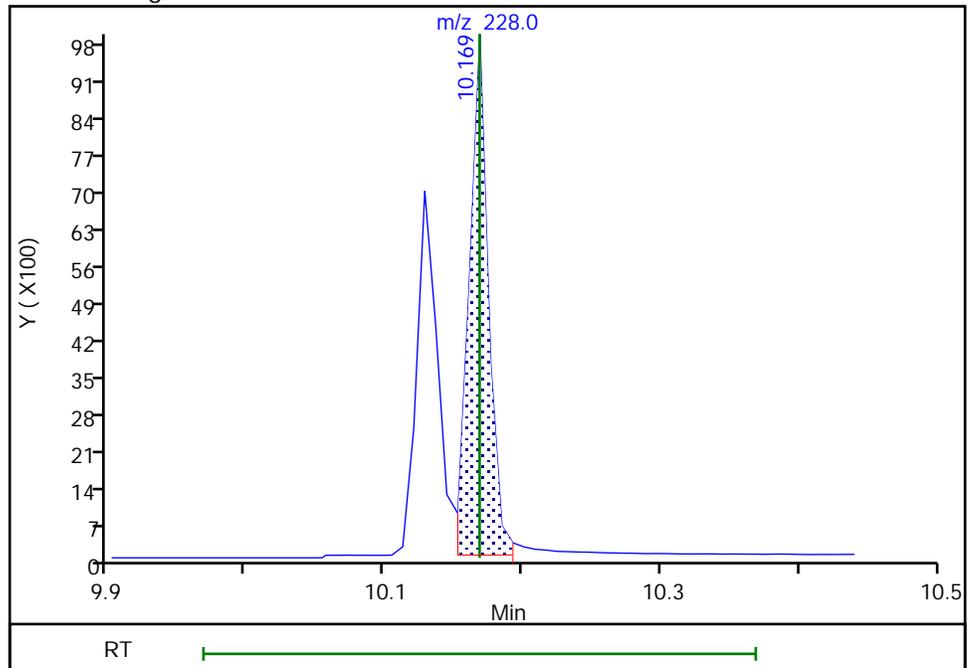
RT: 10.17
Area: 9061
Amount: 0.022312
Amount Units: ug/ml

Processing Integration Results



RT: 10.17
Area: 9569
Amount: 0.023354
Amount Units: ug/ml

Manual Integration Results



Reviewer: cochranj, 29-Jul-2019 14:32:51
Audit Action: Assigned New Baseline

Audit Reason: Baseline

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 2X.D
 Lims ID: ic 2
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 21-Jul-2019 12:20:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-003
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5
 Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:36 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: cochranj

Date: 29-Jul-2019 14:34:00

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 99 | 11829 | 0.1000 | 0.0923 | |
| 2 cis-Decalin | 138 | 4.465 | 4.465 | 0.000 | 95 | 6855 | 0.1000 | 0.0950 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 219575 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 93 | 49952 | 0.1000 | 0.1034 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 39401 | 0.1000 | 0.0970 | |
| 6 2-Methylnaphthalene | 142 | 5.469 | 5.469 | 0.000 | 97 | 31992 | 0.1000 | 0.1010 | |
| 7 1-Methylnaphthalene | 142 | 5.551 | 5.558 | -0.007 | 97 | 30870 | 0.1000 | 0.1023 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 35031 | 0.1000 | 0.0992 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 40741 | 0.1000 | 0.1036 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 98 | 26182 | 0.1000 | 0.1000 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 35669 | 0.1000 | 0.0949 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 99 | 109200 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.369 | 6.368 | 0.001 | 100 | 29745 | 0.1000 | 0.1024 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 97 | 44376 | 0.1000 | 0.1014 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.687 | 0.000 | 93 | 21645 | 0.1000 | 0.0933 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 100 | 32069 | 0.1000 | 0.0998 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 43885 | 0.1000 | 0.0998 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 184299 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 98 | 48449 | 0.1000 | 0.1021 | |
| 20 Anthracene | 178 | 7.654 | 7.659 | -0.005 | 100 | 36710 | 0.1000 | 0.0927 | |
| 21 1-Methylphenanthrene | 192 | 8.158 | 8.157 | 0.001 | 100 | 29838 | 0.1000 | 0.0960 | |
| 22 Fluoranthene | 202 | 8.698 | 8.698 | 0.000 | 99 | 43087 | 0.1000 | 0.0933 | |
| 23 Pyrene | 202 | 8.917 | 8.917 | 0.000 | 99 | 45374 | 0.1000 | 0.0980 | |
| \$ 24 Terphenyl-d14 | 244 | 9.056 | 9.053 | 0.003 | 100 | 24577 | 0.1000 | 0.0982 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 24933 | 0.1000 | 0.0921 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 89 | 34225 | 0.1000 | 0.0941 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 152968 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 44673 | 0.1000 | 0.1027 | |
| 29 Benzo[b]fluoranthene | 252 | 11.286 | 11.286 | 0.000 | 100 | 37758 | 0.1000 | 0.0923 | |
| 30 Benzo[k]fluoranthene | 252 | 11.317 | 11.316 | 0.001 | 100 | 44122 | 0.1000 | 0.0951 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 2X.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 35804 | 0.1000 | 0.0932 | |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 30951 | 0.1000 | 0.0879 | |
| * 33 Perylene-d12 | 264 | 11.745 | 11.745 | 0.000 | 100 | 149822 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 38177 | 0.1000 | 0.0960 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.165 | 13.165 | 0.000 | 94 | 40160 | 0.1000 | 0.0928 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.175 | 13.175 | 0.000 | 93 | 34402 | 0.1000 | 0.0937 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.514 | 13.518 | -0.004 | 98 | 39646 | 0.1000 | 0.0979 | |

Reagents:

60L28270SIM_00006

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 2X.D

Injection Date: 21-Jul-2019 12:20:30

Instrument ID: MP

Operator ID: 11211

Lims ID: ic 2

Worklist Smp#: 3

Client ID:

Injection Vol: 1.0 ul

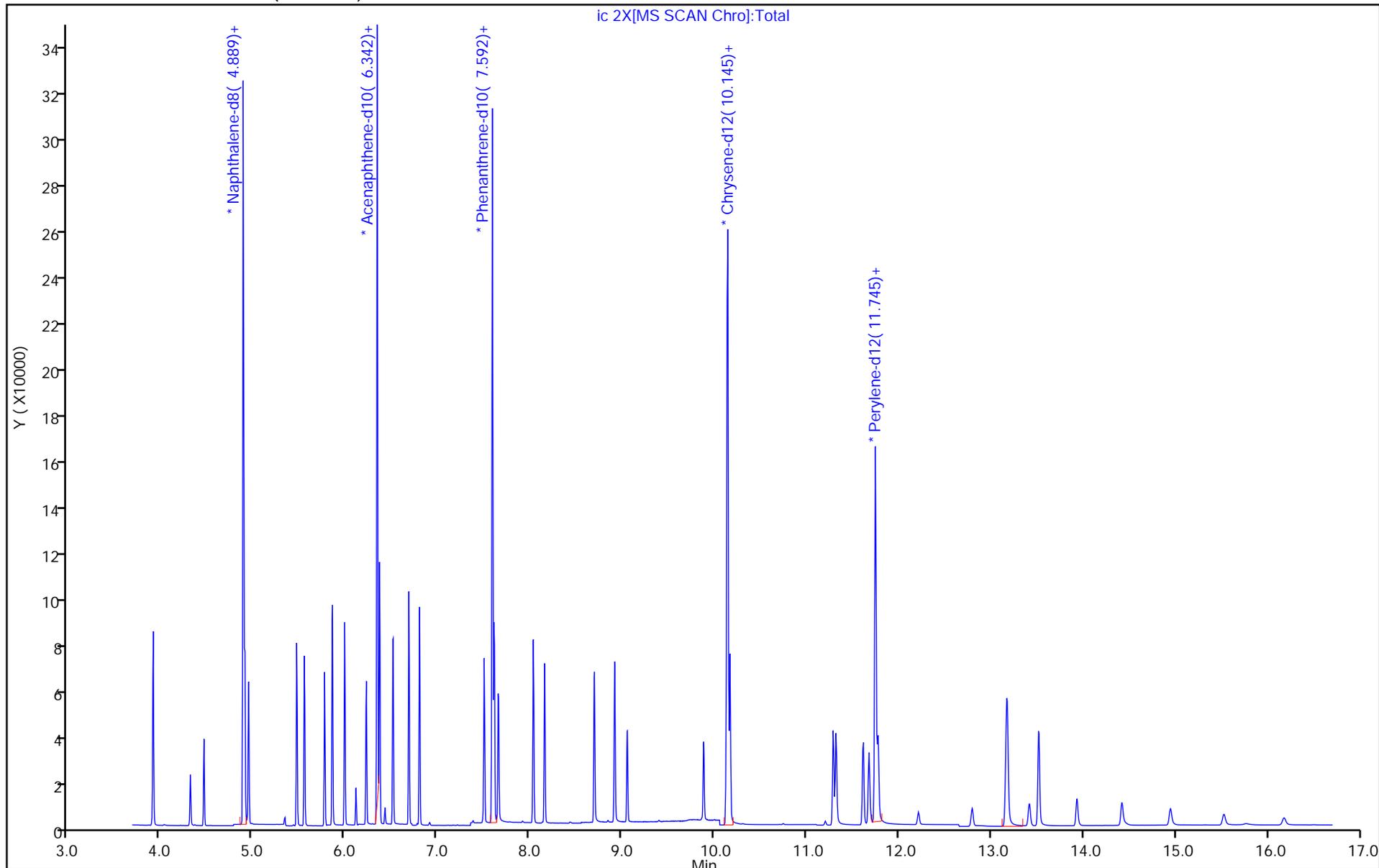
Dil. Factor: 1.0000

ALS Bottle#: 3

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 3X.D
 Lims ID: ic 3
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 21-Jul-2019 12:45:30 ALS Bottle#: 4 Worklist Smp#: 4
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-004
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5
 Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:40 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: cochranj

Date: 29-Jul-2019 14:34:50

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 99 | 29211 | 0.2500 | 0.2242 | |
| 2 cis-Decalin | 138 | 4.465 | 4.465 | 0.000 | 94 | 18083 | 0.2500 | 0.2465 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 223159 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 93 | 124160 | 0.2500 | 0.2528 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 102966 | 0.2500 | 0.2494 | |
| 6 2-Methylnaphthalene | 142 | 5.469 | 5.469 | 0.000 | 97 | 80935 | 0.2500 | 0.2515 | |
| 7 1-Methylnaphthalene | 142 | 5.551 | 5.558 | -0.007 | 97 | 77744 | 0.2500 | 0.2536 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 89825 | 0.2500 | 0.2498 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 100883 | 0.2500 | 0.2519 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 98 | 65921 | 0.2500 | 0.2473 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 85393 | 0.2500 | 0.2231 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 98 | 111209 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.368 | 6.368 | 0.000 | 100 | 74278 | 0.2500 | 0.2510 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 97 | 112131 | 0.2500 | 0.2515 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.687 | 0.000 | 91 | 58477 | 0.2500 | 0.2474 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 100 | 81020 | 0.2500 | 0.2475 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 111190 | 0.2500 | 0.2458 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 189535 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 100 | 121561 | 0.2500 | 0.2490 | |
| 20 Anthracene | 178 | 7.659 | 7.659 | 0.000 | 100 | 94415 | 0.2500 | 0.2319 | |
| 21 1-Methylphenanthrene | 192 | 8.157 | 8.157 | 0.000 | 100 | 77645 | 0.2500 | 0.2429 | |
| 22 Fluoranthene | 202 | 8.698 | 8.698 | 0.000 | 99 | 111627 | 0.2500 | 0.2351 | |
| 23 Pyrene | 202 | 8.917 | 8.917 | 0.000 | 99 | 117477 | 0.2500 | 0.2410 | |
| \$ 24 Terphenyl-d14 | 244 | 9.055 | 9.053 | 0.002 | 100 | 65167 | 0.2500 | 0.2473 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 66774 | 0.2500 | 0.2343 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 99 | 85690 | 0.2500 | 0.2237 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 161093 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 114916 | 0.2500 | 0.2509 | |
| 29 Benzo[b]fluoranthene | 252 | 11.294 | 11.286 | 0.008 | 100 | 88756 | 0.2500 | 0.2223 | |
| 30 Benzo[k]fluoranthene | 252 | 11.316 | 11.316 | 0.000 | 100 | 116322 | 0.2500 | 0.2569 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 3X.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 91702 | 0.2500 | 0.2446 | |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 73223 | 0.2500 | 0.2132 | |
| * 33 Perylene-d12 | 264 | 11.745 | 11.745 | 0.000 | 100 | 146195 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 94970 | 0.2500 | 0.2449 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.165 | 13.165 | 0.000 | 96 | 99498 | 0.2500 | 0.2356 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.175 | 13.175 | 0.000 | 91 | 87445 | 0.2500 | 0.2440 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.518 | 13.518 | 0.000 | 98 | 93120 | 0.2500 | 0.2356 | |

Reagents:

60L38270SIM_00006

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 3X.D

Injection Date: 21-Jul-2019 12:45:30

Instrument ID: MP

Operator ID: 11211

Lims ID: ic 3

Worklist Smp#: 4

Client ID:

Injection Vol: 1.0 ul

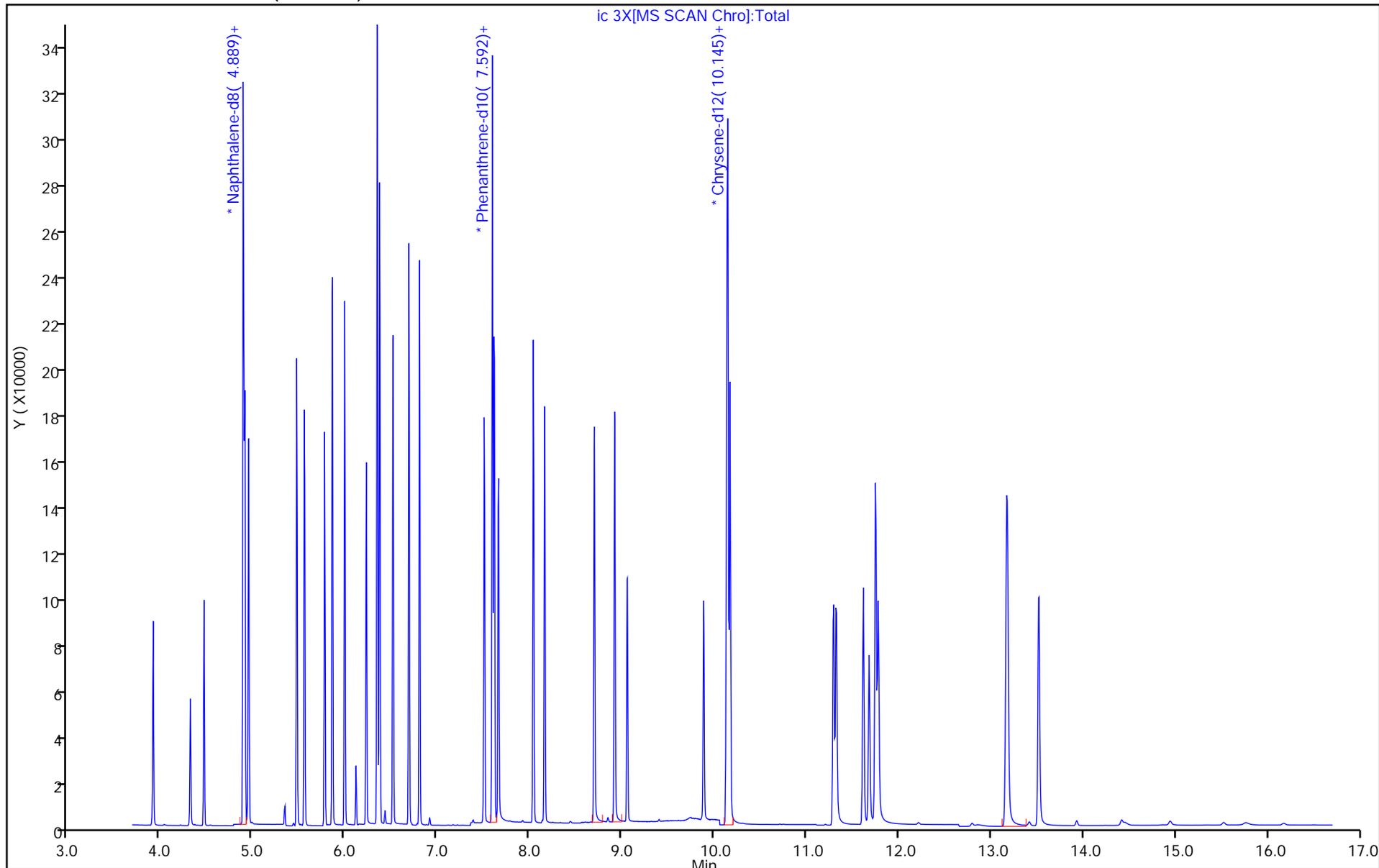
Dil. Factor: 1.0000

ALS Bottle#: 4

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\icis 4X.D
 Lims ID: icis 4
 Client ID:
 Sample Type: ICIS Calib Level: 4
 Inject. Date: 21-Jul-2019 13:11:30 ALS Bottle#: 5 Worklist Smp#: 5
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-005
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5

Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:42 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D

Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: cochranj

Date: 29-Jul-2019 14:35:56

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 99 | 59715 | 0.5000 | 0.4782 | |
| 2 cis-Decalin | 138 | 4.465 | 4.465 | 0.000 | 94 | 35517 | 0.5000 | 0.5051 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 213911 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 93 | 239975 | 0.5000 | 0.5097 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 200794 | 0.5000 | 0.5075 | |
| 6 2-Methylnaphthalene | 142 | 5.469 | 5.469 | 0.000 | 97 | 156847 | 0.5000 | 0.5085 | |
| 7 1-Methylnaphthalene | 142 | 5.558 | 5.558 | 0.000 | 97 | 150276 | 0.5000 | 0.5113 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 172674 | 0.5000 | 0.5043 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 194867 | 0.5000 | 0.5110 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 99 | 128831 | 0.5000 | 0.5076 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 176002 | 0.5000 | 0.4829 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 98 | 105890 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.368 | 6.368 | 0.000 | 100 | 143164 | 0.5000 | 0.5081 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 97 | 215794 | 0.5000 | 0.5084 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.687 | 0.000 | 93 | 115603 | 0.5000 | 0.5136 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 100 | 157549 | 0.5000 | 0.5055 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 217069 | 0.5000 | 0.5038 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 180526 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 100 | 235615 | 0.5000 | 0.5067 | |
| 20 Anthracene | 178 | 7.659 | 7.659 | 0.000 | 100 | 194178 | 0.5000 | 0.5007 | |
| 21 1-Methylphenanthrene | 192 | 8.157 | 8.157 | 0.000 | 100 | 154372 | 0.5000 | 0.5070 | |
| 22 Fluoranthene | 202 | 8.698 | 8.698 | 0.000 | 99 | 226763 | 0.5000 | 0.5015 | |
| 23 Pyrene | 202 | 8.917 | 8.917 | 0.000 | 99 | 240127 | 0.5000 | 0.5019 | |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 130168 | 0.5000 | 0.5035 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 134156 | 0.5000 | 0.4797 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 98 | 180154 | 0.5000 | 0.4793 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 158085 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 225110 | 0.5000 | 0.5008 | |
| 29 Benzo[b]fluoranthene | 252 | 11.286 | 11.286 | 0.000 | 100 | 199208 | 0.5000 | 0.4880 | |
| 30 Benzo[k]fluoranthene | 252 | 11.316 | 11.316 | 0.000 | 100 | 241982 | 0.5000 | 0.5227 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\icis 4X.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 190336 | 0.5000 | 0.4965 | |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 179370 | 0.5000 | 0.5107 | |
| * 33 Perylene-d12 | 264 | 11.745 | 11.745 | 0.000 | 100 | 149512 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 196892 | 0.5000 | 0.4964 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.165 | 13.165 | 0.000 | 95 | 215083 | 0.5000 | 0.4980 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.175 | 13.175 | 0.000 | 91 | 184681 | 0.5000 | 0.5039 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.518 | 13.518 | 0.000 | 98 | 199375 | 0.5000 | 0.4933 | |

Reagents:

60L48270SIM_00006

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\icis 4X.D

Injection Date: 21-Jul-2019 13:11:30

Instrument ID: MP

Operator ID: 11211

Lims ID: icis 4

Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul

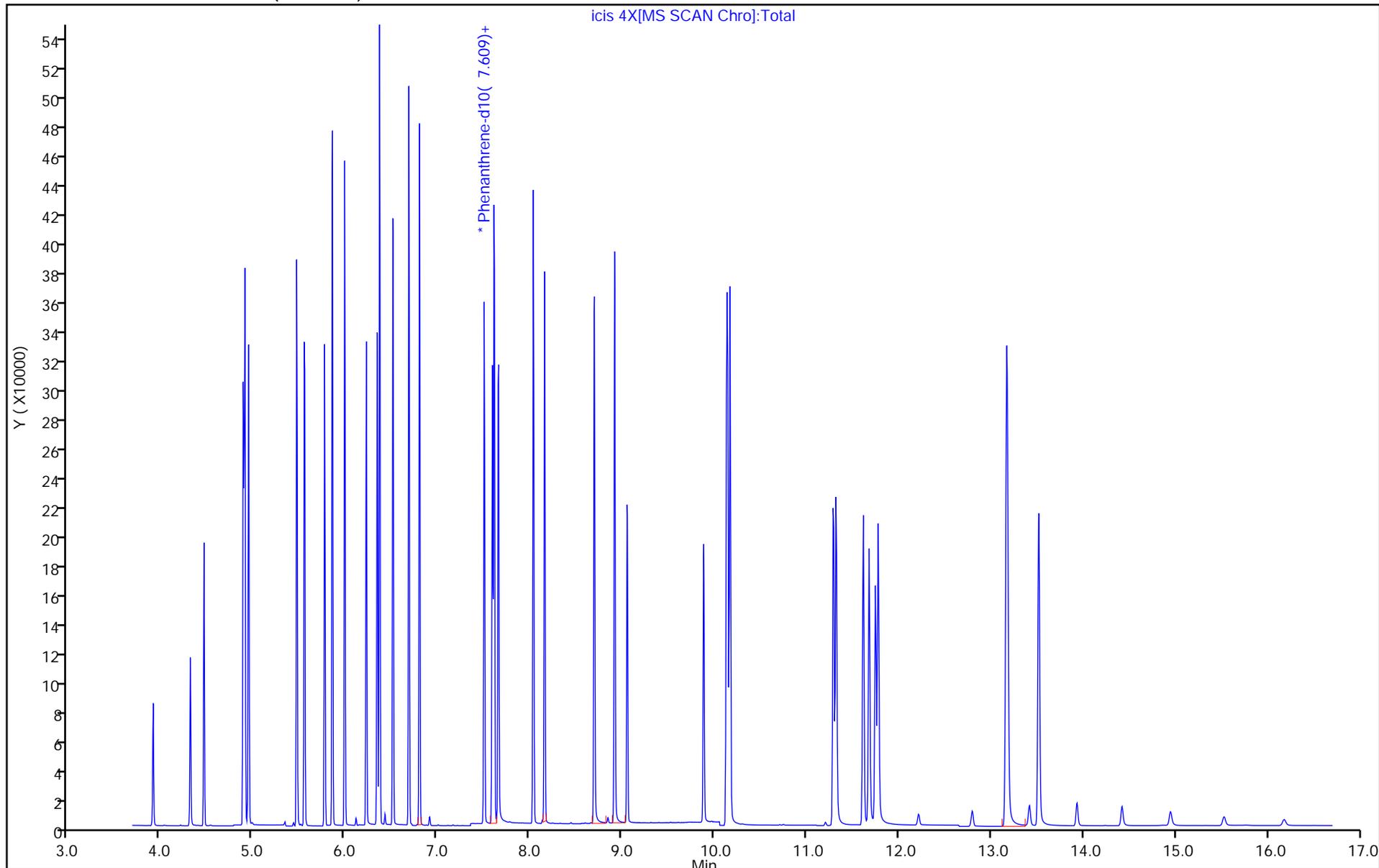
Dil. Factor: 1.0000

ALS Bottle#: 5

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 5X.D
 Lims ID: ic 5
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 21-Jul-2019 13:36:30 ALS Bottle#: 6 Worklist Smp#: 6
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-006
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5
 Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:44 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: cochranj

Date: 29-Jul-2019 14:36:48

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 99 | 125430 | 1.00 | 0.9896 | |
| 2 cis-Decalin | 138 | 4.465 | 4.465 | 0.000 | 93 | 72025 | 1.00 | 1.01 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 217109 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 93 | 478933 | 1.00 | 1.00 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 404704 | 1.00 | 1.01 | |
| 6 2-Methylnaphthalene | 142 | 5.469 | 5.469 | 0.000 | 97 | 317802 | 1.00 | 1.02 | |
| 7 1-Methylnaphthalene | 142 | 5.551 | 5.558 | -0.007 | 98 | 297864 | 1.00 | 1.00 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 349096 | 1.00 | 1.00 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 390720 | 1.00 | 1.00 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 98 | 261961 | 1.00 | 1.01 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 370007 | 1.00 | 0.99 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 99 | 108051 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.368 | 6.368 | 0.000 | 100 | 288656 | 1.00 | 1.00 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 97 | 435159 | 1.00 | 1.00 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.687 | -0.001 | 92 | 236115 | 1.00 | 1.03 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 100 | 322076 | 1.00 | 1.01 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 445228 | 1.00 | 1.02 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 183042 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.614 | 7.609 | 0.005 | 100 | 473402 | 1.00 | 1.00 | |
| 20 Anthracene | 178 | 7.659 | 7.659 | 0.000 | 100 | 406940 | 1.00 | 1.03 | |
| 21 1-Methylphenanthrene | 192 | 8.157 | 8.157 | 0.000 | 100 | 319197 | 1.00 | 1.03 | |
| 22 Fluoranthene | 202 | 8.698 | 8.698 | 0.000 | 99 | 476969 | 1.00 | 1.04 | |
| 23 Pyrene | 202 | 8.919 | 8.917 | 0.002 | 99 | 503278 | 1.00 | 1.00 | |
| \$ 24 Terphenyl-d14 | 244 | 9.055 | 9.053 | 0.002 | 100 | 270035 | 1.00 | 0.99 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 293581 | 1.00 | 1.00 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 97 | 398285 | 1.00 | 1.01 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 166121 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 460660 | 1.00 | 0.9752 | |
| 29 Benzo[b]fluoranthene | 252 | 11.293 | 11.286 | 0.007 | 100 | 459515 | 1.00 | 1.15 | |
| 30 Benzo[k]fluoranthene | 252 | 11.316 | 11.316 | 0.000 | 100 | 455269 | 1.00 | 1.01 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 5X.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 397305 | 1.00 | 1.06 | |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 361370 | 1.00 | 1.06 | |
| * 33 Perylene-d12 | 264 | 11.744 | 11.745 | -0.001 | 100 | 145750 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 406114 | 1.00 | 1.05 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.168 | 13.165 | 0.003 | 92 | 448572 | 1.00 | 1.07 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.178 | 13.175 | 0.003 | 94 | 383410 | 1.00 | 1.07 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.517 | 13.518 | -0.001 | 97 | 402739 | 1.00 | 1.02 | |

Reagents:

60L58270SIM_00006

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 5X.D

Injection Date: 21-Jul-2019 13:36:30

Instrument ID: MP

Operator ID: 11211

Lims ID: ic 5

Worklist Smp#: 6

Client ID:

Injection Vol: 1.0 ul

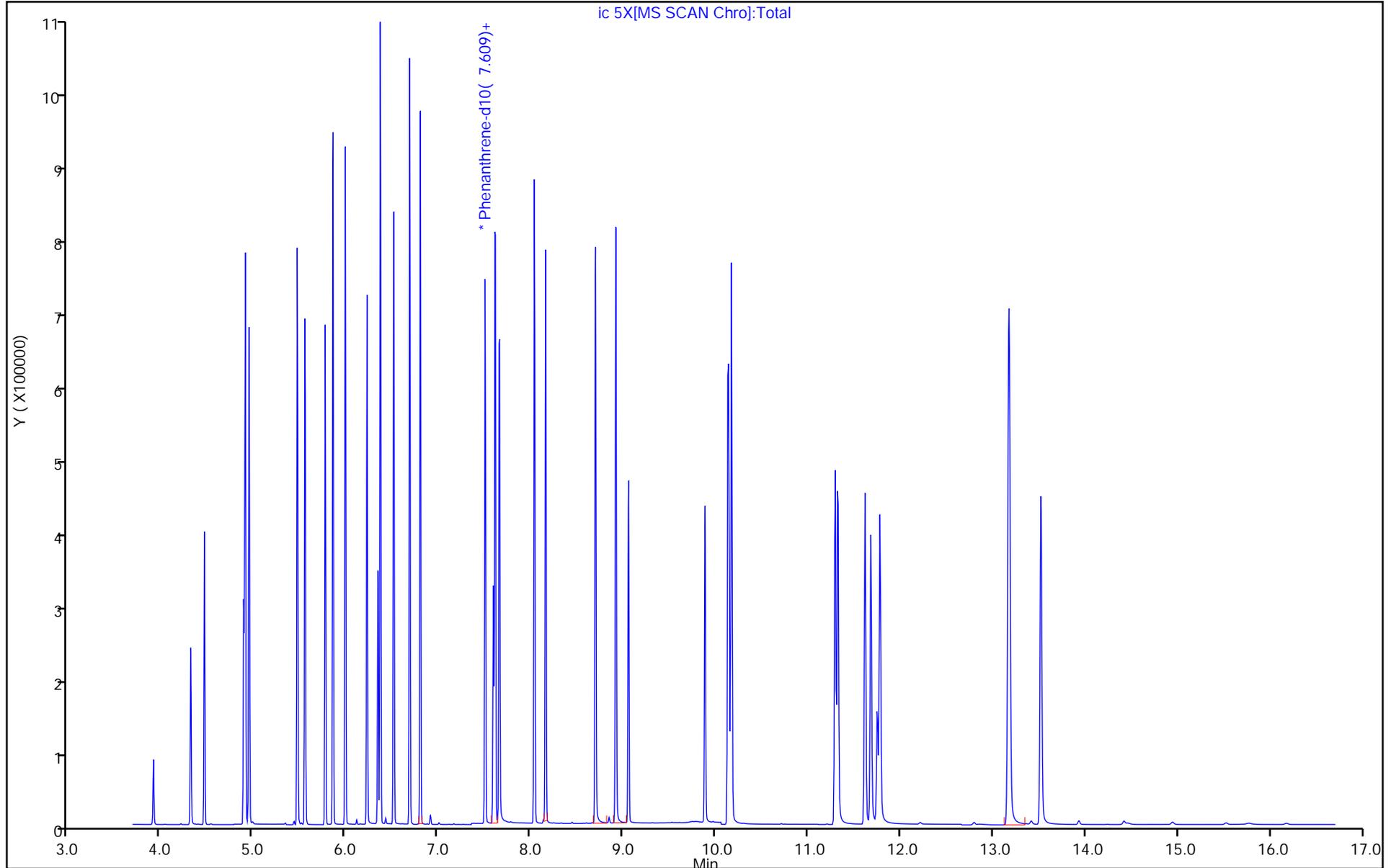
Dil. Factor: 1.0000

ALS Bottle#: 6

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 6X.D
 Lims ID: ic 6
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 21-Jul-2019 14:01:30 ALS Bottle#: 7 Worklist Smp#: 7
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-007
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5
 Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:46 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: cochranj

Date: 29-Jul-2019 14:37:25

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 98 | 328062 | 2.50 | 2.63 | |
| 2 cis-Decalin | 138 | 4.465 | 4.465 | 0.000 | 93 | 174790 | 2.50 | 2.49 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 213714 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 93 | 1138352 | 2.50 | 2.42 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 962993 | 2.50 | 2.44 | |
| 6 2-Methylnaphthalene | 142 | 5.470 | 5.469 | 0.001 | 99 | 755402 | 2.50 | 2.45 | |
| 7 1-Methylnaphthalene | 142 | 5.552 | 5.558 | -0.006 | 99 | 717030 | 2.50 | 2.44 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 837706 | 2.50 | 2.41 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 937053 | 2.50 | 2.42 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 98 | 644421 | 2.50 | 2.50 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 1005879 | 2.50 | 2.72 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 98 | 107579 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.369 | 6.368 | 0.001 | 99 | 698905 | 2.50 | 2.44 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 97 | 1059581 | 2.50 | 2.46 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.687 | 0.000 | 92 | 591687 | 2.50 | 2.59 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 99 | 791685 | 2.50 | 2.50 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 1098885 | 2.50 | 2.50 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 183836 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.615 | 7.609 | 0.006 | 100 | 1150340 | 2.50 | 2.43 | |
| 20 Anthracene | 178 | 7.654 | 7.659 | -0.005 | 100 | 1059249 | 2.50 | 2.68 | |
| 21 1-Methylphenanthrene | 192 | 8.158 | 8.157 | 0.001 | 100 | 803844 | 2.50 | 2.59 | |
| 22 Fluoranthene | 202 | 8.698 | 8.698 | 0.000 | 99 | 1229602 | 2.50 | 2.67 | |
| 23 Pyrene | 202 | 8.917 | 8.917 | 0.000 | 99 | 1286874 | 2.50 | 2.55 | |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 661955 | 2.50 | 2.43 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 99 | 762257 | 2.50 | 2.59 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 96 | 1059968 | 2.50 | 2.68 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 69 | 166497 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 1122677 | 2.50 | 2.37 | |
| 29 Benzo[b]fluoranthene | 252 | 11.294 | 11.286 | 0.008 | 100 | 1148803 | 2.50 | 2.75 | |
| 30 Benzo[k]fluoranthene | 252 | 11.324 | 11.316 | 0.008 | 100 | 1181881 | 2.50 | 2.49 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 6X.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 1035672 | 2.50 | 2.64 | |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 1021484 | 2.50 | 2.84 | |
| * 33 Perylene-d12 | 264 | 11.745 | 11.745 | 0.000 | 100 | 153219 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 1065065 | 2.50 | 2.62 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.170 | 13.165 | 0.005 | 96 | 1172244 | 2.50 | 2.65 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.179 | 13.175 | 0.004 | 90 | 982147 | 2.50 | 2.61 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.523 | 13.518 | 0.005 | 97 | 1033468 | 2.50 | 2.50 | |

Reagents:

60L68270SIM_00006

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 6X.D

Injection Date: 21-Jul-2019 14:01:30

Instrument ID: MP

Operator ID: 11211

Lims ID: ic 6

Worklist Smp#: 7

Client ID:

Injection Vol: 1.0 ul

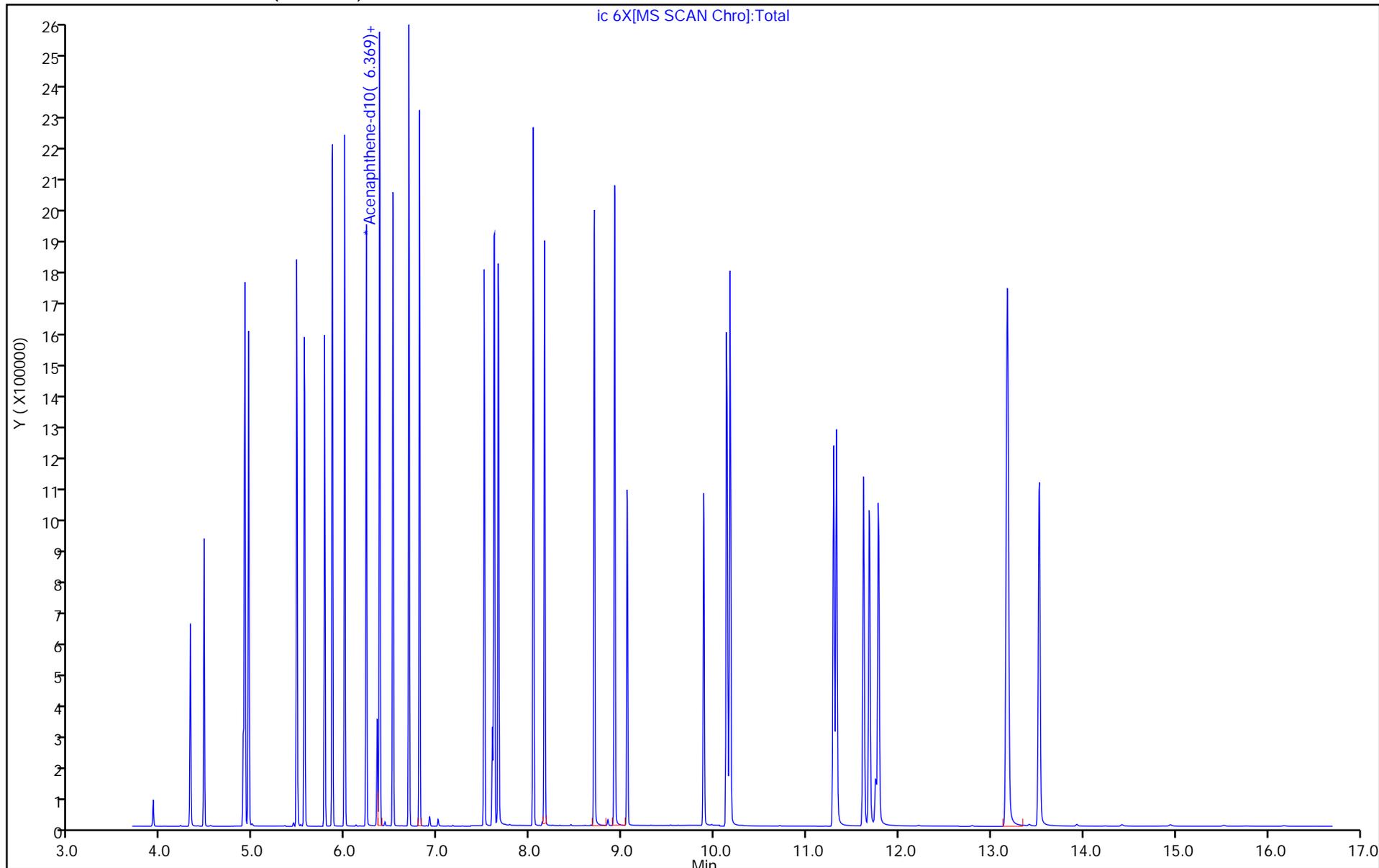
Dil. Factor: 1.0000

ALS Bottle#: 7

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Lims ID: ic 7
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 21-Jul-2019 14:26:30 ALS Bottle#: 8 Worklist Smp#: 8
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-008
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5
 Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:49 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: cochranj

Date: 29-Jul-2019 14:46:54

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 98 | 669758 | 5.00 | 5.22 | |
| 2 cis-Decalin | 138 | 4.470 | 4.465 | 0.005 | 97 | 341828 | 5.00 | 4.73 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 219644 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 93 | 2114072 | 5.00 | 4.37 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 1831105 | 5.00 | 4.51 | |
| 6 2-Methylnaphthalene | 142 | 5.476 | 5.469 | 0.007 | 97 | 1427865 | 5.00 | 4.51 | |
| 7 1-Methylnaphthalene | 142 | 5.558 | 5.558 | 0.000 | 96 | 1359311 | 5.00 | 4.50 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 1582268 | 5.00 | 4.43 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 1753733 | 5.00 | 4.41 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 100 | 1235396 | 5.00 | 4.67 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 2014135 | 5.00 | 5.30 | |
| * 12 Acenaphthene-d10 | 164 | 6.346 | 6.342 | 0.004 | 98 | 110402 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.373 | 6.368 | 0.005 | 98 | 1316249 | 5.00 | 4.48 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 98 | 2009087 | 5.00 | 4.54 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.691 | 6.687 | 0.004 | 87 | 1145006 | 5.00 | 4.88 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 99 | 1516700 | 5.00 | 4.67 | |
| 17 Dibenzothiophene | 184 | 7.508 | 7.502 | 0.006 | 99 | 2115730 | 5.00 | 4.67 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 98 | 189930 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.615 | 7.609 | 0.006 | 100 | 2193728 | 5.00 | 4.48 | |
| 20 Anthracene | 178 | 7.659 | 7.659 | 0.000 | 99 | 2079069 | 5.00 | 5.10 | |
| 21 1-Methylphenanthrene | 192 | 8.161 | 8.157 | 0.004 | 100 | 1560700 | 5.00 | 4.87 | |
| 22 Fluoranthene | 202 | 8.700 | 8.698 | 0.002 | 99 | 2405679 | 5.00 | 5.06 | |
| 23 Pyrene | 202 | 8.919 | 8.917 | 0.002 | 98 | 2501407 | 5.00 | 4.80 | |
| \$ 24 Terphenyl-d14 | 244 | 9.058 | 9.053 | 0.005 | 100 | 1275914 | 5.00 | 4.53 | |
| 25 Naphthobenzothiophene | 234 | 9.886 | 9.883 | 0.003 | 99 | 1566646 | 5.00 | 5.14 | |
| 26 Benzo[a]anthracene | 228 | 10.137 | 10.129 | 0.008 | 97 | 2109714 | 5.00 | 5.15 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 69 | 172270 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.177 | 10.169 | 0.008 | 100 | 2146798 | 5.00 | 4.38 | |
| 29 Benzo[b]fluoranthene | 252 | 11.294 | 11.286 | 0.008 | 100 | 2168983 | 5.00 | 4.87 | |
| 30 Benzo[k]fluoranthene | 252 | 11.324 | 11.316 | 0.008 | 100 | 2427192 | 5.00 | 4.81 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.622 | 11.615 | 0.007 | 99 | 2038126 | 5.00 | 4.87 | |
| 32 Benzo[a]pyrene | 252 | 11.683 | 11.676 | 0.007 | 100 | 2100916 | 5.00 | 5.48 | |
| * 33 Perylene-d12 | 264 | 11.752 | 11.745 | 0.007 | 100 | 163119 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.783 | 11.775 | 0.008 | 100 | 2119821 | 5.00 | 4.90 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.178 | 13.165 | 0.013 | 91 | 2344306 | 5.00 | 4.98 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.187 | 13.175 | 0.012 | 92 | 1946519 | 5.00 | 4.87 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.531 | 13.518 | 0.013 | 97 | 2069141 | 5.00 | 4.69 | |

Reagents:

60L78270SIM_00006

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D

Injection Date: 21-Jul-2019 14:26:30

Instrument ID: MP

Operator ID: 11211

Lims ID: ic 7

Worklist Smp#: 8

Client ID:

Injection Vol: 1.0 ul

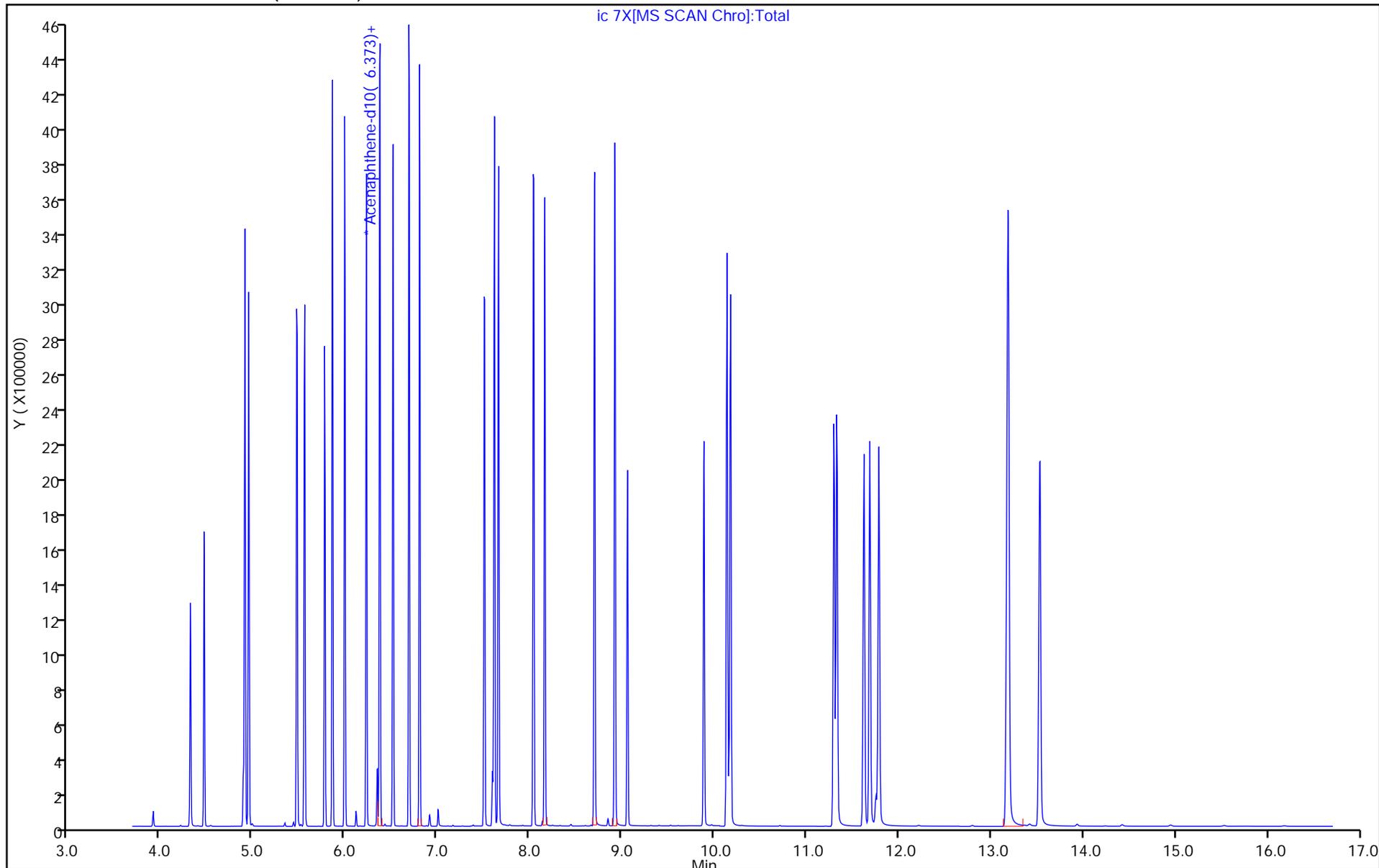
Dil. Factor: 1.0000

ALS Bottle#: 8

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



FORM VI
RESOLUTION CHECK SUMMARY

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Lab Sample ID (1): CCVIS 140-32296/2 Instrument ID (1): MP

GC Column (1): Rxi-5SilMS 25 ID: 0.25(mm) Date Analyzed (1): 08/01/2019 18:13

| ANALYTE | RT | RESOLUTION (%) |
|----------------------|-------|----------------|
| Benzo[b]fluoranthene | 11.29 | 34.40 |

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\CCVIS.D

Injection Date: 01-Aug-2019 18:13:30

Instrument ID: MP

Lims ID: CCVIS

Client ID:

Operator ID: 11211

ALS Bottle#: 2

Worklist Smp#: 2

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

29 Benzo[b]fluoranthene - 30 Benzo[k]fluoranthene

SW-846 Method

Version D: $\%R = (V / ((H1 + H2)/2)) * 100$

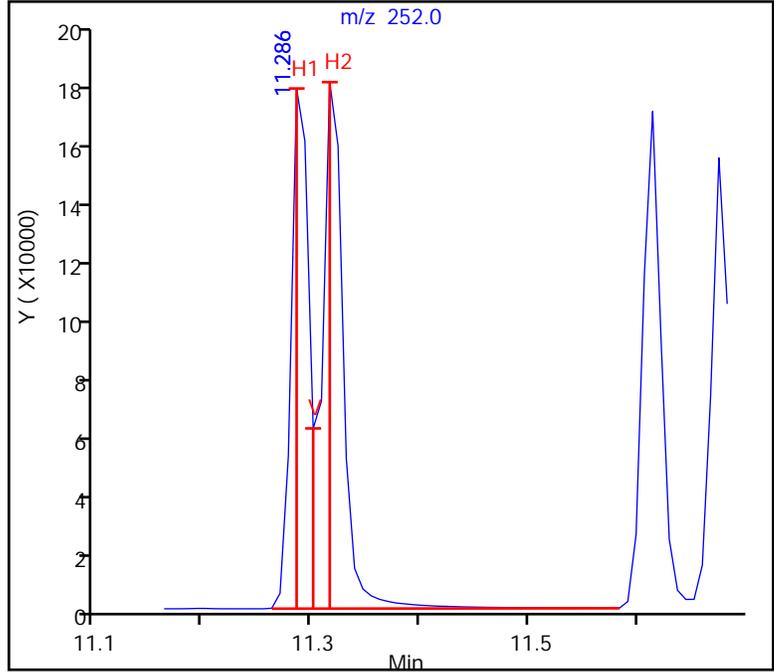
V (Valley Height) = 59811

H1(29 Benzo[b]fluoranthene) = 172617

H2(30 Benzo[k]fluoranthene) = 174717

Version D: $\%R = 34.4 \leq 50.0$

Passed



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Lab Sample ID: ICV 140-32163/10 Calibration Date: 07/21/2019 15:17

Instrument ID: MP Calib Start Date: 07/21/2019 11:55

GC Column: Rxi-5SilMS 25 ID: 0.25 (mm) Calib End Date: 07/21/2019 14:26

Lab File ID: icvX.D Conc. Units: ng/L

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|----------------------------|------------|---------|--------|---------|-------------|--------------|-------|--------|
| cis-Decalin | Ave | 0.1643 | 0.1669 | | 508000 | 500000 | 1.5 | 30.0 |
| Naphthalene | Ave | 1.101 | 1.105 | 0.7000 | 502000 | 500000 | 0.4 | 30.0 |
| Benzo (b) thiophene | Ave | 0.9249 | 0.9457 | | 511000 | 500000 | 2.3 | 30.0 |
| 2-Methylnaphthalene | Ave | 0.7210 | 0.6900 | 0.4000 | 479000 | 500000 | -4.3 | 30.0 |
| 1-Methylnaphthalene | Ave | 0.6870 | 0.6519 | | 474000 | 500000 | -5.1 | 30.0 |
| 1,1'-Biphenyl | Ave | 1.801 | 1.848 | | 513000 | 500000 | 2.6 | 30.0 |
| 2,6-Dimethylnaphthalene | Ave | 1.198 | 1.220 | | 509000 | 500000 | 1.8 | 30.0 |
| Acenaphthylene | Ave | 1.721 | 1.548 | 0.9000 | 450000 | 500000 | -10.0 | 30.0 |
| Acenaphthene | Ave | 1.330 | 1.328 | 0.9000 | 499000 | 500000 | -0.2 | 30.0 |
| Dibenzofuran | Ave | 2.004 | 2.047 | 0.8000 | 511000 | 500000 | 2.1 | 30.0 |
| 2,3,5-Trimethylnaphthalene | Ave | 1.063 | 1.102 | | 519000 | 500000 | 3.7 | 30.0 |
| Fluorene | Ave | 1.472 | 1.470 | 0.9000 | 499000 | 500000 | -0.1 | 30.0 |
| Dibenzothiophene | Ave | 1.193 | 1.306 | | 547000 | 500000 | 9.5 | 30.0 |
| Phenanthrene | Ave | 1.288 | 1.296 | 0.7000 | 503000 | 500000 | 0.6 | 30.0 |
| Anthracene | Ave | 1.074 | 1.009 | 0.7000 | 470000 | 500000 | -6.1 | 30.0 |
| 1-Methylphenanthrene | Ave | 0.8433 | 0.8464 | | 502000 | 500000 | 0.4 | 30.0 |
| Fluoranthene | Ave | 1.252 | 1.181 | 0.6000 | 471000 | 500000 | -5.7 | 30.0 |
| Pyrene | Ave | 1.513 | 1.413 | 0.6000 | 467000 | 500000 | -6.6 | 30.0 |
| Naphthobenzothiophene | Ave | 0.8846 | 0.6840 | | 387000 | 500000 | -22.7 | 30.0 |
| Benzo[a]anthracene | Ave | 1.189 | 0.998 | 0.8000 | 420000 | 500000 | -16.1 | 30.0 |
| Chrysene | Ave | 1.422 | 1.457 | 0.7000 | 513000 | 500000 | 2.5 | 30.0 |
| Benzo[b]fluoranthene | Ave | 1.365 | 1.455 | 0.7000 | 533000 | 500000 | 6.6 | 30.0 |
| Benzo[k]fluoranthene | Ave | 1.548 | 1.607 | 0.7000 | 519000 | 500000 | 3.8 | 30.0 |
| Benzo[e]pyrene | Ave | 1.282 | 1.420 | | 554000 | 500000 | 10.7 | 30.0 |
| Benzo[a]pyrene | Ave | 1.175 | 1.016 | 0.7000 | 432000 | 500000 | -13.5 | 30.0 |
| Perylene | Ave | 1.326 | 1.502 | | 566000 | 500000 | 13.2 | 30.0 |
| Indeno[1,2,3-cd]pyrene | Ave | 1.444 | 1.386 | 0.5000 | 480000 | 500000 | -4.0 | 30.0 |
| Dibenz (a,h) anthracene | Ave | 1.226 | 1.273 | 0.4000 | 519000 | 500000 | 3.9 | 30.0 |
| Benzo[g,h,i]perylene | Ave | 1.352 | 1.299 | 0.5000 | 481000 | 500000 | -3.9 | 30.0 |
| Nitrobenzene-d5 | Ave | 0.2919 | 0.2571 | | 440000 | 500000 | -11.9 | 30.0 |
| 2-Fluorobiphenyl (Surr) | Ave | 1.617 | 1.659 | | 513000 | 500000 | 2.6 | 30.0 |
| Terphenyl-d14 | Ave | 0.8177 | 0.8286 | | 507000 | 500000 | 1.3 | 30.0 |

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\icvX.D
 Lims ID: icv
 Client ID:
 Sample Type: ICV
 Inject. Date: 21-Jul-2019 15:17:30 ALS Bottle#: 10 Worklist Smp#: 10
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012421-010
 Misc. Info.: P072119(8270)ICSC
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5

Method: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 29-Jul-2019 18:38:49 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D

Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX1022

First Level Reviewer: jacksonc

Date: 29-Jul-2019 18:54:44

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.316 | 4.316 | 0.000 | 100 | 51083 | 0.5000 | 0.4403 | |
| 2 cis-Decalin | 138 | 4.465 | 4.465 | 0.000 | 90 | 33161 | 0.5000 | 0.5077 | |
| * 3 Naphthalene-d8 | 136 | 4.896 | 4.889 | 0.007 | 100 | 198727 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.909 | 4.909 | 0.000 | 93 | 219660 | 0.5000 | 0.5022 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.950 | 0.000 | 100 | 187937 | 0.5000 | 0.5113 | |
| 6 2-Methylnaphthalene | 142 | 5.476 | 5.469 | 0.007 | 98 | 137124 | 0.5000 | 0.4785 | |
| 7 1-Methylnaphthalene | 142 | 5.558 | 5.558 | 0.000 | 97 | 129549 | 0.5000 | 0.4745 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 162182 | 0.5000 | 0.5129 | |
| 9 1,1'-Biphenyl | 154 | 5.858 | 5.858 | 0.000 | 100 | 180700 | 0.5000 | 0.5132 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 99 | 119306 | 0.5000 | 0.5091 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.225 | 0.000 | 100 | 151363 | 0.5000 | 0.4498 | |
| * 12 Acenaphthene-d10 | 164 | 6.346 | 6.342 | 0.004 | 99 | 97779 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.369 | 6.368 | 0.000 | 100 | 129871 | 0.5000 | 0.4992 | |
| 14 Dibenzofuran | 168 | 6.516 | 6.516 | 0.000 | 98 | 200165 | 0.5000 | 0.5107 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.691 | 6.687 | 0.004 | 86 | 107764 | 0.5000 | 0.5185 | |
| 16 Fluorene | 166 | 6.803 | 6.803 | 0.000 | 100 | 143725 | 0.5000 | 0.4994 | |
| 17 Dibenzothiophene | 184 | 7.508 | 7.502 | 0.006 | 99 | 215642 | 0.5000 | 0.5473 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 99 | 165088 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.615 | 7.609 | 0.006 | 100 | 213927 | 0.5000 | 0.5031 | |
| 20 Anthracene | 178 | 7.659 | 7.659 | 0.000 | 100 | 166513 | 0.5000 | 0.4695 | |
| 21 1-Methylphenanthrene | 192 | 8.161 | 8.157 | 0.004 | 100 | 139730 | 0.5000 | 0.5019 | |
| 22 Fluoranthene | 202 | 8.698 | 8.698 | 0.000 | 99 | 194906 | 0.5000 | 0.4713 | |
| 23 Pyrene | 202 | 8.919 | 8.917 | 0.002 | 99 | 203806 | 0.5000 | 0.4668 | |
| \$ 24 Terphenyl-d14 | 244 | 9.055 | 9.053 | 0.002 | 100 | 119540 | 0.5000 | 0.5066 | |
| 25 Naphthobenzothiophene | 234 | 9.886 | 9.883 | 0.003 | 100 | 98686 | 0.5000 | 0.3866 | |
| 26 Benzo[a]anthracene | 228 | 10.137 | 10.129 | 0.008 | 85 | 143946 | 0.5000 | 0.4196 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 69 | 144275 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 210262 | 0.5000 | 0.5125 | |
| 29 Benzo[b]fluoranthene | 252 | 11.294 | 11.286 | 0.008 | 100 | 168733 | 0.5000 | 0.5329 | |
| 30 Benzo[k]fluoranthene | 252 | 11.324 | 11.316 | 0.008 | 100 | 186318 | 0.5000 | 0.5189 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\icvX.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 164618 | 0.5000 | 0.5536 | |
| 32 Benzo[a]pyrene | 252 | 11.683 | 11.676 | 0.007 | 100 | 117777 | 0.5000 | 0.4324 | |
| * 33 Perylene-d12 | 264 | 11.752 | 11.745 | 0.007 | 100 | 115957 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 174114 | 0.5000 | 0.5660 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.170 | 13.165 | 0.005 | 90 | 160701 | 0.5000 | 0.4798 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.179 | 13.175 | 0.004 | 95 | 147633 | 0.5000 | 0.5193 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.518 | 13.518 | 0.000 | 97 | 150646 | 0.5000 | 0.4806 | |

Reagents:

60ICV8270SIM_00010

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\icvX.D

Injection Date: 21-Jul-2019 15:17:30

Instrument ID: MP

Operator ID: 11211

Lims ID: icv

Worklist Smp#: 10

Client ID:

Injection Vol: 1.0 ul

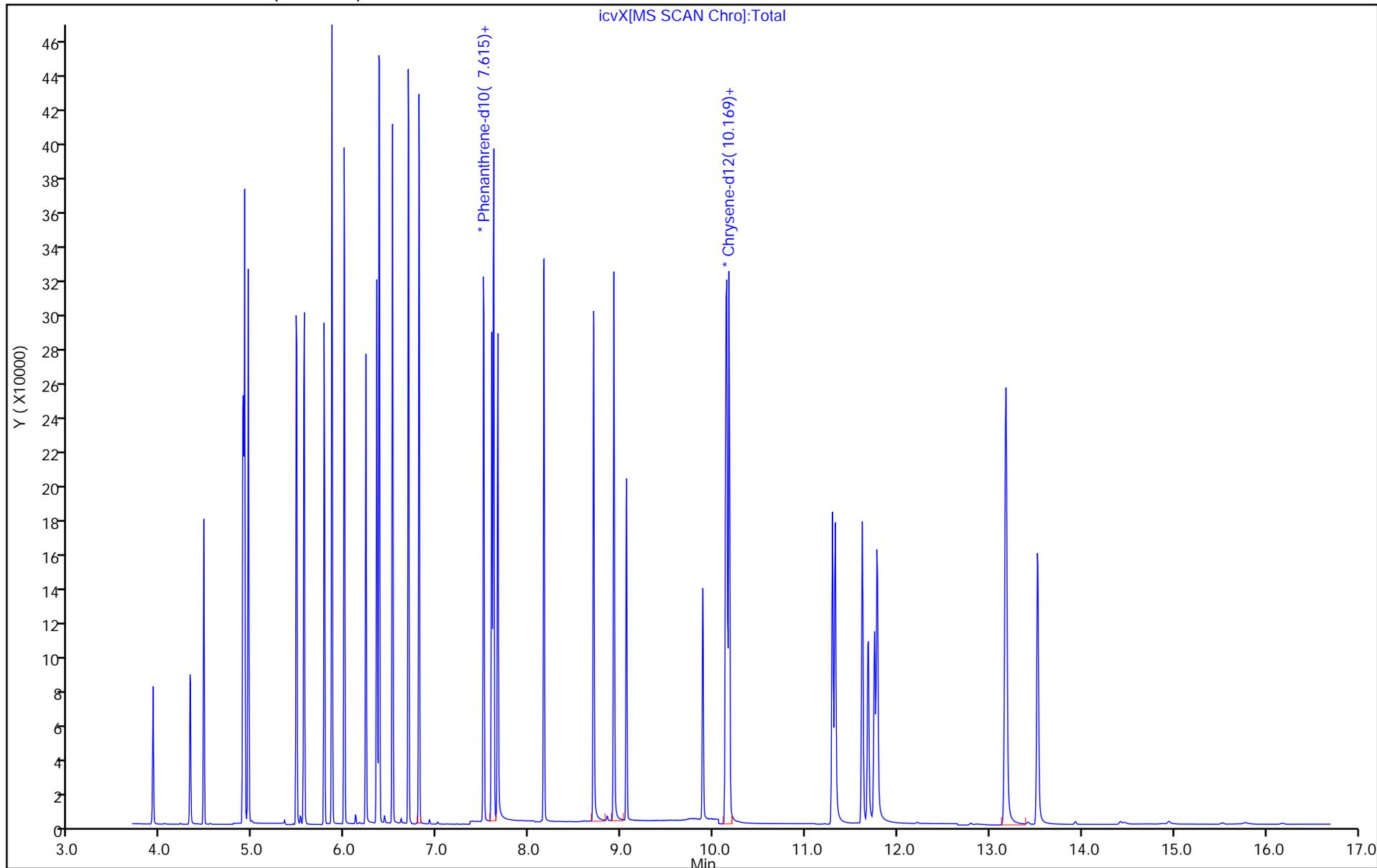
Dil. Factor: 1.0000

ALS Bottle#: 10

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



FORM VII
GC/MS SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Lab Sample ID: CCVIS 140-32296/2 Calibration Date: 08/01/2019 18:13
 Instrument ID: MP Calib Start Date: 07/21/2019 11:55
 GC Column: Rxi-5SilMS 25 ID: 0.25 (mm) Calib End Date: 07/21/2019 14:26
 Lab File ID: CCVIS.D Conc. Units: ng/L

| ANALYTE | CURVE TYPE | AVE RRF | RRF | MIN RRF | CALC AMOUNT | SPIKE AMOUNT | %D | MAX %D |
|----------------------------|------------|---------|--------|---------|-------------|--------------|------|--------|
| cis-Decalin | Ave | 0.1643 | 0.1676 | | 510000 | 500000 | 2.0 | 20.0 |
| Naphthalene | Ave | 1.101 | 1.129 | 0.7000 | 513000 | 500000 | 2.5 | 20.0 |
| Benzo (b) thiophene | Ave | 0.9249 | 0.9294 | | 502000 | 500000 | 0.5 | 20.0 |
| 2-Methylnaphthalene | Ave | 0.7210 | 0.7361 | 0.4000 | 510000 | 500000 | 2.1 | 20.0 |
| 1-Methylnaphthalene | Ave | 0.6870 | 0.7040 | | 512000 | 500000 | 2.5 | 20.0 |
| 1,1'-Biphenyl | Ave | 1.801 | 1.843 | | 512000 | 500000 | 2.4 | 20.0 |
| 2,6-Dimethylnaphthalene | Ave | 1.198 | 1.223 | | 510000 | 500000 | 2.0 | 20.0 |
| Acenaphthylene | Ave | 1.721 | 1.823 | 0.9000 | 530000 | 500000 | 5.9 | 20.0 |
| Acenaphthene | Ave | 1.330 | 1.367 | 0.9000 | 514000 | 500000 | 2.7 | 20.0 |
| Dibenzofuran | Ave | 2.004 | 1.994 | 0.8000 | 497000 | 500000 | -0.5 | 20.0 |
| 2,3,5-Trimethylnaphthalene | Ave | 1.063 | 1.097 | | 516000 | 500000 | 3.3 | 20.0 |
| Fluorene | Ave | 1.472 | 1.553 | 0.9000 | 528000 | 500000 | 5.5 | 20.0 |
| Dibenzothiophene | Ave | 1.193 | 1.211 | | 507000 | 500000 | 1.5 | 20.0 |
| Phenanthrene | Ave | 1.288 | 1.295 | 0.7000 | 503000 | 500000 | 0.6 | 20.0 |
| Anthracene | Ave | 1.074 | 1.114 | 0.7000 | 518000 | 500000 | 3.7 | 20.0 |
| 1-Methylphenanthrene | Ave | 0.8433 | 0.8681 | | 515000 | 500000 | 2.9 | 20.0 |
| Fluoranthene | Ave | 1.252 | 1.281 | 0.6000 | 512000 | 500000 | 2.3 | 20.0 |
| Pyrene | Ave | 1.513 | 1.656 | 0.6000 | 547000 | 500000 | 9.4 | 20.0 |
| Naphthobenzothiophene | Ave | 0.8846 | 0.9236 | | 522000 | 500000 | 4.4 | 20.0 |
| Benzo[a]anthracene | Ave | 1.189 | 1.242 | 0.8000 | 522000 | 500000 | 4.5 | 20.0 |
| Chrysene | Ave | 1.422 | 1.413 | 0.7000 | 497000 | 500000 | -0.6 | 20.0 |
| Benzo[b]fluoranthene | Ave | 1.365 | 1.370 | 0.7000 | 502000 | 500000 | 0.4 | 20.0 |
| Benzo[k]fluoranthene | Ave | 1.548 | 1.698 | 0.7000 | 548000 | 500000 | 9.7 | 20.0 |
| Benzo[e]pyrene | Ave | 1.282 | 1.312 | | 512000 | 500000 | 2.3 | 20.0 |
| Benzo[a]pyrene | Ave | 1.175 | 1.225 | 0.7000 | 522000 | 500000 | 4.3 | 20.0 |
| Perylene | Ave | 1.326 | 1.330 | | 501000 | 500000 | 0.3 | 20.0 |
| Indeno[1,2,3-cd]pyrene | Ave | 1.444 | 1.457 | 0.5000 | 504000 | 500000 | 0.9 | 20.0 |
| Dibenz (a,h) anthracene | Ave | 1.226 | 1.243 | 0.4000 | 507000 | 500000 | 1.4 | 20.0 |
| Benzo[g,h,i]perylene | Ave | 1.352 | 1.342 | 0.5000 | 496000 | 500000 | -0.7 | 20.0 |
| Nitrobenzene-d5 | Ave | 0.2919 | 0.3202 | | 549000 | 500000 | 9.7 | 20.0 |
| 2-Fluorobiphenyl (Surr) | Ave | 1.617 | 1.611 | | 498000 | 500000 | -0.3 | 20.0 |
| Terphenyl-d14 | Ave | 0.8177 | 0.8417 | | 515000 | 500000 | 2.9 | 20.0 |

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\CCVIS.D
 Lims ID: CCVIS
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 01-Aug-2019 18:13:30 ALS Bottle#: 2 Worklist Smp#: 2
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-002
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Sublist: chrom-8270D_SIM_MP*sub5
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:07 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym

Date: 02-Aug-2019 06:58:33

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.311 | 4.311 | 0.000 | 100 | 76683 | 0.5000 | 0.5485 | |
| 2 cis-Decalin | 138 | 4.460 | 4.460 | 0.000 | 92 | 40129 | 0.5000 | 0.5099 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 239453 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.902 | 4.902 | 0.000 | 100 | 270230 | 0.5000 | 0.5127 | |
| 5 Benzo(b)thiophene | 134 | 4.943 | 4.943 | 0.000 | 99 | 222535 | 0.5000 | 0.5024 | |
| 6 2-Methylnaphthalene | 142 | 5.469 | 5.469 | 0.000 | 100 | 176251 | 0.5000 | 0.5104 | |
| 7 1-Methylnaphthalene | 142 | 5.551 | 5.551 | 0.000 | 100 | 168571 | 0.5000 | 0.5124 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 187756 | 0.5000 | 0.4983 | |
| 9 1,1'-Biphenyl | 154 | 5.853 | 5.853 | 0.000 | 99 | 214768 | 0.5000 | 0.5118 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 93 | 142476 | 0.5000 | 0.5102 | |
| 11 Acenaphthylene | 152 | 6.221 | 6.221 | 0.000 | 100 | 212448 | 0.5000 | 0.5297 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 99 | 116527 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.368 | 6.368 | 0.000 | 99 | 159271 | 0.5000 | 0.5137 | |
| 14 Dibenzofuran | 168 | 6.512 | 6.512 | 0.000 | 100 | 232309 | 0.5000 | 0.4973 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.686 | 6.686 | 0.000 | 91 | 127878 | 0.5000 | 0.5163 | |
| 16 Fluorene | 166 | 6.800 | 6.800 | 0.000 | 100 | 180911 | 0.5000 | 0.5275 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 234881 | 0.5000 | 0.5073 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 194000 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 100 | 251274 | 0.5000 | 0.5029 | |
| 20 Anthracene | 178 | 7.654 | 7.654 | 0.000 | 100 | 216062 | 0.5000 | 0.5185 | |
| 21 1-Methylphenanthrene | 192 | 8.157 | 8.157 | 0.000 | 100 | 168404 | 0.5000 | 0.5147 | |
| 22 Fluoranthene | 202 | 8.695 | 8.695 | 0.000 | 99 | 248564 | 0.5000 | 0.5115 | |
| 23 Pyrene | 202 | 8.916 | 8.916 | 0.000 | 99 | 263359 | 0.5000 | 0.5472 | |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 133862 | 0.5000 | 0.5146 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 146896 | 0.5000 | 0.5221 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 98 | 197561 | 0.5000 | 0.5224 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 159044 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 224729 | 0.5000 | 0.4969 | |
| 29 Benzo[b]fluoranthene | 252 | 11.286 | 11.286 | 0.000 | 100 | 203383 | 0.5000 | 0.5018 | |
| 30 Benzo[k]fluoranthene | 252 | 11.316 | 11.316 | 0.000 | 100 | 252108 | 0.5000 | 0.5484 | |

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\CCVIS.D

| Compound | Sig | RT (min.) | Adj RT (min.) | Diff RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|----------------|-----|----------|---------------|-----------------|-------|
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.000 | 100 | 194747 | 0.5000 | 0.5116 | |
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 181906 | 0.5000 | 0.5216 | |
| * 33 Perylene-d12 | 264 | 11.744 | 11.744 | 0.000 | 100 | 148447 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 197476 | 0.5000 | 0.5014 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.168 | 13.168 | 0.000 | 92 | 216272 | 0.5000 | 0.5044 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.178 | 13.178 | 0.000 | 93 | 184503 | 0.5000 | 0.5070 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.521 | 13.521 | 0.000 | 98 | 199196 | 0.5000 | 0.4964 | |

Reagents:

608270simccv_00005

Amount Added: 1.00

Units: mL

Report Date: 02-Aug-2019 09:31:08

Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\CCVIS.D

Injection Date: 01-Aug-2019 18:13:30

Instrument ID: MP

Operator ID: 11211

Lims ID: CCVIS

Worklist Smp#: 2

Client ID:

Injection Vol: 1.0 ul

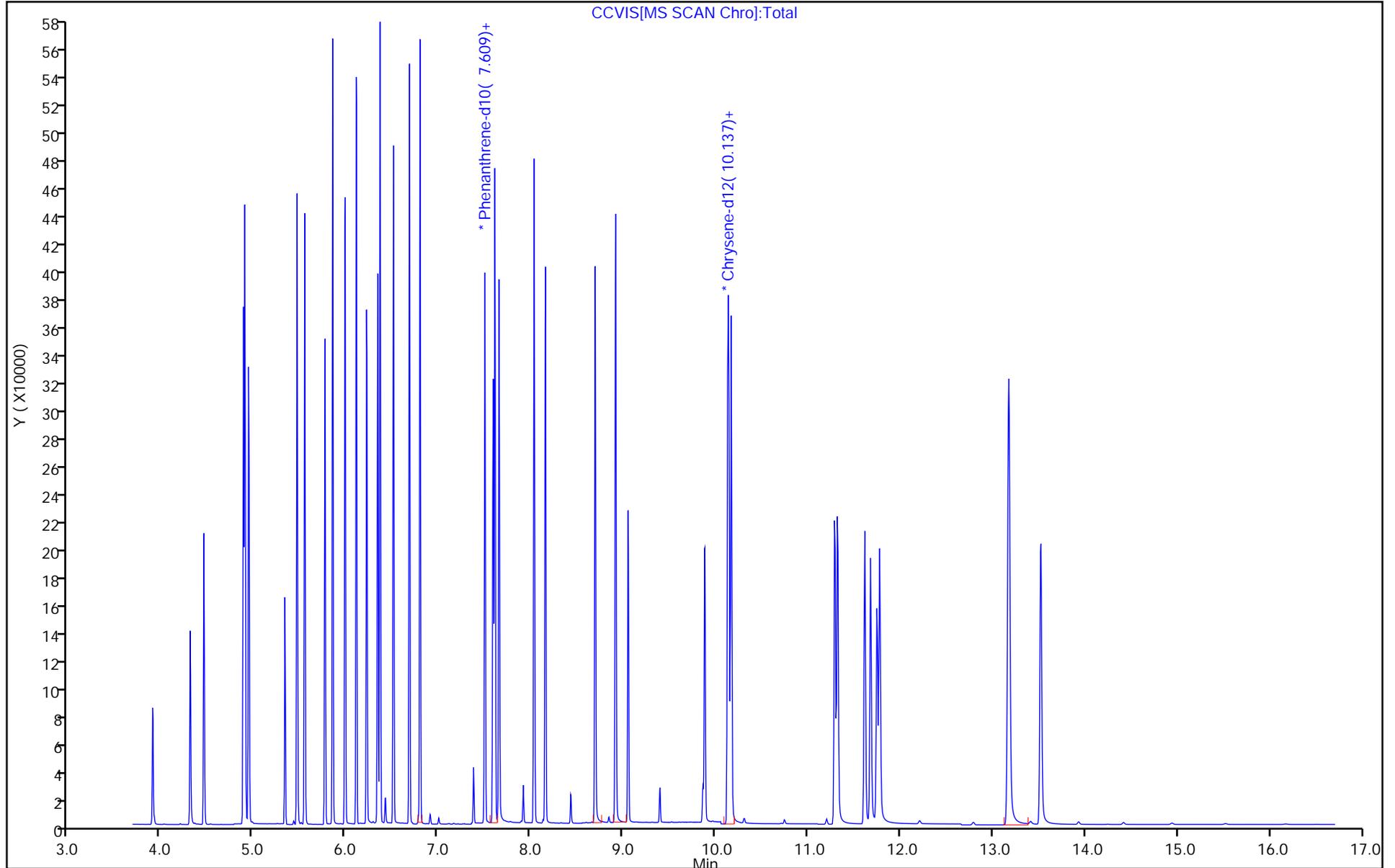
Dil. Factor: 1.0000

ALS Bottle#: 2

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\WDM.D
 Lims ID: WDM
 Client ID:
 Sample Type: WDM
 Inject. Date: 01-Aug-2019 18:38:30 ALS Bottle#: 3 Worklist Smp#: 3
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-003
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 04-Aug-2019 13:54:58 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0325

First Level Reviewer: cochranj Date: 04-Aug-2019 13:54:44

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|------------------------------------|-------|-----------|-----------------|---------------|-----|----------|---------------|-----------------|-------|
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 294385 | 0.5000 | 0.5000 | |
| * 12 Acenaphthene-d10 | 164 | 6.346 | 6.346 | 0.000 | 98 | 161347 | 0.5000 | 0.5000 | |
| * 18 Phenanthrene-d10 | 188 | 7.598 | 7.598 | 0.000 | 98 | 264706 | 0.5000 | 0.5000 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 69 | 238667 | 0.5000 | 0.5000 | |
| * 33 Perylene-d12 | 264 | 11.752 | 11.752 | 0.000 | 100 | 220216 | 0.5000 | 0.5000 | |
| A 38 C1-Naphthalenes | 142 | 5.533 | (5.454-5.583) | | 0 | 5650056 | 5000.0 | 5000.0 | |
| A 39 C2-Naphthalenes | 156 | 6.085 | (5.923-6.247) | | 0 | 7279059 | 5000.0 | 5000.0 | |
| A 40 C3-Naphthalenes | 170 | 6.565 | (6.323-6.820) | | 0 | 4817362 | 5000.0 | 5000.0 | |
| A 41 C4-Naphthalenes | 184 | 6.871 | (6.492-7.423) | | 0 | 2551273 | 5000.0 | 5000.0 | |
| A 42 C1-Fluorenes | 180 | 7.289 | (7.218-7.469) | | 0 | 788143 | 5000.0 | 5000.0 | |
| A 43 C2-Fluorenes | 194 | 7.761 | (7.574-7.945) | | 0 | 1024506 | 5000.0 | 5000.0 | |
| A 44 C3-Fluorenes | 208 | 8.231 | (7.990-8.467) | | 0 | 732482 | 5000.0 | 5000.0 | |
| A 45 C1-Dibenzothiophenes | 198 | 7.952 | (7.838-8.076) | | 0 | 535692 | 5000.0 | 5000.0 | |
| A 46 C2-Dibenzothiophenes | 212 | 8.602 | (8.209-8.703) | | 0 | 748929 | 5000.0 | 5000.0 | |
| A 47 C3-Dibenzothiophenes | 226 | 8.668 | (8.560-9.120) | | 0 | 515420 | 5000.0 | 5000.0 | |
| A 48 C4-Dibenzothiophenes | 240 | 8.943 | (8.822-9.597) | | 0 | 285865 | 5000.0 | 5000.0 | |
| A 49 C1-Phenanthrenes/Anthracen192 | 8.138 | | (8.019-8.347) | | 0 | 2353343 | 5000.0 | 5000.0 | |
| A 50 C2-Phenanthrenes/Anthracen206 | 8.567 | | (8.358-8.785) | | 0 | 2417202 | 5000.0 | 5000.0 | |
| A 51 C3-Phenanthrenes/Anthracen220 | 9.009 | | (8.759-9.267) | | 0 | 1449959 | 5000.0 | 5000.0 | |
| A 52 C4-Phenanthrenes/Anthracen234 | 9.333 | | (8.964-9.698) | | 0 | 763958 | 5000.0 | 5000.0 | |
| A 53 C1-Fluoranthenes/pyrene | 216 | 9.315 | (9.124-9.506) | | 0 | 311108 | 5000.0 | 5000.0 | |
| A 54 C2-Fluoranthenes/Pyrene | 230 | 9.696 | (9.596-10.059) | | 0 | 527655 | 5000.0 | 5000.0 | |
| A 55 C3-Fluoranthenes/Pyrene | 244 | 10.217 | (10.044-10.517) | | 0 | 592129 | 5000.0 | 5000.0 | |
| A 56 C4-Fluoranthenes/Pyrene | 258 | 10.576 | (10.390-10.861) | | 0 | 424148 | 5000.0 | 5000.0 | |
| A 57 C1-Chrysenes | 242 | 10.560 | (10.521-10.762) | | 0 | 421894 | 5000.0 | 5000.0 | |
| A 58 C2-Chrysenes | 256 | 11.099 | (10.937-11.264) | | 0 | 412815 | 5000.0 | 5000.0 | |
| A 59 C3-Chrysenes | 270 | 11.538 | (11.248-11.900) | | 0 | 339476 | 5000.0 | 5000.0 | |
| A 60 C4-Chrysenes | 284 | 12.020 | (11.355-12.475) | | 0 | 215716 | 5000.0 | 5000.0 | |
| A 61 C1-Decalins | 152 | 4.569 | (4.506-4.633) | | 0 | 724442 | 5000.0 | 5000.0 | |
| A 62 C2-Decalins | 166 | 4.881 | (4.802-5.149) | | 0 | 528471 | 5000.0 | 5000.0 | |
| A 63 C3-Decalins | 180 | 5.449 | (5.197-5.706) | | 0 | 521573 | 5000.0 | 5000.0 | |

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|--------------------------------|-----|-----------|-----------------|---------------|---|----------|---------------|-----------------|-------|
| A 64 C4-Decalins | 194 | 5.876 | (5.676-6.097) | | 0 | 366718 | 5000.0 | 5000.0 | |
| A 65 C1-Naphthobenzothiophenes | 248 | 10.380 | (10.225-10.539) | | 0 | 189972 | 5000.0 | 5000.0 | |
| A 66 C2-Naphthobenzothiophenes | 262 | 10.791 | (10.596-11.219) | | 0 | 267738 | 5000.0 | 5000.0 | |
| A 67 C3-Naphthobenzothiophenes | 276 | 11.263 | (11.034-11.634) | | 0 | 185023 | 5000.0 | 5000.0 | |
| A 68 C4-Naphthobenzothiophenes | 290 | 11.710 | (11.194-12.234) | | 0 | 95421 | 5000.0 | 5000.0 | |
| A 69 C1-Benzothiophenes | 148 | 5.295 | (5.208-5.375) | | 0 | 74565 | 5000.0 | 5000.0 | |
| A 70 C2-Benzothiophenes | 162 | 6.011 | (5.907-6.110) | | 0 | 63840 | 5000.0 | 5000.0 | |
| A 71 C3-Benzothiophenes | 176 | 6.454 | (6.334-6.646) | | 0 | 117070 | 5000.0 | 5000.0 | |
| A 72 C4-Benzothiophenes | 190 | 6.941 | (6.699-7.189) | | 0 | 80487 | 5000.0 | 5000.0 | |

Reagents:

60WDM8270D_00003

Amount Added: 1.00

Units: mL

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\WDM.D

Injection Date: 01-Aug-2019 18:38:30

Instrument ID: MP

Operator ID: 11211

Lims ID: WDM

Worklist Smp#: 3

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

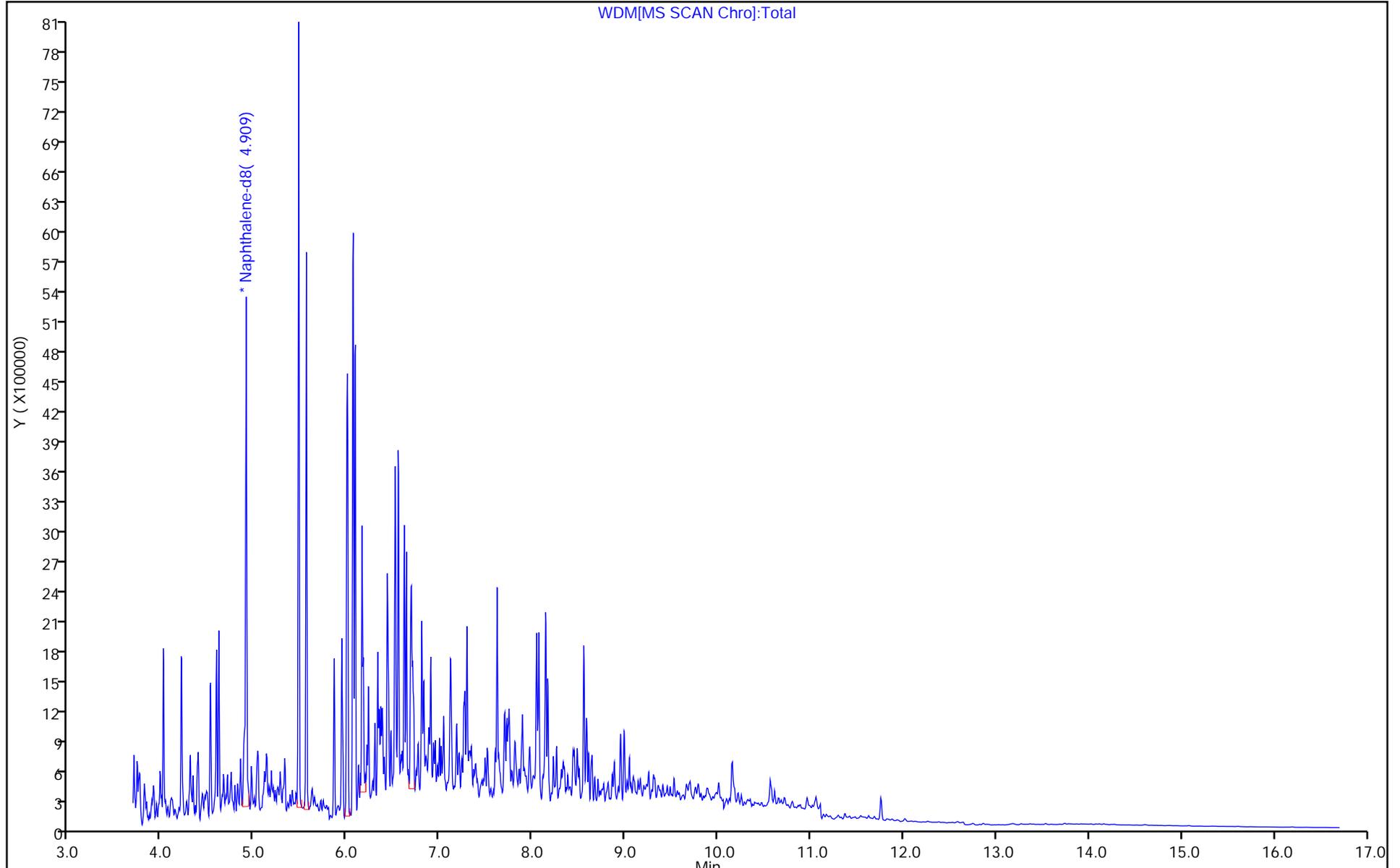
ALS Bottle#: 3

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

WDM[MS SCAN Chroj:Total



FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 140-32029/1-A
 Matrix: Water Lab File ID: MB 140-32029-1-A.D
 Analysis Method: 8270D SIM Date Collected: _____
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 1000 (mL) Date Analyzed: 08/01/2019 20:20
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------------|--------|---|----|-----|
| 83-32-9 | Acenaphthene | ND | | 10 | 4.0 |
| 208-96-8 | Acenaphthylene | ND | | 10 | 1.2 |
| 120-12-7 | Anthracene | ND | | 10 | 6.9 |
| 56-55-3 | Benzo[a]anthracene | ND | | 10 | 2.4 |
| 50-32-8 | Benzo[a]pyrene | ND | | 10 | 1.9 |
| 205-99-2 | Benzo[b]fluoranthene | ND | | 10 | 4.4 |
| 192-97-2 | Benzo[e]pyrene | ND | | 10 | 2.1 |
| 191-24-2 | Benzo[g,h,i]perylene | ND | | 10 | 2.9 |
| 207-08-9 | Benzo[k]fluoranthene | ND | | 10 | 1.9 |
| STL00905 | C1-Chrysenes | ND | | 10 | 3.1 |
| STL00906 | C2-Chrysenes | ND | | 10 | 4.8 |
| STL00907 | C3-Chrysenes | ND | | 10 | 4.1 |
| STL00908 | C4-Chrysenes | ND | | 10 | 3.8 |
| STL00909 | C1-Dibenzothiophenes | ND | | 10 | 3.3 |
| STL00910 | C2-Dibenzothiophenes | ND | | 10 | 6.9 |
| STL00911 | C3-Dibenzothiophenes | ND | | 20 | 13 |
| STL00967 | C4-Dibenzothiophenes | ND | | 20 | 11 |
| STL00912 | C1-Fluoranthenes/pyrene | ND | | 10 | 5.3 |
| STL00968 | C2-Fluoranthenes/Pyrene | ND | | 10 | 7.4 |
| STL00969 | C3-Fluoranthenes/Pyrene | ND | | 10 | 8.1 |
| STL01791 | C4-Fluoranthenes/Pyrene | ND | | 10 | 6.3 |
| STL00913 | C1-Fluorenes | ND | | 20 | 9.0 |
| STL00914 | C2-Fluorenes | 10.8 | | 10 | 8.4 |
| STL00915 | C3-Fluorenes | ND | | 10 | 7.9 |
| 218-01-9 | Chrysene | ND | | 10 | 2.4 |
| STL00916 | C1-Naphthalenes | ND | | 10 | 5.6 |
| STL00917 | C2-Naphthalenes | ND | | 10 | 5.0 |
| STL00918 | C3-Naphthalenes | ND | | 10 | 6.4 |
| STL00919 | C4-Naphthalenes | ND | | 40 | 20 |
| STL00901 | C1-Phenanthrenes/Anthracenes | ND | | 20 | 10 |
| STL00902 | C2-Phenanthrenes/Anthracenes | ND | | 20 | 11 |
| STL00903 | C3-Phenanthrenes/Anthracenes | ND | | 20 | 16 |
| STL00904 | C4-Phenanthrenes/Anthracenes | ND | | 20 | 18 |
| 53-70-3 | Dibenz(a,h)anthracene | ND | | 10 | 3.6 |

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 140-32029/1-A
 Matrix: Water Lab File ID: MB 140-32029-1-A.D
 Analysis Method: 8270D SIM Date Collected: _____
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 1000 (mL) Date Analyzed: 08/01/2019 20:20
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------|--------|---|----|-----|
| 132-65-0 | Dibenzothiophene | ND | | 10 | 6.5 |
| 206-44-0 | Fluoranthene | ND | | 20 | 11 |
| 86-73-7 | Fluorene | ND | | 10 | 4.1 |
| 193-39-5 | Indeno[1,2,3-cd]pyrene | ND | | 10 | 4.0 |
| 90-12-0 | 1-Methylnaphthalene | ND | | 10 | 3.6 |
| 91-57-6 | 2-Methylnaphthalene | ND | | 20 | 5.7 |
| 91-20-3 | Naphthalene | ND | | 50 | 10 |
| 198-55-0 | Perylene | ND | | 20 | 11 |
| 85-01-8 | Phenanthrene | ND | | 40 | 20 |
| 129-00-0 | Pyrene | ND | | 10 | 7.4 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|-----------|-------------------------|------|---|--------|
| 321-60-8 | 2-Fluorobiphenyl (Surr) | 73 | | 48-145 |
| 4165-60-0 | Nitrobenzene-d5 | 92 | | 20-116 |
| 1718-51-0 | Terphenyl-d14 | 91 | | 55-150 |

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D
 Lims ID: MB 140-32029/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 01-Aug-2019 20:20:30 ALS Bottle#: 7 Worklist Smp#: 7
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-007
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym Date: 02-Aug-2019 08:16:45

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.311 | 4.311 | 0.000 | 100 | 136558 | 1.00 | 0.9161 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 255322 | 0.5000 | 0.5000 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 322992 | 1.00 | 0.7264 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 99 | 137505 | 0.5000 | 0.5000 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 30 | 1407 | | 0.002387 | 7a |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 246998 | 0.5000 | 0.5000 | |
| 21 1-Methylphenanthrene | 192 | 8.158 | 8.157 | 0.001 | 77 | 704 | | 0.001690 | 7a |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 323142 | 1.00 | 0.9135 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 95 | 216281 | 0.5000 | 0.5000 | |
| 30 Benzo[k]fluoranthene | 252 | 11.317 | 11.316 | 0.001 | 63 | 249 | | 0.000370 | 7a |
| * 33 Perylene-d12 | 264 | 11.745 | 11.744 | 0.001 | 100 | 217337 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 63 | 84 | | 0.000146 | 7a |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.170 | 13.168 | 0.002 | 95 | 269 | | 0.000429 | 7a |
| 36 Dibenz(a,h)anthracene | 278 | 13.179 | 13.178 | 0.001 | 88 | 155 | | 0.000291 | 7a |
| A 41 C4-Naphthalenes | 184 | 6.947 | (6.492-7.423) | | 0 | 11544 | | 0.0205 | |
| A 43 C2-Fluorenes | 194 | 7.615 | (7.574-7.945) | | 0 | 8704 | | 0.0215 | |
| A 46 C2-Dibenzothiophenes | 212 | 9.050 | (8.209-8.703) | | 0 | 813 | | 0.001379 | 7 |

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

a - User Assigned ID

Reagents:

60x8270simis_00003 Amount Added: 0.01 Units: mL Run Reagent

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D

Injection Date: 01-Aug-2019 20:20:30

Instrument ID: MP

Operator ID: 11211

Lims ID: MB 140-32029/1-A

Worklist Smp#: 7

Client ID:

Injection Vol: 1.0 ul

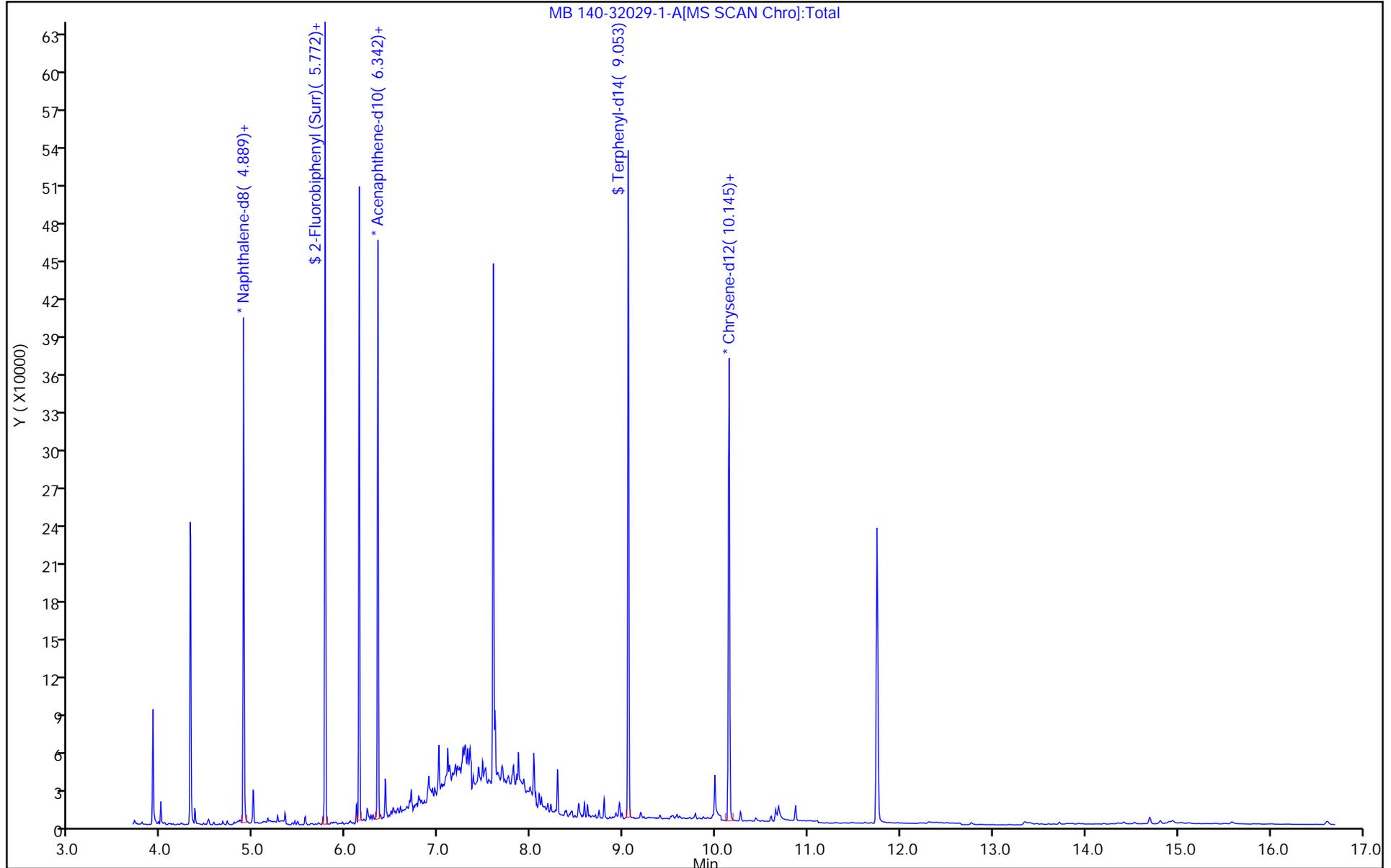
Dil. Factor: 1.0000

ALS Bottle#: 7

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Recovery Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D
 Lims ID: MB 140-32029/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 01-Aug-2019 20:20:30 ALS Bottle#: 7 Worklist Smp#: 7
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-007
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym Date: 02-Aug-2019 08:16:45

| Compound | Amount Added | Amount Recovered | % Rec. |
|------------------------------|--------------|------------------|--------|
| \$ 1 Nitrobenzene-d5 | 1.00 | 0.9161 | 91.61 |
| \$ 8 2-Fluorobiphenyl (Surr) | 1.00 | 0.7264 | 72.64 |
| \$ 24 Terphenyl-d14 | 1.00 | 0.9135 | 91.35 |

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D

Injection Date: 01-Aug-2019 20:20:30

Instrument ID: MP

Lims ID: MB 140-32029/1-A

Client ID:

Operator ID: 11211

ALS Bottle#: 7

Worklist Smp#: 7

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

Method: 8270D_SIM_MP

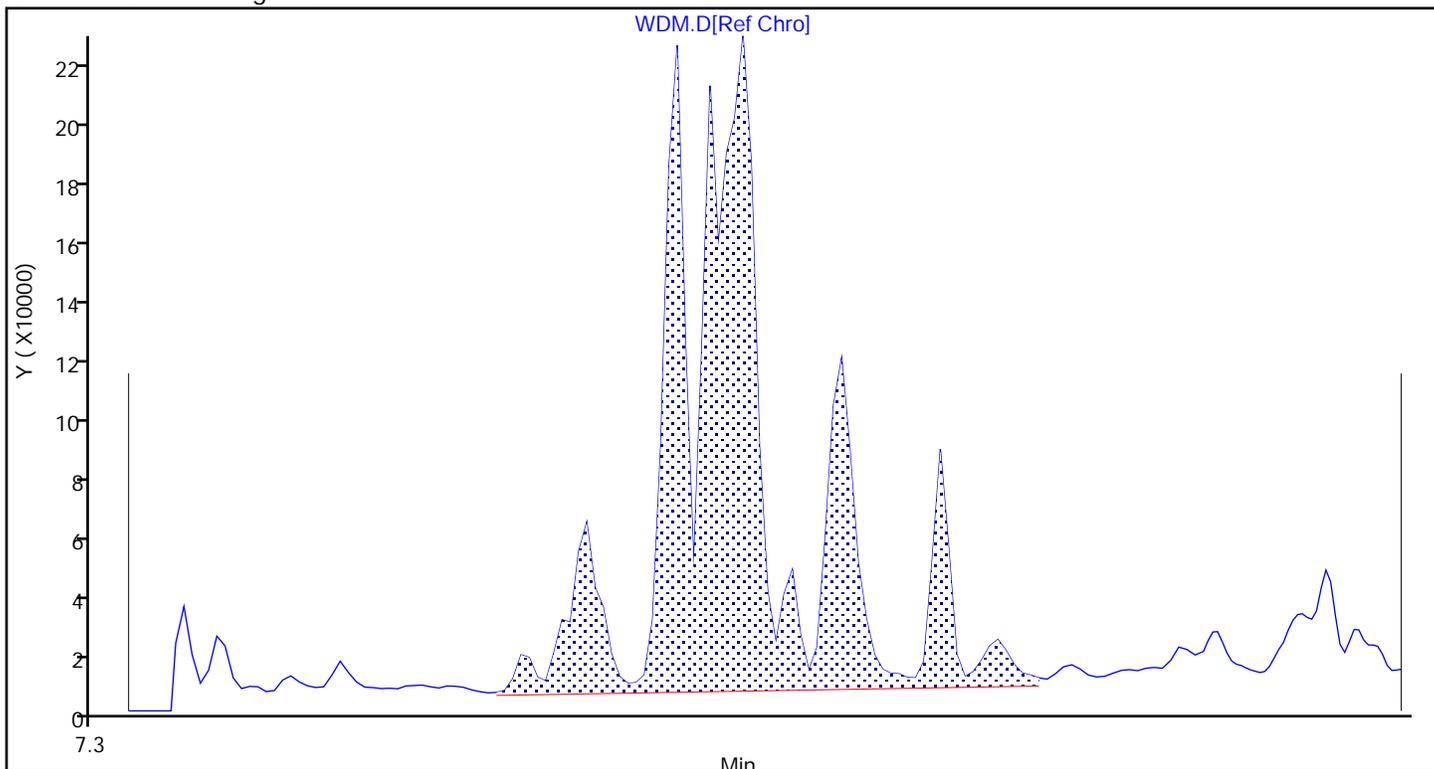
Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)

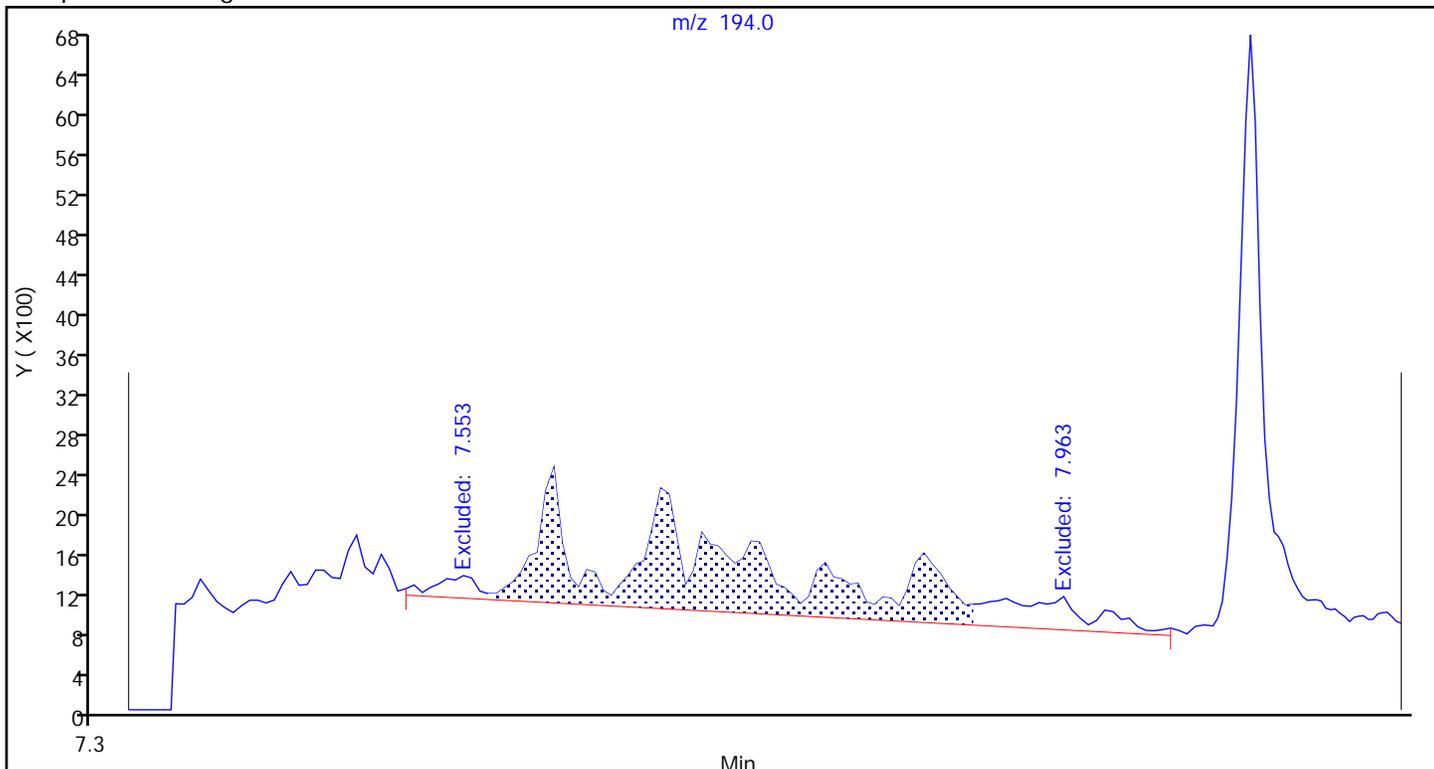
Detector: MS SCAN

A 43 C2-Fluorenes, CAS: STL00914

Reference Chromatogram



Sample Chromatogram



Euofins TestAmerica, Knoxville

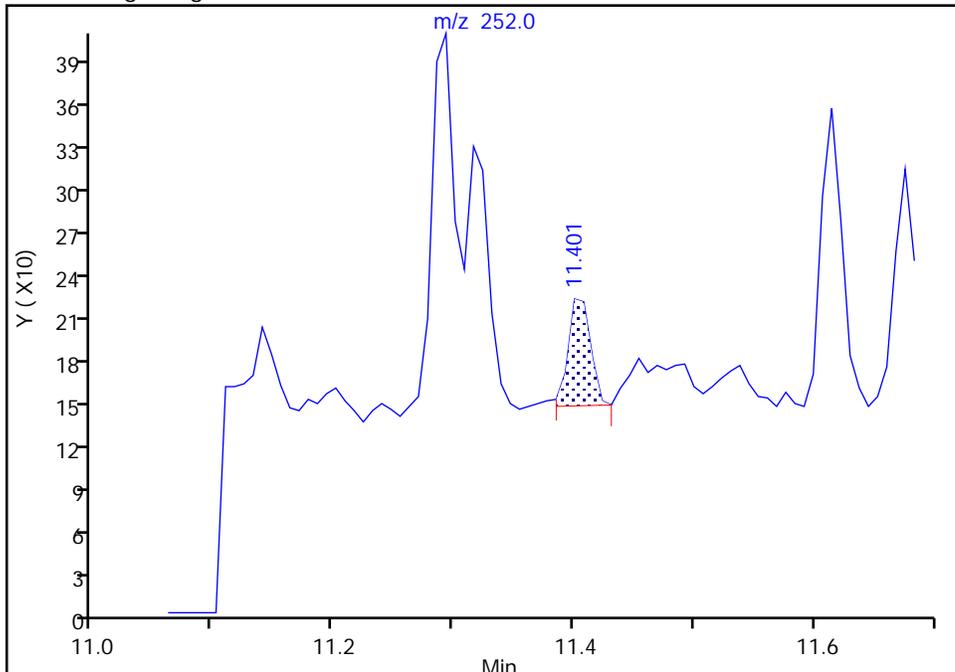
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D
Injection Date: 01-Aug-2019 20:20:30 Instrument ID: MP
Lims ID: MB 140-32029/1-A
Client ID:
Operator ID: 11211 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector: MS SCAN

30 Benzo[k]fluoranthene, CAS: 207-08-9

Signal: 1

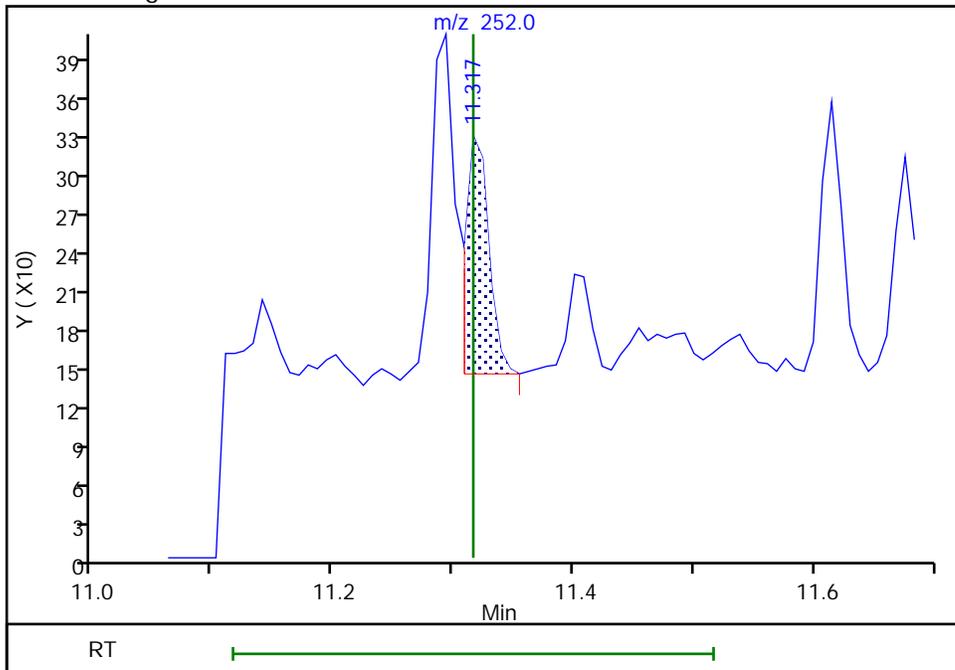
RT: 11.40
Area: 98
Amount: 0.000146
Amount Units: ug/ml

Processing Integration Results



RT: 11.32
Area: 249
Amount: 0.000370
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 07:20:43
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Euofins TestAmerica, Knoxville

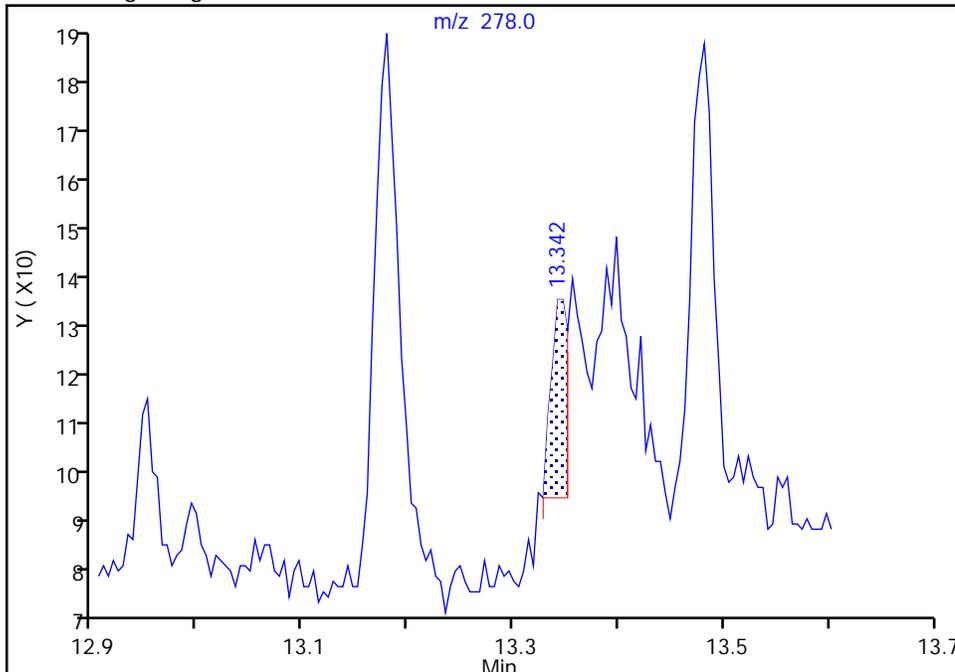
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D
Injection Date: 01-Aug-2019 20:20:30 Instrument ID: MP
Lims ID: MB 140-32029/1-A
Client ID:
Operator ID: 11211 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector MS SCAN

36 Dibenz(a,h)anthracene, CAS: 53-70-3

Signal: 1

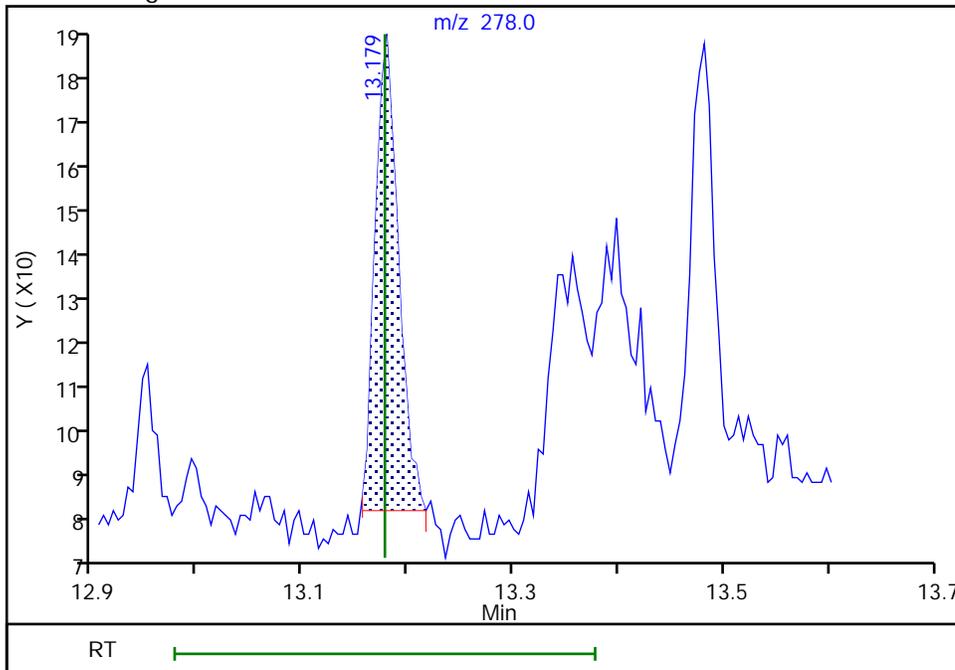
RT: 13.34
Area: 42
Amount: 0.000079
Amount Units: ug/ml

Processing Integration Results



RT: 13.18
Area: 155
Amount: 0.000291
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 07:21:04
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Euofins TestAmerica, Knoxville

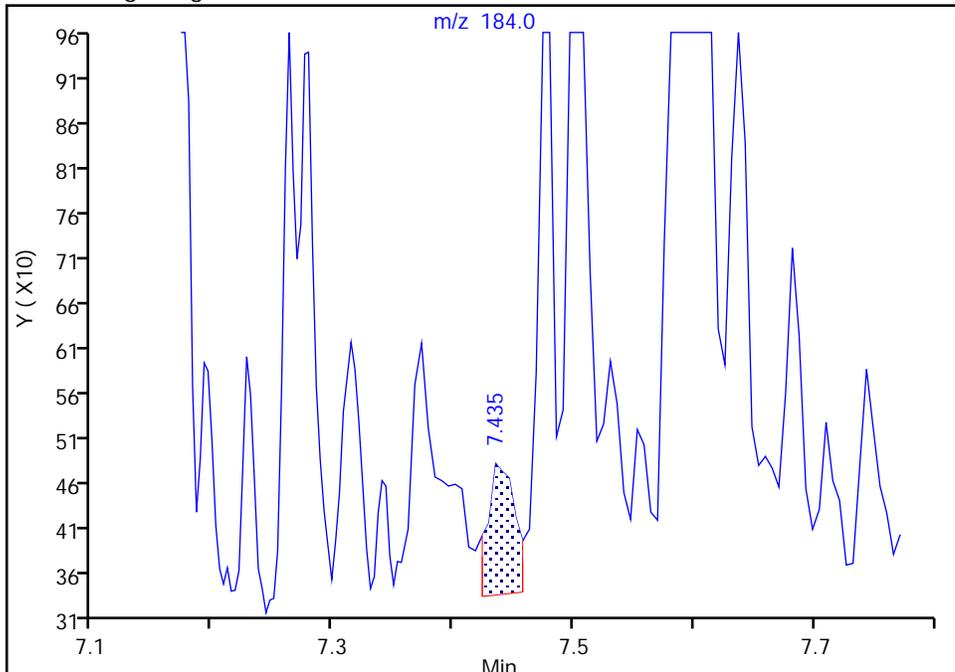
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D
Injection Date: 01-Aug-2019 20:20:30 Instrument ID: MP
Lims ID: MB 140-32029/1-A
Client ID:
Operator ID: 11211 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector MS SCAN

17 Dibenzothiophene, CAS: 132-65-0

Signal: 1

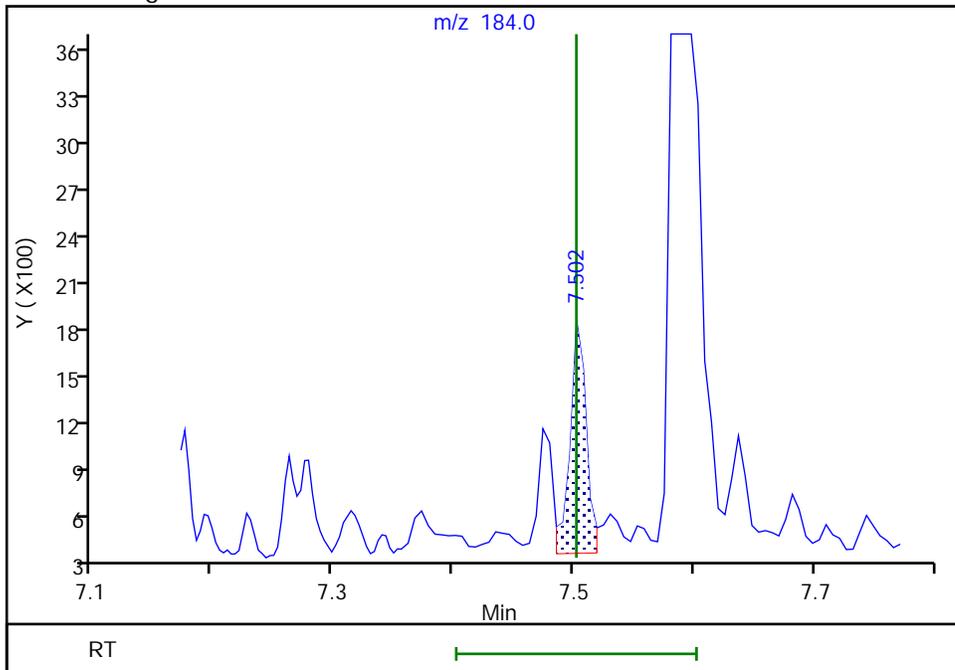
RT: 7.44
Area: 236
Amount: 0.000400
Amount Units: ug/ml

Processing Integration Results



RT: 7.50
Area: 1407
Amount: 0.002387
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 07:20:17
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

Eurofins TestAmerica, Knoxville

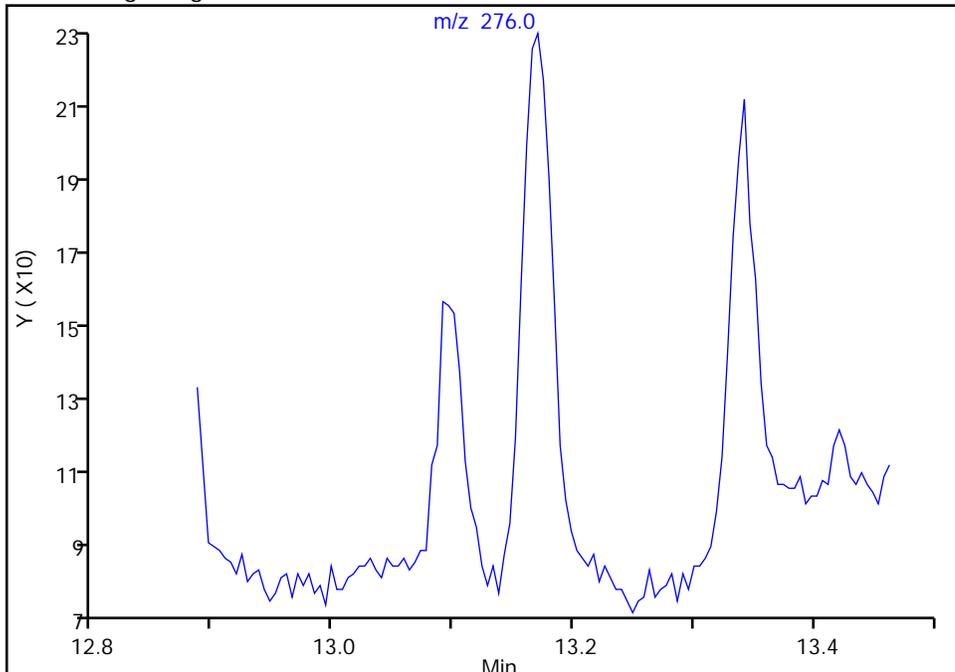
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D
Injection Date: 01-Aug-2019 20:20:30 Instrument ID: MP
Lims ID: MB 140-32029/1-A
Client ID:
Operator ID: 11211 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector MS SCAN

35 Indeno[1,2,3-cd]pyrene, CAS: 193-39-5

Signal: 1

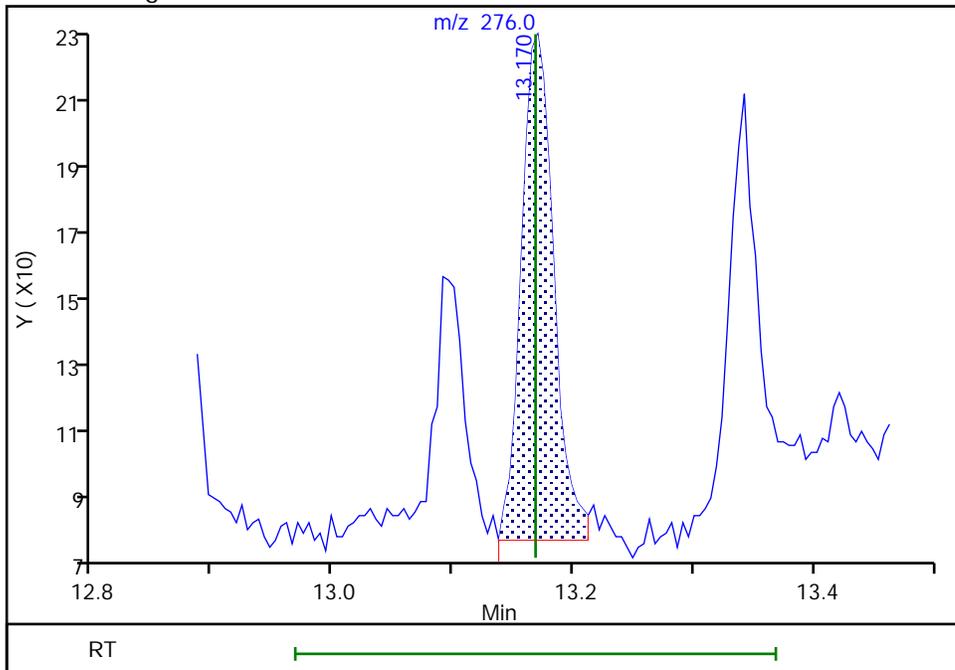
Not Detected
Expected RT: 13.17

Processing Integration Results



Manual Integration Results

RT: 13.17
Area: 269
Amount: 0.000429
Amount Units: ug/ml



Euofins TestAmerica, Knoxville

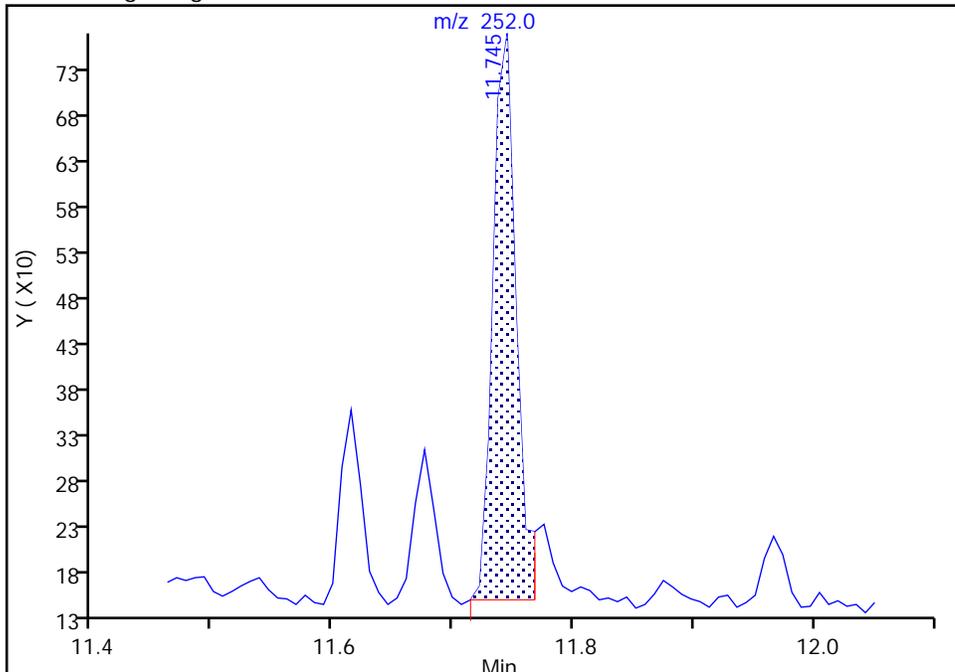
Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\MB 140-32029-1-A.D
Injection Date: 01-Aug-2019 20:20:30 Instrument ID: MP
Lims ID: MB 140-32029/1-A
Client ID:
Operator ID: 11211 ALS Bottle#: 7 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Method: 8270D_SIM_MP Limit Group: MSS - 8270D_SIM ICAL
Column: Restek-5Sil MS 25um (0.25 mm) Detector MS SCAN

34 Perylene, CAS: 198-55-0

Signal: 1

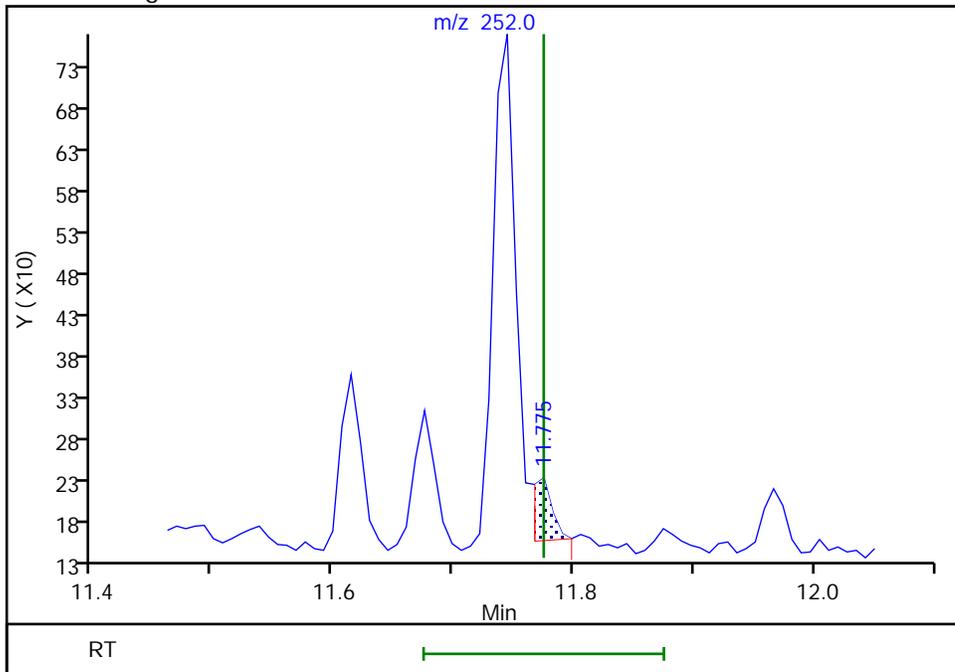
RT: 11.74
Area: 828
Amount: 0.001436
Amount Units: ug/ml

Processing Integration Results



RT: 11.78
Area: 84
Amount: 0.000146
Amount Units: ug/ml

Manual Integration Results



Reviewer: pattym, 02-Aug-2019 07:20:52
Audit Action: Assigned Compound ID

Audit Reason: Peak assignment corrected

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 140-32029/2-A
 Matrix: Water Lab File ID: LCS 140-32029-2-A.D
 Analysis Method: 8270D SIM Date Collected: _____
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 1000 (mL) Date Analyzed: 08/01/2019 21:10
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------|--------|---|----|-----|
| 83-32-9 | Acenaphthene | 430 | | 10 | 4.0 |
| 208-96-8 | Acenaphthylene | 505 | | 10 | 1.2 |
| 120-12-7 | Anthracene | 501 | | 10 | 6.9 |
| 56-55-3 | Benzo[a]anthracene | 559 | | 10 | 2.4 |
| 50-32-8 | Benzo[a]pyrene | 497 | | 10 | 1.9 |
| 205-99-2 | Benzo[b]fluoranthene | 514 | | 10 | 4.4 |
| 192-97-2 | Benzo[e]pyrene | 453 | | 10 | 2.1 |
| 191-24-2 | Benzo[g,h,i]perylene | 451 | | 10 | 2.9 |
| 207-08-9 | Benzo[k]fluoranthene | 415 | | 10 | 1.9 |
| 218-01-9 | Chrysene | 436 | | 10 | 2.4 |
| 53-70-3 | Dibenz(a,h)anthracene | 463 | | 10 | 3.6 |
| 132-65-0 | Dibenzothiophene | 438 | | 10 | 6.5 |
| 206-44-0 | Fluoranthene | 499 | | 20 | 11 |
| 86-73-7 | Fluorene | 443 | | 10 | 4.1 |
| 193-39-5 | Indeno[1,2,3-cd]pyrene | 478 | | 10 | 4.0 |
| 90-12-0 | 1-Methylnaphthalene | 447 | | 10 | 3.6 |
| 91-57-6 | 2-Methylnaphthalene | 452 | | 20 | 5.7 |
| 91-20-3 | Naphthalene | 440 | | 50 | 10 |
| 198-55-0 | Perylene | 422 | | 20 | 11 |
| 85-01-8 | Phenanthrene | 441 | | 40 | 20 |
| 129-00-0 | Pyrene | 492 | | 10 | 7.4 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|-----------|-------------------------|------|---|--------|
| 321-60-8 | 2-Fluorobiphenyl (Surr) | 82 | | 48-145 |
| 4165-60-0 | Nitrobenzene-d5 | 109 | | 20-116 |
| 1718-51-0 | Terphenyl-d14 | 98 | | 55-150 |

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\LCS 140-32029-2-A.D
 Lims ID: LCS 140-32029/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 01-Aug-2019 21:10:30 ALS Bottle#: 9 Worklist Smp#: 9
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-009
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym

Date: 02-Aug-2019 08:19:41

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.311 | 4.311 | 0.000 | 100 | 155004 | 1.00 | 1.09 | |
| 2 cis-Decalin | 138 | 4.460 | 4.460 | 0.000 | 90 | 65204 | 1.00 | 0.8155 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 243244 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.902 | 4.902 | 0.000 | 100 | 471170 | 1.00 | 0.8801 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.943 | 0.007 | 100 | 390911 | 1.00 | 0.8688 | |
| 6 2-Methylnaphthalene | 142 | 5.469 | 5.469 | 0.000 | 99 | 316746 | 1.00 | 0.9030 | |
| 7 1-Methylnaphthalene | 142 | 5.551 | 5.551 | 0.000 | 99 | 299066 | 1.00 | 0.8948 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 343754 | 1.00 | 0.8218 | |
| 9 1,1'-Biphenyl | 154 | 5.854 | 5.853 | 0.001 | 99 | 388739 | 1.00 | 0.8345 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 95 | 267082 | 1.00 | 0.8614 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.221 | 0.004 | 100 | 449415 | 1.00 | 1.01 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 99 | 129363 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.368 | 6.368 | 0.000 | 100 | 296321 | 1.00 | 0.8609 | |
| 14 Dibenzofuran | 168 | 6.512 | 6.512 | 0.000 | 100 | 435249 | 1.00 | 0.8394 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.686 | 0.001 | 92 | 254674 | 1.00 | 0.9262 | |
| 16 Fluorene | 166 | 6.800 | 6.800 | 0.000 | 99 | 337223 | 1.00 | 0.8857 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 476689 | 1.00 | 0.8763 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 227905 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 100 | 517866 | 1.00 | 0.8822 | |
| 20 Anthracene | 178 | 7.654 | 7.654 | 0.000 | 100 | 490322 | 1.00 | 1.00 | |
| 21 1-Methylphenanthrene | 192 | 8.157 | 8.157 | 0.000 | 100 | 374151 | 1.00 | 0.9734 | |
| 22 Fluoranthene | 202 | 8.695 | 8.695 | 0.000 | 99 | 570260 | 1.00 | 1.00 | |
| 23 Pyrene | 202 | 8.917 | 8.916 | 0.001 | 99 | 597568 | 1.00 | 0.9844 | |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 321389 | 1.00 | 0.9796 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 344547 | 1.00 | 0.9709 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 97 | 533218 | 1.00 | 1.12 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 200595 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 496901 | 1.00 | 0.8711 | |
| 29 Benzo[b]fluoranthene | 252 | 11.293 | 11.286 | 0.007 | 100 | 573249 | 1.00 | 1.03 | |
| 30 Benzo[k]fluoranthene | 252 | 11.316 | 11.316 | 0.000 | 100 | 525538 | 1.00 | 0.8307 | |
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.001 | 100 | 474748 | 1.00 | 0.9062 | |

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 477453 | 1.00 | 0.99 | |
| * 33 Perylene-d12 | 264 | 11.744 | 11.744 | 0.000 | 100 | 204303 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 457309 | 1.00 | 0.8437 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.170 | 13.168 | 0.002 | 94 | 564594 | 1.00 | 0.9568 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.179 | 13.178 | 0.001 | 95 | 464063 | 1.00 | 0.9265 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.523 | 13.521 | 0.002 | 98 | 497757 | 1.00 | 0.9013 | |

Reagents:

60x8270simis_00003

Amount Added: 0.01

Units: mL

Run Reagent

Report Date: 02-Aug-2019 09:31:20

Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\LCS 140-32029-2-A.D

Injection Date: 01-Aug-2019 21:10:30

Instrument ID: MP

Operator ID: 11211

Lims ID: LCS 140-32029/2-A

Worklist Smp#: 9

Client ID:

Injection Vol: 1.0 ul

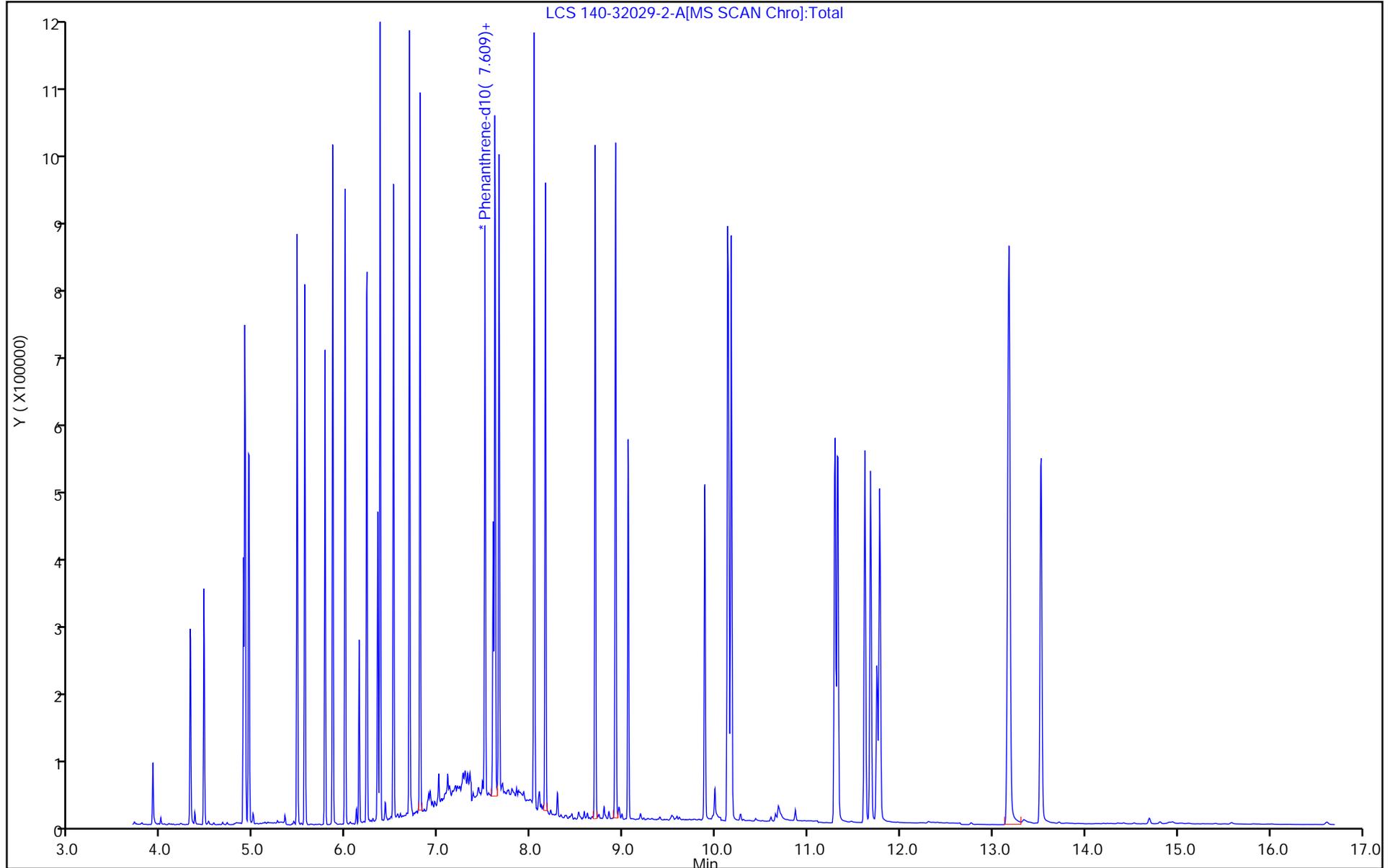
Dil. Factor: 1.0000

ALS Bottle#: 9

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Recovery Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\LCS 140-32029-2-A.D
 Lims ID: LCS 140-32029/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 01-Aug-2019 21:10:30 ALS Bottle#: 9 Worklist Smp#: 9
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-009
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym Date: 02-Aug-2019 08:19:41

| Compound | Amount Added | Amount Recovered | % Rec. |
|------------------------------|--------------|------------------|--------|
| \$ 1 Nitrobenzene-d5 | 1.00 | 1.09 | 109.15 |
| \$ 8 2-Fluorobiphenyl (Surr) | 1.00 | 0.8218 | 82.18 |
| \$ 24 Terphenyl-d14 | 1.00 | 0.9796 | 97.96 |

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 140-32029/3-A
 Matrix: Water Lab File ID: LCSD 140-32029-3-A.D
 Analysis Method: 8270D SIM Date Collected: _____
 Extract. Method: 3520C Date Extracted: 07/25/2019 11:50
 Sample wt/vol: 1000 (mL) Date Analyzed: 08/01/2019 21:36
 Con. Extract Vol.: 0.5 (mL) Dilution Factor: 1
 Injection Volume: 1 (uL) Level: (low/med) Low
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 32296 Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | RL | MDL |
|----------|------------------------|--------|---|----|-----|
| 83-32-9 | Acenaphthene | 406 | | 10 | 4.0 |
| 208-96-8 | Acenaphthylene | 472 | | 10 | 1.2 |
| 120-12-7 | Anthracene | 484 | | 10 | 6.9 |
| 56-55-3 | Benzo[a]anthracene | 533 | | 10 | 2.4 |
| 50-32-8 | Benzo[a]pyrene | 479 | | 10 | 1.9 |
| 205-99-2 | Benzo[b]fluoranthene | 499 | | 10 | 4.4 |
| 192-97-2 | Benzo[e]pyrene | 441 | | 10 | 2.1 |
| 191-24-2 | Benzo[g,h,i]perylene | 438 | | 10 | 2.9 |
| 207-08-9 | Benzo[k]fluoranthene | 403 | | 10 | 1.9 |
| 218-01-9 | Chrysene | 418 | | 10 | 2.4 |
| 53-70-3 | Dibenz(a,h)anthracene | 449 | | 10 | 3.6 |
| 132-65-0 | Dibenzothiophene | 425 | | 10 | 6.5 |
| 206-44-0 | Fluoranthene | 485 | | 20 | 11 |
| 86-73-7 | Fluorene | 429 | | 10 | 4.1 |
| 193-39-5 | Indeno[1,2,3-cd]pyrene | 463 | | 10 | 4.0 |
| 90-12-0 | 1-Methylnaphthalene | 419 | | 10 | 3.6 |
| 91-57-6 | 2-Methylnaphthalene | 420 | | 20 | 5.7 |
| 91-20-3 | Naphthalene | 403 | | 50 | 10 |
| 198-55-0 | Perylene | 403 | | 20 | 11 |
| 85-01-8 | Phenanthrene | 427 | | 40 | 20 |
| 129-00-0 | Pyrene | 473 | | 10 | 7.4 |

| CAS NO. | SURROGATE | %REC | Q | LIMITS |
|-----------|-------------------------|------|---|--------|
| 321-60-8 | 2-Fluorobiphenyl (Surr) | 75 | | 48-145 |
| 4165-60-0 | Nitrobenzene-d5 | 101 | | 20-116 |
| 1718-51-0 | Terphenyl-d14 | 94 | | 55-150 |

Eurofins TestAmerica, Knoxville
Target Compound Quantitation Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\LCSD 140-32029-3-A.D
 Lims ID: LCSD 140-32029/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 01-Aug-2019 21:36:30 ALS Bottle#: 10 Worklist Smp#: 10
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-010
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym

Date: 02-Aug-2019 08:20:43

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|-------------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| \$ 1 Nitrobenzene-d5 | 82 | 4.311 | 4.311 | 0.000 | 100 | 136490 | 1.00 | 1.01 | |
| 2 cis-Decalin | 138 | 4.465 | 4.460 | 0.005 | 97 | 52803 | 1.00 | 0.6954 | |
| * 3 Naphthalene-d8 | 136 | 4.889 | 4.889 | 0.000 | 95 | 231027 | 0.5000 | 0.5000 | |
| 4 Naphthalene | 128 | 4.902 | 4.902 | 0.000 | 93 | 409938 | 1.00 | 0.8062 | |
| 5 Benzo(b)thiophene | 134 | 4.950 | 4.943 | 0.007 | 100 | 343097 | 1.00 | 0.8028 | |
| 6 2-Methylnaphthalene | 142 | 5.469 | 5.469 | 0.000 | 99 | 279731 | 1.00 | 0.8397 | |
| 7 1-Methylnaphthalene | 142 | 5.551 | 5.551 | 0.000 | 99 | 265721 | 1.00 | 0.8371 | |
| \$ 8 2-Fluorobiphenyl (Surr) | 172 | 5.772 | 5.772 | 0.000 | 87 | 305833 | 1.00 | 0.7487 | |
| 9 1,1'-Biphenyl | 154 | 5.854 | 5.853 | 0.001 | 99 | 350315 | 1.00 | 0.7700 | |
| 10 2,6-Dimethylnaphthalene | 156 | 5.990 | 5.990 | 0.000 | 96 | 242154 | 1.00 | 0.7998 | |
| 11 Acenaphthylene | 152 | 6.225 | 6.221 | 0.004 | 100 | 410108 | 1.00 | 0.9432 | |
| * 12 Acenaphthene-d10 | 164 | 6.342 | 6.342 | 0.000 | 99 | 126333 | 0.5000 | 0.5000 | |
| 13 Acenaphthene | 153 | 6.368 | 6.368 | 0.000 | 100 | 272664 | 1.00 | 0.8111 | |
| 14 Dibenzofuran | 168 | 6.512 | 6.512 | 0.000 | 99 | 403916 | 1.00 | 0.7976 | |
| 15 2,3,5-Trimethylnaphthalene | 170 | 6.687 | 6.686 | 0.001 | 93 | 239834 | 1.00 | 0.8932 | |
| 16 Fluorene | 166 | 6.800 | 6.800 | 0.000 | 100 | 319033 | 1.00 | 0.8580 | |
| 17 Dibenzothiophene | 184 | 7.502 | 7.502 | 0.000 | 100 | 454243 | 1.00 | 0.8504 | |
| * 18 Phenanthrene-d10 | 188 | 7.592 | 7.592 | 0.000 | 100 | 223784 | 0.5000 | 0.5000 | |
| 19 Phenanthrene | 178 | 7.609 | 7.609 | 0.000 | 100 | 492195 | 1.00 | 0.8539 | |
| 20 Anthracene | 178 | 7.654 | 7.654 | 0.000 | 100 | 465157 | 1.00 | 0.9676 | |
| 21 1-Methylphenanthrene | 192 | 8.157 | 8.157 | 0.000 | 100 | 356841 | 1.00 | 0.9455 | |
| 22 Fluoranthene | 202 | 8.698 | 8.695 | 0.003 | 99 | 543602 | 1.00 | 0.9698 | |
| 23 Pyrene | 202 | 8.917 | 8.916 | 0.001 | 99 | 565883 | 1.00 | 0.9457 | |
| \$ 24 Terphenyl-d14 | 244 | 9.053 | 9.053 | 0.000 | 100 | 303941 | 1.00 | 0.9399 | |
| 25 Naphthobenzothiophene | 234 | 9.883 | 9.883 | 0.000 | 100 | 327150 | 1.00 | 0.9352 | |
| 26 Benzo[a]anthracene | 228 | 10.129 | 10.129 | 0.000 | 97 | 501616 | 1.00 | 1.07 | |
| * 27 Chrysene-d12 | 240 | 10.145 | 10.145 | 0.000 | 70 | 197719 | 0.5000 | 0.5000 | |
| 28 Chrysene | 228 | 10.169 | 10.169 | 0.000 | 100 | 470102 | 1.00 | 0.8361 | |
| 29 Benzo[b]fluoranthene | 252 | 11.294 | 11.286 | 0.008 | 100 | 543968 | 1.00 | 1.00 | |
| 30 Benzo[k]fluoranthene | 252 | 11.316 | 11.316 | 0.000 | 100 | 498225 | 1.00 | 0.8062 | |
| 31 Benzo[e]pyrene | 252 | 11.615 | 11.615 | 0.001 | 100 | 451831 | 1.00 | 0.8830 | |

| Compound | Sig | RT (min.) | Adj RT (min.) | Dlt RT (min.) | Q | Response | Cal Amt ug/ml | OnCol Amt ug/ml | Flags |
|---------------------------|-----|-----------|---------------|---------------|-----|----------|---------------|-----------------|-------|
| 32 Benzo[a]pyrene | 252 | 11.676 | 11.676 | 0.000 | 100 | 448813 | 1.00 | 0.9574 | |
| * 33 Perylene-d12 | 264 | 11.745 | 11.744 | 0.001 | 100 | 199562 | 0.5000 | 0.5000 | |
| 34 Perylene | 252 | 11.775 | 11.775 | 0.000 | 100 | 427155 | 1.00 | 0.8068 | |
| 35 Indeno[1,2,3-cd]pyrene | 276 | 13.168 | 13.168 | 0.000 | 96 | 534076 | 1.00 | 0.9265 | |
| 36 Dibenz(a,h)anthracene | 278 | 13.178 | 13.178 | 0.000 | 91 | 439528 | 1.00 | 0.8984 | |
| 37 Benzo[g,h,i]perylene | 276 | 13.521 | 13.521 | 0.000 | 98 | 472246 | 1.00 | 0.8755 | |

Reagents:

60xx8270simis_00003

Amount Added: 0.01

Units: mL

Run Reagent

Report Date: 02-Aug-2019 09:31:27

Chrom Revision: 2.3 15-Jul-2019 06:58:08

Eurofins TestAmerica, Knoxville

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\LCSD 140-32029-3-A.D

Injection Date: 01-Aug-2019 21:36:30

Instrument ID: MP

Operator ID: 11211

Lims ID: LCSD 140-32029/3-A

Worklist Smp#: 10

Client ID:

Injection Vol: 1.0 ul

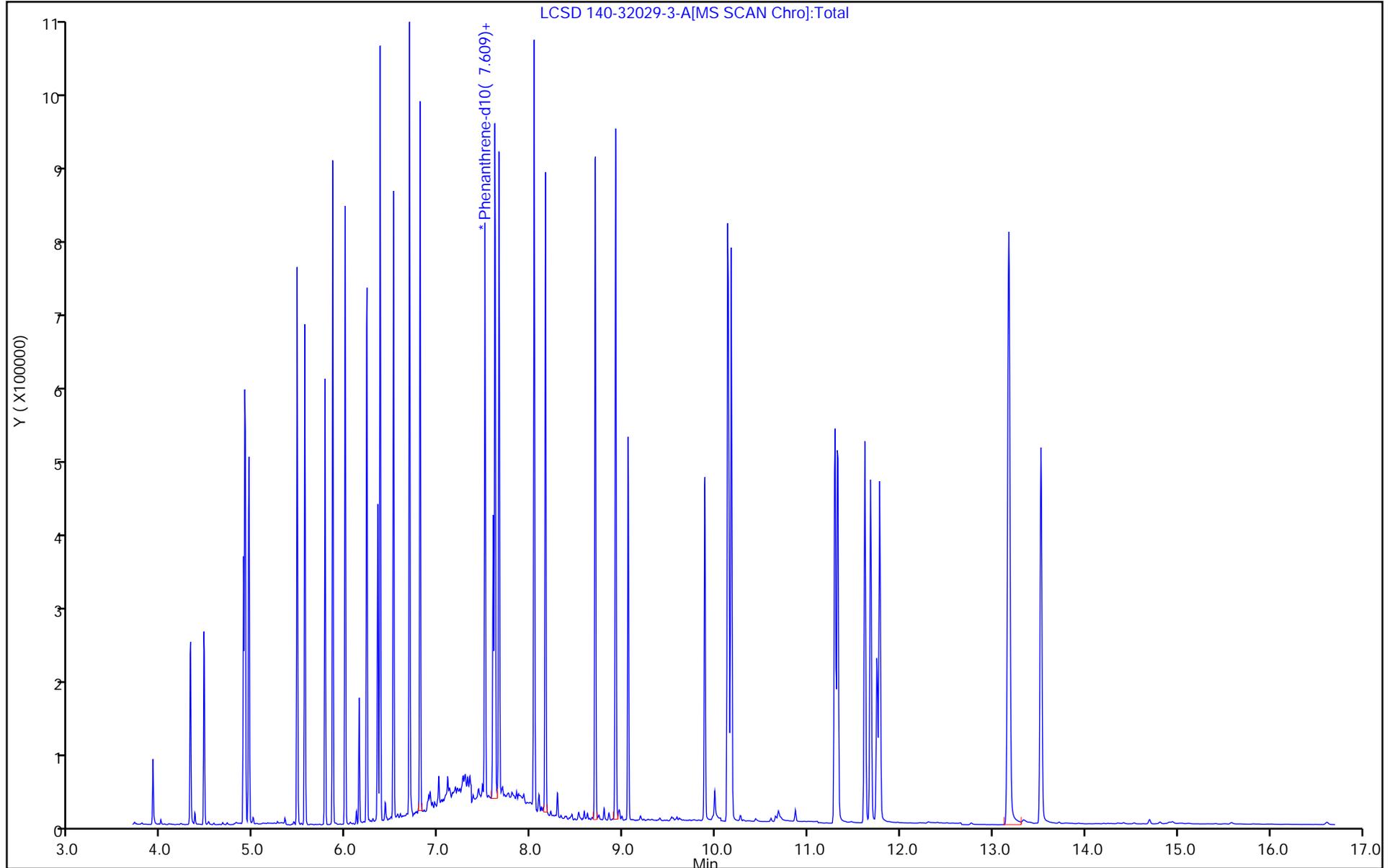
Dil. Factor: 1.0000

ALS Bottle#: 10

Method: 8270D_SIM_MP

Limit Group: MSS - 8270D_SIM ICAL

Column: Restek-5Sil MS 25um (0.25 mm)



Eurofins TestAmerica, Knoxville
Recovery Report

Data File: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\LCSD 140-32029-3-A.D
 Lims ID: LCSD 140-32029/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 01-Aug-2019 21:36:30 ALS Bottle#: 10 Worklist Smp#: 10
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: 140-0012590-010
 Misc. Info.: P080119(8270)
 Operator ID: 11211 Instrument ID: MP
 Method: \\chromna\Knoxville\ChromData\MP\20190801-12590.b\8270D_SIM_MP.m
 Limit Group: MSS - 8270D_SIM ICAL
 Last Update: 02-Aug-2019 09:31:09 Calib Date: 21-Jul-2019 14:26:30
 Integrator: RTE ID Type: RT Order ID
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\chromna\Knoxville\ChromData\MP\20190729-12531.b\ic 7X.D
 Column 1 : Restek-5Sil MS 25um (0.25 mm) Det: MS SCAN
 Process Host: CTX0319

First Level Reviewer: pattym Date: 02-Aug-2019 08:20:43

| Compound | Amount Added | Amount Recovered | % Rec. |
|------------------------------|--------------|------------------|--------|
| \$ 1 Nitrobenzene-d5 | 1.00 | 1.01 | 101.19 |
| \$ 8 2-Fluorobiphenyl (Surr) | 1.00 | 0.7487 | 74.87 |
| \$ 24 Terphenyl-d14 | 1.00 | 0.9399 | 93.99 |

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Instrument ID: MP Start Date: 07/21/2019 11:55

Analysis Batch Number: 32163 End Date: 07/21/2019 15:17

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|------------------|------------------|------------------|-----------------|-------------|-------------------------|
| IC 140-32163/2 | | 07/21/2019 11:55 | 1 | ic 1X.D | Rxi-5SilMS 25 0.25 (mm) |
| IC 140-32163/3 | | 07/21/2019 12:20 | 1 | ic 2X.D | Rxi-5SilMS 25 0.25 (mm) |
| IC 140-32163/4 | | 07/21/2019 12:45 | 1 | ic 3X.D | Rxi-5SilMS 25 0.25 (mm) |
| ICIS 140-32163/5 | | 07/21/2019 13:11 | 1 | icis 4X.D | Rxi-5SilMS 25 0.25 (mm) |
| IC 140-32163/6 | | 07/21/2019 13:36 | 1 | ic 5X.D | Rxi-5SilMS 25 0.25 (mm) |
| IC 140-32163/7 | | 07/21/2019 14:01 | 1 | ic 6X.D | Rxi-5SilMS 25 0.25 (mm) |
| IC 140-32163/8 | | 07/21/2019 14:26 | 1 | ic 7X.D | Rxi-5SilMS 25 0.25 (mm) |
| ICV 140-32163/10 | | 07/21/2019 15:17 | 1 | icvX.D | Rxi-5SilMS 25 0.25 (mm) |

Eurofins/TestAmerica Knoxville GC/MS-SIM ICAL Review/Narrative Checklist
Method: PAHs and Selected SVOCs – KNOX-ID-0016, Revision 12

| | | | | | |
|-----------------------|---------|-----------------------------|------------|-----------------|---|
| Instrument: | MP | TALS Batch / Event # | PAH | 0010 PAH | Scanned <input type="checkbox"/> |
| Analysis Date: | 7/21/19 | PAH: | 2060/32163 | / | |
| Chrom WL # | 12531 | EU: | / | / | |
| | | PCB: | / | / | |
| | | Other: | / | / | |

| Chrom Worklist/Peak Review | 1st | Comments | 2nd |
|---|-----------------------|--|-----------------------|
| 1. Re-read each limit group [method editor-limit groups] | ✓ | | |
| 2. Verify LOD [method editor -> edit -> MDL] | ✓ | | |
| 3. Are the reagents & init./final vol. correct [Sample & Run Reagents] | ✓ | | |
| 4. First levels "unlock/clear" or "unlock/clear by sublist" as appropriate? | ✓ | | ✓ |
| 5. Are the Cal Levels & groups correct in WL? | ✓ | | ✓ |
| 6. Were all standards injected within 12 hr of first injection? [F7] | ✓ | | ✓ |
| 7. Was the high point std checked for saturation [flags + visible inspection; 8.4x10 ⁶] | ✓ | | ✓ |
| 8. If manual integrations were performed, are they appropriate with proper reason given? | ✓ | | ✓ |
| 9. Were all peaks identified automatically? If not, list analytes: _____ | ✓ | Modify method for detection must be attempted and all points reprocessed. Any non-detected peaks must be verified in each affected sample. | ✓ |
| 10. Elution order checked on isomeric pairs? | | | |
| • 1,4 dichlorobenzene before 1,2 dichlorobenzene (& d4 isomers) | ✓ | | ✓ |
| • 2-methylnaphthalene before 1-methylnaphthalene (& d10 isomers) | ✓ | | ✓ |
| • acenaphthylene before acenaphthene (& d10 isomers) | ✓ | | ✓ |
| • dibenzothiophene before phenanthrene | ✓ | | ✓ |
| • phenanthrene before anthracene (& d10 isomers) | ✓ | | ✓ |
| • 3-methylphenanthrene and 1-methylphenanthrene | ✓ | | ✓ |
| • fluoranthene before pyrene (& d10 isomers) | ✓ | | ✓ |
| • benzo(a)anthracene before chrysene (& d12 isomers) | ✓ | | ✓ |
| • benzo(b)fluoranthene before benzo(k)fluoranthene (& d12 isomers) | ✓ | | ✓ |
| • benzo(e)pyrene before benzo(a)pyrene before perylene (& d12 isomers) | ✓ | | ✓ |
| • Indeno(1,2,3-cd)pyrene before benzo(g,h,i)perylene (& d12 isomers) | ✓ | | ✓ |

| Chrom MLG Review | PAH | 0010 | Comments/NCM# | PAH | 0010 |
|--|----------------------|---|--|------------|-------------|
| 11. Are ICAL start/end dates/times correct on summary? [F6] | ✓ | | | ✓ | |
| 12. Are ≥ 5 levels of each compound/surrogate active? [F6] | ✓ | | | ✓ | |
| 13. Is low level standard at or below RL & points consec? [F6] | ✓ | | | ✓ | |
| 14. Are all %RSD ≤30% [F6] | ✓ | | | ✓ | |
| 15. Was a linear or quadratic fit used for analytes >30 % RSD? [F6] | N/A | | | NA | |
| 16. If curves were used, is correlation coefficient ≥0.990? [F6] | ↓ | | | ↓ | |
| 17. At least 6 consecutive points used for quadratic curves? [F6] | ↓ | | | ↓ | |
| 18. For quadratic: is a tangent's slope to the curve entirely positive or negative and continuous? [Ctrl-C, details] | ↓ | | | ↓ | |
| 19. Is the intercept < RL for each curve? [Ctrl-C, details] | ↓ | | | ↓ | |
| 20. Is the readback for each point within criteria? [F6-Drift] (<40% for all points, except low point < 50 %) | ✓ | | | ✓ | |
| 21. Was the ICV within ± 30% recovery? [F8-icv] | ✓ | | <input type="checkbox"/> ICV out, smp ND (NCM#) | ✓ | |
| 1st level reviewer: MP/AL | Date: 7/29/19 | 2nd level reviewer: CJS | Date: 7/29/19 | | |
| Comments: | | | | | |
| | | | | | |
| | | | | | |

* Such action must be taken in consultation with client.

Eurofins/TestAmerica Knoxville GC/MS-SIM ICAL Review/Narrative Checklist
Method: PAHs and Selected SVOCs – KNOX-ID-0016, Revision 12

| <i>TALS MLG Review</i> | PAH | 0010 | Comments | PAH | 0010 |
|---|----------------------|------|--|----------------------|------|
| 22. Upload ICAL | ✓ | | | ✓ | |
| 23. Graphics uploaded? [Sample List Tab] | ✓ | | | ✓ | |
| 24. All points are in the most recent active calibration event #? [Calibration ID # in the sample results tab & Calibration Events] [Calibration Events - 'Fix ICAL Linkage' if needed] | ✓ | | | ✓ | |
| 25. If criteria not met, was a NCM generated? | NA | | | NA | |
| 26. After review in TALS, approve the calibrations in TALS | | | | ✓ | |
| 27. After verifying TALS is correct, lock method in Chrom <resolve any error issues> | | | | / | |
| 28. Checklist scanned & attached properly? | | | | | |
| 1 st level reviewer: <i>maf</i> | Date: <i>7/30/19</i> | | 2 nd level reviewer: <i>CSJ</i> | Date: <i>7/29/19</i> | |
| Comments: | | | | | |
| | | | | | |
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* Such action must be taken in consultation with client.

GC/MS SEMI VOA ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Instrument ID: MP Start Date: 08/01/2019 18:13Analysis Batch Number: 32296 End Date: 08/01/2019 22:26

| LAB SAMPLE ID | CLIENT SAMPLE ID | DATE ANALYZED | DILUTION FACTOR | LAB FILE ID | COLUMN ID |
|----------------------|------------------|------------------|-----------------|-------------------------|-------------------------|
| CCVIS 140-32296/2 | | 08/01/2019 18:13 | 1 | CCVIS.D | Rxi-5SilMS 25 0.25 (mm) |
| WDM 140-32296/3 | | 08/01/2019 18:38 | 1 | WDM.D | Rxi-5SilMS 25 0.25 (mm) |
| MB 140-32029/1-A | | 08/01/2019 20:20 | 1 | MB 140-32029-1-A.D | Rxi-5SilMS 25 0.25 (mm) |
| 140-15917-A-1-A MDLV | | 08/01/2019 20:45 | 1 | | Rxi-5SilMS 25 0.25 (mm) |
| LCS 140-32029/2-A | | 08/01/2019 21:10 | 1 | LCS 140-32029-2-A.D | Rxi-5SilMS 25 0.25 (mm) |
| LCSD 140-32029/3-A | | 08/01/2019 21:36 | 1 | LCSD 140-32029-3-A.D | Rxi-5SilMS 25 0.25 (mm) |
| 580-87761-28 | | 08/01/2019 22:01 | 1 | 580-87761-D-28- A.D | Rxi-5SilMS 25 0.25 (mm) |
| 580-87761-29 | | 08/01/2019 22:26 | 1 | 580-87761-D-29- A.D | Rxi-5SilMS 25 0.25 (mm) |

Eurofins/TestAmerica Knoxville Semivolatile GC/MS Continuing Calibration Data Review / Narrative Checklist
8270D - KNOX-MS-0027, Rev 0

| | | | |
|-----------------|---------------|------------|----------------------------------|
| | TALS Batch #: | 32296 | |
| | | | ICAL TALS Batch / Event # |
| Instrument: | MP | 32163/2060 | Scanned <input type="checkbox"/> |
| Analysis Date: | 8/1/19 | | |
| ICAL Chrom WL # | 12590 12531 | MP 8/2/19 | |
| CCAL Chrom WL # | 12590 | | |

| CCV Chrom/Worklist Review | 1 st | Comments/NCM # | 2 nd |
|---|-----------------|--|-----------------|
| 1. Are the reagents & init/final volumes correct? (Verify reagents & amt. injected) [WL Sample Reagent Tab] | ✓ | | / |
| 2. Are all required calibration standards in worklist? | ✓ | | |
| 3. Was the CCAL compared to the most recent & correct ICAL for each CCV & LG? (verify ICAL batch #, start/end Cal date & time) [FS] | ✓ | | / |
| 4. Elution order checked on isomeric pairs/coeluters? | | | |
| • 2 & 1 - methylnaphthalene | ✓ | | / |
| • acenaphthylene / acenaphthene | ✓ | | / |
| • phenanthrene / anthracene | ✓ | | / |
| • 3-methylphenanthrene / 1-methylphenanthrene | ✓ | | / |
| • fluoranthene / pyrene | ✓ | | / |
| • benzo(a)anthracene / chrysene | ✓ | | / |
| • benzo(b)fluoranthene / benzo(k)fluoranthene | ✓ | | / |
| • benzo(e)pyrene / benzo(a)pyrene / perylene | ✓ | | / |
| • indeno(1,2,3-cd)pyrene / benzo(g,h,i)perylene | ✓ | | / |
| 5. Manual integrations properly performed, correctly ID'd, baseline clearly identified, and correct reason given? | NA | Note: manual selections should be updated and all data reprocessed | NA |
| 6. Were all peaks identified automatically? If not, list analytes: | ✓ | Note: any non-detected peaks must be verified in each affected sample. | ✓ |
| 7. Has the retention time been updated to the method? | ✓ | | ✓ |
| 8. Are the internal standard responses within limits for each CCV? (50-200% of the mid-level ICAL standard) [F8-istd] | ✓ | | / |
| 9. Are the internal standard retention times within limits for each CCV? (+30 seconds of the mid-level ICAL standard) [F8-ista] | ✓ | | ✓ |
| 10. Have the alkyl groups in WDM been correctly integrated? | ✓ | | / |
| CCV Chrom/TALS MLG Review [F8] or [TALS Sample tab] | | | |
| 11. Do the RF's meet minimum criteria | ✓ | | ✓ |
| 12. Is the %D <20% for 80% of compounds? | ✓ | | ✓ |
| 13. For any compound > 20% (low), was a RL standard analyzed & detected? * | N/A | <input type="checkbox"/> CCV out, EST (1) (NCM# _____) | NA |
| 14. For any compound > 20%D (high or low), NCM generated? * | N/A | <input type="checkbox"/> CCV out, EST (2) (NCM# _____) | NA |
| 15. Benz(b & k) fluoranthene: height of the valley between < 50% of average of the two peak heights? [F8 Resolution] | ✓ | | / |
| 16. Is the calibration event # correct for each CCV? [TALS Sample Results tab] | ✓ | | ✓ |

Continued on next page

* Such action must be taken in consultation with client.

Eurofins/TestAmerica Knoxville Semivolatile GC/MS Continuing Calibration Data Review / Narrative Checklist
8270D – KNOX-MS-0027, Rev 0

| <i>Batch Chrom/TALS review</i> | | <i>1st</i> | <i>TALS BATCH #: 32296</i> | <i>2nd</i> | | | | | | | | | | | | |
|--|---|-----------------------|---|-----------------------|---|---------|---|---------|---|---------|---|------|---|--|--|--|
| | | | <i>Comments/NCM #</i> | | | | | | | | | | | | | |
| 1. Have the sample ID's and dilution factors been confirmed (check sequence, autosampler positions, etc.)? | | ✓ | | | | | | | | | | | | | | |
| 2. Were all samples injected within 12 hr of CCV? | | ✓ | | ✓ | | | | | | | | | | | | |
| 3. Method blank or instrument blank analyzed? | | ✓ | | ✓ | | | | | | | | | | | | |
| 4. Are all analytes in the method blank < ½ RL (< RL for phthalates)? | | ✱ | <input type="checkbox"/> MB CLC <5x RL (NCM# _____) <input checked="" type="checkbox"/> MB Rpt ND (NCM# <u>18941</u>) ✓ <input type="checkbox"/> MB-Rpt.10x (NCM# _____) <input type="checkbox"/> MB-insuff samp (NCM# _____) <input type="checkbox"/> MB-insuff samp -CONSUMED (NCM# _____) <input type="checkbox"/> MB > ½ RL (explain) (NCM# _____) <input type="checkbox"/> MB RX - HT out (NCM# _____) | ✱ | | | | | | | | | | | | |
| 5. Method blank surrogate recoveries within QC limits? [F8] or [Batch Results SUR Tab] | | ✓ | <input type="checkbox"/> Surr-MB (1) high (NCM# _____) + (2) smp OK (NCM# _____) or (3) Insuff. sample (NCM# _____) or (4) CONSUMED (NCM# _____) | ✓ | | | | | | | | | | | | |
| 6. LCS done per batch and criteria met with limited # marginal exceedences allowed (see table) and no two consecutive MEs? | | ✓ | <input type="checkbox"/> LCS/D-Insuff smp (NCM# _____) <input type="checkbox"/> LCS/D-Insuff smp - CONSUMED (NCM# _____) <input type="checkbox"/> LCS/D %R High < RL in smp (1+2-5) (NCM# _____) <input type="checkbox"/> LCS/D out-RX HT out (NCM# _____) <input type="checkbox"/> Mar. Exceed. w/in ME limits & Random (NCM# _____) <input type="checkbox"/> LCS/D-%RPD (%R OK) (NCM# _____) <input type="checkbox"/> NCM# <u>140-6154</u> : Water wash | ✓ | | | | | | | | | | | | |
| Number of target analytes in LCS # marginal exceedences of LCS control limits allowed <table border="1"> <tr><td>>90</td><td>5</td></tr> <tr><td>71 - 90</td><td>4</td></tr> <tr><td>51 - 70</td><td>3</td></tr> <tr><td>31 - 50</td><td>2</td></tr> <tr><td>11 - 30</td><td>1</td></tr> <tr><td>< 11</td><td>0</td></tr> </table> [Chrom-F8] [TALS-Sample Results Tab] | | >90 | 5 | 71 - 90 | 4 | 51 - 70 | 3 | 31 - 50 | 2 | 11 - 30 | 1 | < 11 | 0 | | | |
| >90 | 5 | | | | | | | | | | | | | | | |
| 71 - 90 | 4 | | | | | | | | | | | | | | | |
| 51 - 70 | 3 | | | | | | | | | | | | | | | |
| 31 - 50 | 2 | | | | | | | | | | | | | | | |
| 11 - 30 | 1 | | | | | | | | | | | | | | | |
| < 11 | 0 | | | | | | | | | | | | | | | |
| 7. All runs - peaks ID'd correctly and false positives removed? Flag or narrate analyte interferences issues > RL <i>NCM only needed for "cn"</i> FLAGS: K: benzo(b/k) reported as (b) k: benzo(b/k) reported as (k) a: benzo(a)anthracene/chrysene reported as b(a)a y: benzo(a)anthracene/chrysene reported as chrysene CI: chromatographic interferences – high bias cn: see case narrative | | ✓ | <input type="checkbox"/> Interf-Chrom (NCM# _____) <input type="checkbox"/> "cn" (see narrative): (NCM# _____) Samples/ analytes: _____ _____ _____ | ✓ | | | | | | | | | | | | |
| 8. Manual integrations properly performed, correctly ID'd, baseline clearly identified, and correct reason given? | | ✓ | | ✓ | | | | | | | | | | | | |
| 9. Are Alkyl group start/end times and patterns identified? | | ✓ | "AP" flags applied where appropriate? (NCM not needed unless necessary) | ✓ | | | | | | | | | | | | |
| 10. Are surrogates within QC limits? [Batch Results SUR Tab] If no, list samples, reason and NCM # | | ✓ | <input type="checkbox"/> Surr-High-ND (1,8) (NCM# _____) <input type="checkbox"/> Surr-Incorrect Spike amt (NCM# _____) <input type="checkbox"/> Surr-Insuff Smp (1) insuff smp (NCM# _____) or (4) CONSUMED (NCM# _____) + (2) low bias (NCM# _____) or (3) high bias (NCM# _____) <input type="checkbox"/> Surr-Insuff Smp - CONSUMED (NCM# _____) <input type="checkbox"/> Surr-Matrix (1-5) (NCM# _____) <input type="checkbox"/> Surr-rpt per client (released w/o further investigation)* (NCM# _____) <input type="checkbox"/> Surr-RX concur (NCM# _____) <input type="checkbox"/> Surr-RX pass (RX outside HT, but w/in limits) (NCM# _____) <input type="checkbox"/> Dil – Surr dil out or estimated & elev RL's (opt 1-4 & 5-8): (NCM# _____) <input type="checkbox"/> NCM# <u>140-6154</u> : Water wash | ✓ | | | | | | | | | | | | |
| 11. Are internal standards within QC limits? [Batch Results IS Tab] If no, list samples, reason and NCM # | | ✓ | <input type="checkbox"/> ISTD- Matrix (NCM# _____) <input type="checkbox"/> ISTD- Matrix DL required (NCM# _____) <input type="checkbox"/> ISTD- non-targets affected (NCM# _____) <input type="checkbox"/> ISTD- RX/RA concur (NCM# _____) <input type="checkbox"/> NCM# <u>140-5757</u> : Samples bracketed by acceptable runs*. | ✓ | | | | | | | | | | | | |

Continued on next page

* Such action must be taken in consultation with client.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Batch Number: 32029 Batch Start Date: 07/25/19 11:50 Batch Analyst: Ivey, Crystal LBatch Method: 3520C Batch End Date: 07/30/19 14:40

| Lab Sample ID | Client Sample ID | Method Chain | Basis | GrossWeight | TareWeight | InitialAmount | FinalAmount | ReceivedpH | 60SP8270SIMSR 00006 |
|---------------------|------------------------------|---------------------|-------|-------------|------------|---------------|-------------|------------|------------------------|
| MB 140-32029/1 | | 3520C, 8270D SIM | | | | 1000 mL | 0.5 mL | | 0.5 mL |
| LCS 140-32029/2 | | 3520C, 8270D SIM | | | | 1000 mL | 0.5 mL | | 0.5 mL |
| LCSD 140-32029/3 | | 3520C, 8270D SIM | | | | 1000 mL | 0.5 mL | | 0.5 mL |
| 580-87761-D-28 | 22T-VB-01-RB-BRL 20190718 | 3520C, 8270D SIM | T | 1560.08 g | 510.89 g | 1049.2 mL | 0.5 mL | 5 SU | 0.5 mL |
| 580-87761-D-29 | 22T-SG-01-RB-CR_ 20190718 | 3520C, 8270D SIM | T | 1388.61 g | 511.09 g | 877.5 mL | 0.5 mL | 5 SU | 0.5 mL |

| Lab Sample ID | Client Sample ID | Method Chain | Basis | 60SP8270SIMTA 00009 | | | | | |
|---------------------|------------------------------|---------------------|-------|------------------------|--|--|--|--|--|
| MB 140-32029/1 | | 3520C, 8270D SIM | | | | | | | |
| LCS 140-32029/2 | | 3520C, 8270D SIM | | 0.5 mL | | | | | |
| LCSD 140-32029/3 | | 3520C, 8270D SIM | | 0.5 mL | | | | | |
| 580-87761-D-28 | 22T-VB-01-RB-BRL 20190718 | 3520C, 8270D SIM | T | | | | | | |
| 580-87761-D-29 | 22T-SG-01-RB-CR_ 20190718 | 3520C, 8270D SIM | T | | | | | | |

| Batch Notes | |
|------------------------------------|--|
| Balance ID | 02 |
| Batch Comment | Transferred to final by SDO 7/30/19, hexane only |
| Analyst ID - Concentration | JPQ/VGC |
| Exchange Solvent ID | 226527 |
| Analyst ID - Extraction | CI |
| Extraction 1 End Time | 07/26/2019 06:40 |
| Extraction 1 Start Time | 07/25/2019 11:50 |
| Na2SO4 ID | 243619 |
| Prep Solvent ID | 237277 |
| Analyst ID - Spike Analyst | CI |
| Analyst ID - Spike Witness Analyst | DWS |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC/MS SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Knoxville Job No.: 580-87761-2

SDG No.: _____

Batch Number: 32029 Batch Start Date: 07/25/19 11:50 Batch Analyst: Ivey, Crystal L

Batch Method: 3520C Batch End Date: 07/30/19 14:40

| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Eurofins/TestAmerica Knoxville Prep Batch Review Checklist

Batch # 32029

Split Batch # NA

| Review Items | N/A | Yes | No | If No, why is data reportable? | 2nd Level |
|---|-----|-----|----|--------------------------------|-----------|
| 1. Were the samples extracted within the required holding times? | | ✓ | | If No, NCM #: _____ | ✓ |
| 2. Are the final extracts free of water, precipitates, multiple phases, and for HRMS - color? | | ✓ | | | ✓ |
| 3. Were all project specific requirements met? | | ✓ | | | ✓ |
| 4. Were the correct start and completion dates entered into TALS? | | ✓ | | | ✓ |
| 5. Are the spike IDs and volumes correct in TALS for the method? | | ✓ | | | ✓ |
| 6. Does the prep batch paperwork package contain all required documentation which has been properly and completely filled out, including: <ul style="list-style-type: none"> • Extraction Benchsheet (Excel) • TALS Raw data worksheets • Batch Worksheets (ANLY) • Verify Protocol #'s (compare excel sheet to TALS) • Was the Excel Extraction Benchsheet and Prep Batch Review Checklist scanned and attached to batch in TALS? | | ✓ | | | ✓ |
| 7. Did extracts go through GPC cleanup? Has the following nonconformance been associated with all extracts? | ✓ | | | If Yes, NCM# <u>140-18550</u> | N/A |
| 8. Are all additional nonconformances documented appropriately and copy included with deliverable? | | ✓ | | If Yes, NCM#: <u>140-18781</u> | ✓ |

Analyst : SDO Date: 7/30/19

Comments:

2nd Level Reviewer: JPO Date: 7/30/19

Comments:

METALS

COVER PAGE
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job Number: 580-87761-2

SDG No.: _____

Project: Portland Harbor

Client Sample ID
22T-VB-01-RB-BRL_20190718
22T-SG-01-RB-CR_20190718

Lab Sample ID
580-87761-28
580-87761-29

Comments:

1A-IN
 INORGANIC ANALYSIS DATA SHEET
 METALS

Client Sample ID: 22T-VB-01-RB-BRL_20190718

Lab Sample ID: 580-87761-28

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG ID.: _____

Matrix: Water

Date Sampled: 07/18/2019 07:30

Reporting Basis: WET

Date Received: 07/18/2019 13:00

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|-----------|---------|--------|---------|---------|-------|---|---|-----|--------|
| 7439-97-6 | Mercury | ND | 0.00030 | 0.00015 | mg/L | | | 1 | 7470A |

1A-IN
 INORGANIC ANALYSIS DATA SHEET
 METALS - TOTAL RECOVERABLE

Client Sample ID: 22T-VB-01-RB-BRL_20190718

Lab Sample ID: 580-87761-28

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG ID.: _____

Matrix: Water

Date Sampled: 07/18/2019 07:30

Reporting Basis: WET

Date Received: 07/18/2019 13:00

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|-----------|---------|--------|--------|---------|-------|---|---|-----|--------|
| 7440-38-2 | Arsenic | 0.0042 | 0.0050 | 0.0010 | mg/L | J | B | 5 | 6020A |
| 7440-43-9 | Cadmium | ND | 0.0020 | 0.00050 | mg/L | | | 5 | 6020A |
| 7440-50-8 | Copper | ND | 0.010 | 0.0030 | mg/L | | | 5 | 6020A |
| 7439-92-1 | Lead | ND | 0.0040 | 0.0010 | mg/L | | | 5 | 6020A |
| 7440-66-6 | Zinc | ND | 0.035 | 0.0095 | mg/L | | | 5 | 6020A |

1A-IN
 INORGANIC ANALYSIS DATA SHEET
 METALS

Client Sample ID: 22T-SG-01-RB-CR_20190718

Lab Sample ID: 580-87761-29

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG ID.: _____

Matrix: Water

Date Sampled: 07/18/2019 12:00

Reporting Basis: WET

Date Received: 07/18/2019 13:00

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|-----------|---------|--------|---------|---------|-------|---|---|-----|--------|
| 7439-97-6 | Mercury | ND | 0.00030 | 0.00015 | mg/L | | | 1 | 7470A |

1A-IN
 INORGANIC ANALYSIS DATA SHEET
 METALS - TOTAL RECOVERABLE

Client Sample ID: 22T-SG-01-RB-CR_20190718

Lab Sample ID: 580-87761-29

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG ID.: _____

Matrix: Water

Date Sampled: 07/18/2019 12:00

Reporting Basis: WET

Date Received: 07/18/2019 13:00

| CAS No. | Analyte | Result | RL | MDL | Units | C | Q | DIL | Method |
|-----------|---------|--------|--------|---------|-------|---|---|-----|--------|
| 7440-38-2 | Arsenic | 0.0047 | 0.0050 | 0.0010 | mg/L | J | B | 5 | 6020A |
| 7440-43-9 | Cadmium | ND | 0.0020 | 0.00050 | mg/L | | | 5 | 6020A |
| 7440-50-8 | Copper | ND | 0.010 | 0.0030 | mg/L | | | 5 | 6020A |
| 7439-92-1 | Lead | ND | 0.0040 | 0.0010 | mg/L | | | 5 | 6020A |
| 7440-66-6 | Zinc | ND | 0.035 | 0.0095 | mg/L | | | 5 | 6020A |

2A-IN
 CALIBRATION VERIFICATIONS
 METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

ICV Source: ICPMS ICV_00037 Concentration Units: ug/L

CCV Source: ICPMS CAL #4_00028

| Analyte | ICV 580-306788/7 07/26/2019 09:03 | | | | CCV 580-306788/12 07/26/2019 09:33 | | | | CCV 580-306788/25 07/26/2019 10:28 | | | |
|----------------|--------------------------------------|---|------|----|---------------------------------------|---|------|-----|---------------------------------------|---|------|----|
| | Found | C | True | %R | Found | C | True | %R | Found | C | True | %R |
| Arsenic | 39.2 | | 40.0 | 98 | 49.3 | | 50.0 | 99 | 48.2 | | 50.0 | 96 |
| Cadmium | 39.7 | | 40.0 | 99 | 49.9 | | 50.0 | 100 | 48.5 | | 50.0 | 97 |
| Copper | 39.3 | | 40.0 | 98 | 49.1 | | 50.0 | 98 | 48.0 | | 50.0 | 96 |
| Lead | 39.3 | | 40.0 | 98 | 49.1 | | 50.0 | 98 | 47.9 | | 50.0 | 96 |
| Zinc | 39.7 | | 40.0 | 99 | 49.2 | | 50.0 | 98 | 47.2 | | 50.0 | 94 |

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
 Italicized analytes were not requested for this sequence.

2A-IN
 CALIBRATION VERIFICATIONS
 METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

ICV Source: ICPMS ICV_00037 Concentration Units: ug/L

CCV Source: ICPMS CAL #4_00028

| Analyte | CCV 580-306788/38 07/26/2019 11:24 | | | | | | | | | | | |
|----------------|---------------------------------------|---|------|----|-------|---|------|----|-------|---|------|----|
| | Found | C | True | %R | Found | C | True | %R | Found | C | True | %R |
| Arsenic | 48.6 | | 50.0 | 97 | | | | | | | | |
| Cadmium | 49.1 | | 50.0 | 98 | | | | | | | | |
| Copper | 47.7 | | 50.0 | 95 | | | | | | | | |
| Lead | 48.1 | | 50.0 | 96 | | | | | | | | |
| Zinc | 47.7 | | 50.0 | 95 | | | | | | | | |

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
 Italicized analytes were not requested for this sequence.

2A-IN
 CALIBRATION VERIFICATIONS
 METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

ICV Source: ICP-MS CCVL_00004 Concentration Units: ug/L

CCV Source: ICP-MS CCVL_00004

| Analyte | ICVL 580-306788/9 07/26/2019 09:16 | | | | CCVL 580-306788/14 07/26/2019 09:41 | | | | CCVL 580-306788/27 07/26/2019 10:37 | | | |
|----------------|---------------------------------------|---|-------|----|--|---|-------|-----|--|---|-------|----|
| | Found | C | True | %R | Found | C | True | %R | Found | C | True | %R |
| Arsenic | 0.969 | J | 1.00 | 97 | 1.00 | | 1.00 | 100 | 0.977 | J | 1.00 | 98 |
| Cadmium | 0.379 | J | 0.400 | 95 | 0.402 | | 0.400 | 100 | 0.394 | J | 0.400 | 98 |
| Copper | 1.89 | J | 2.00 | 94 | 1.88 | J | 2.00 | 94 | 1.89 | J | 2.00 | 94 |
| Lead | 0.749 | J | 0.800 | 94 | 0.752 | J | 0.800 | 94 | 0.732 | J | 0.800 | 91 |
| Zinc | 6.88 | J | 7.00 | 98 | 6.88 | J | 7.00 | 98 | 6.86 | J | 7.00 | 98 |

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
 Italicized analytes were not requested for this sequence.

2A-IN
 CALIBRATION VERIFICATIONS
 METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

ICV Source: ICP-MS CCVL_00004 Concentration Units: ug/L

CCV Source: ICP-MS CCVL_00004

| Analyte | CCVL 580-306788/40 07/26/2019 11:32 | | | | | | | | | | | |
|----------------|--|---|-------|----|-------|---|------|----|-------|---|------|----|
| | Found | C | True | %R | Found | C | True | %R | Found | C | True | %R |
| Arsenic | 0.991 | J | 1.00 | 99 | | | | | | | | |
| Cadmium | 0.373 | J | 0.400 | 93 | | | | | | | | |
| Copper | 1.84 | J | 2.00 | 92 | | | | | | | | |
| Lead | 0.706 | J | 0.800 | 88 | | | | | | | | |
| Zinc | 6.74 | J | 7.00 | 96 | | | | | | | | |

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
 Italicized analytes were not requested for this sequence.

2A-IN
 CALIBRATION VERIFICATIONS
 METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

ICV Source: Hg_ICV_WORK_00049 Concentration Units: mg/L

CCV Source: Hg_CAL_WORK_00043

| Analyte | ICV 580-306570/7 07/24/2019 10:50 | | | | CCV 580-306570/32 07/24/2019 13:50 | | | | CCV 580-306570/41 07/24/2019 14:15 | | | |
|----------------|--------------------------------------|---|---------|-----|---------------------------------------|---|---------|----|---------------------------------------|---|---------|-----|
| | Found | C | True | %R | Found | C | True | %R | Found | C | True | %R |
| Mercury | 0.00398 | | 0.00400 | 100 | 0.00495 | | 0.00500 | 99 | 0.00516 | | 0.00500 | 103 |

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
 Italicized analytes were not requested for this sequence.

2A-IN
 CALIBRATION VERIFICATIONS
 METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

ICV Source: Hg_ICV_WORK_00049 Concentration Units: mg/L

CCV Source: Hg_CAL_WORK_00043

| Analyte | CCV 580-306570/53 07/24/2019 14:42 | | | | | | | | | | | |
|----------------|---------------------------------------|---|---------|-----|-------|---|------|----|-------|---|------|----|
| | Found | C | True | %R | Found | C | True | %R | Found | C | True | %R |
| Mercury | 0.00506 | | 0.00500 | 101 | | | | | | | | |

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.
 Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Concentration Units: ug/L

| Analyte | RL | ICB 580-306788/8 07/26/2019 09:11 | | CCB 580-306788/13 07/26/2019 09:37 | | CCB 580-306788/26 07/26/2019 10:32 | | CCB 580-306788/39 07/26/2019 11:28 | |
|----------------|------|--------------------------------------|---|---------------------------------------|---|---------------------------------------|---|---------------------------------------|---|
| | | Found | C | Found | C | Found | C | Found | C |
| Arsenic | 1.0 | ND | | ND | | ND | | ND | |
| Cadmium | 0.40 | ND | | ND | | ND | | ND | |
| Copper | 2.0 | ND | | ND | | ND | | ND | |
| Lead | 0.80 | ND | | ND | | ND | | ND | |
| Zinc | 7.0 | ND | | ND | | ND | | ND | |

Italicized analytes were not requested for this sequence.

3-IN
INSTRUMENT BLANKS
METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Concentration Units: mg/L

| Analyte | RL | ICB 580-306570/8 07/24/2019 10:57 | | CCB 580-306570/33 07/24/2019 13:52 | | CCB 580-306570/42 07/24/2019 14:17 | | CCB 580-306570/54 07/24/2019 14:44 | |
|----------------|---------|--------------------------------------|---|---------------------------------------|---|---------------------------------------|---|---------------------------------------|---|
| | | Found | C | Found | C | Found | C | Found | C |
| Mercury | 0.00030 | ND | | ND | | ND | | ND | |

Italicized analytes were not requested for this sequence.

3-IN
METHOD BLANK
METALS - TOTAL RECOVERABLE

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2
SDG No.: _____
Concentration Units: mg/L Lab Sample ID: MB 580-306640/22-A
Instrument Code: SEA044 Batch No.: 306788

| CAS No. | Analyte | Concentration | C | Q | Method |
|-----------|---------|---------------|---|---|--------|
| 7440-38-2 | Arsenic | 0.000853 | J | | 6020A |
| 7440-43-9 | Cadmium | ND | | | 6020A |
| 7440-50-8 | Copper | ND | | | 6020A |
| 7439-92-1 | Lead | ND | | | 6020A |
| 7440-66-6 | Zinc | ND | | | 6020A |

3-IN
METHOD BLANK
METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Concentration Units: mg/L Lab Sample ID: MB 580-306478/11-A

Instrument Code: TAC104 Batch No.: 306570

| CAS No. | Analyte | Concentration | C | Q | Method |
|-----------|---------|---------------|---|---|--------|
| 7439-97-6 | Mercury | ND | | | 7470A |

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Lab Sample ID: ICSA 580-306788/10

Instrument ID: SEA044

Lab File ID: 023SMPL.D

ICS Source: ICPMS- ICSA_00015

Concentration Units: ug/L

| Analyte | True Solution A | Found Solution A | Percent Recovery |
|----------------|--------------------|---------------------|---------------------|
| Arsenic | | 0.236 | |
| Cadmium | | 0.154 | |
| Copper | | 0.0646 | |
| Lead | | 0.0258 | |
| Zinc | | 0.190 | |
| Aluminum | 10000 | 9527 | 95 |
| Antimony | | 0.0407 | |
| Barium | | 0.0842 | |
| Beryllium | | 0.0186 | |
| Calcium | 10000 | 9878 | 99 |
| Chromium | | 0.203 | |
| Cobalt | | 0.0267 | |
| Iron | 10000 | 9697 | 97 |
| Magnesium | 10000 | 9508 | 95 |
| Manganese | | 0.0210 | |
| Mercury | | 0.0059 | |
| Molybdenum | 200 | 197 | 98 |
| Nickel | | 0.0746 | |
| Phosphorus | 10000 | 9596 | 96 |
| Potassium | 10000 | 9622 | 96 |
| Selenium | | 0.207 | |
| Silver | | 0.0022 | |
| Sodium | 10000 | 9779 | 98 |
| Strontium | | 0.108 | |
| Thallium | | 0.0024 | |
| Tin | | 0.150 | |
| Titanium | 200 | 189 | 94 |
| Uranium | | 0.0146 | |
| Vanadium | | 0.638 | |

Calculations are performed before rounding to avoid round-off errors in calculated results.

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Lab Sample ID: ICSAB 580-306788/11

Instrument ID: SEA044

Lab File ID: 024SMPL.D

ICS Source: ICPMS- ICSA_00015

Concentration Units: ug/L

| Analyte | True | Found | Percent Recovery |
|-------------------|--------------|---------------|------------------|
| | Solution AB | Solution AB | |
| Arsenic | 20.0 | 19.1 | 96 |
| Cadmium | 20.0 | 19.1 | 95 |
| Copper | 20.0 | 18.9 | 95 |
| Lead | 20.0 | 18.7 | 93 |
| Zinc | 20.0 | 19.5 | 98 |
| <i>Aluminum</i> | <i>10000</i> | <i>9776</i> | <i>98</i> |
| <i>Antimony</i> | <i>10.0</i> | <i>8.76</i> | <i>88</i> |
| <i>Barium</i> | <i>20.0</i> | <i>18.6</i> | <i>93</i> |
| <i>Beryllium</i> | <i>20.0</i> | <i>18.2</i> | <i>91</i> |
| <i>Calcium</i> | <i>10000</i> | <i>9907</i> | <i>99</i> |
| <i>Chromium</i> | <i>20.0</i> | <i>18.7</i> | <i>94</i> |
| <i>Cobalt</i> | <i>20.0</i> | <i>18.7</i> | <i>94</i> |
| <i>Iron</i> | <i>10000</i> | <i>9796</i> | <i>98</i> |
| <i>Magnesium</i> | <i>10000</i> | <i>9672</i> | <i>97</i> |
| <i>Manganese</i> | <i>20.0</i> | <i>18.8</i> | <i>94</i> |
| <i>Mercury</i> | | <i>0.0510</i> | |
| <i>Molybdenum</i> | <i>200</i> | <i>200</i> | <i>100</i> |
| <i>Nickel</i> | <i>20.0</i> | <i>18.5</i> | <i>92</i> |
| <i>Phosphorus</i> | <i>10000</i> | <i>9633</i> | <i>96</i> |
| <i>Potassium</i> | <i>10000</i> | <i>9630</i> | <i>96</i> |
| <i>Selenium</i> | <i>20.0</i> | <i>19.1</i> | <i>95</i> |
| <i>Silver</i> | <i>10.0</i> | <i>9.52</i> | <i>95</i> |
| <i>Sodium</i> | <i>10000</i> | <i>9645</i> | <i>96</i> |
| <i>Strontium</i> | <i>20.0</i> | <i>18.6</i> | <i>93</i> |
| <i>Thallium</i> | <i>10.0</i> | <i>9.08</i> | <i>91</i> |
| <i>Tin</i> | <i>20.0</i> | <i>18.7</i> | <i>93</i> |
| <i>Titanium</i> | <i>200</i> | <i>191</i> | <i>96</i> |
| <i>Uranium</i> | | <i>0.0127</i> | |
| <i>Vanadium</i> | <i>20.0</i> | <i>19.4</i> | <i>97</i> |

Calculations are performed before rounding to avoid round-off errors in calculated results.

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Lab Sample ID: ICSAB 580-306788/11

Instrument ID: SEA044

Lab File ID: 024SMPL.D

ICS Source: ICPMS-ICSB_00014

Concentration Units: ug/L

| Analyte | True | Found | Percent Recovery |
|-------------------|--------------|---------------|------------------|
| | Solution AB | Solution AB | |
| Arsenic | 20.0 | 19.1 | 96 |
| Cadmium | 20.0 | 19.1 | 95 |
| Copper | 20.0 | 18.9 | 95 |
| Lead | 20.0 | 18.7 | 93 |
| Zinc | 20.0 | 19.5 | 98 |
| <i>Aluminum</i> | <i>10000</i> | <i>9776</i> | <i>98</i> |
| <i>Antimony</i> | <i>10.0</i> | <i>8.76</i> | <i>88</i> |
| <i>Barium</i> | <i>20.0</i> | <i>18.6</i> | <i>93</i> |
| <i>Beryllium</i> | <i>20.0</i> | <i>18.2</i> | <i>91</i> |
| <i>Calcium</i> | <i>10000</i> | <i>9907</i> | <i>99</i> |
| <i>Chromium</i> | <i>20.0</i> | <i>18.7</i> | <i>94</i> |
| <i>Cobalt</i> | <i>20.0</i> | <i>18.7</i> | <i>94</i> |
| <i>Iron</i> | <i>10000</i> | <i>9796</i> | <i>98</i> |
| <i>Magnesium</i> | <i>10000</i> | <i>9672</i> | <i>97</i> |
| <i>Manganese</i> | <i>20.0</i> | <i>18.8</i> | <i>94</i> |
| <i>Mercury</i> | | <i>0.0510</i> | |
| <i>Molybdenum</i> | <i>200</i> | <i>200</i> | <i>100</i> |
| <i>Nickel</i> | <i>20.0</i> | <i>18.5</i> | <i>92</i> |
| <i>Phosphorus</i> | <i>10000</i> | <i>9633</i> | <i>96</i> |
| <i>Potassium</i> | <i>10000</i> | <i>9630</i> | <i>96</i> |
| <i>Selenium</i> | <i>20.0</i> | <i>19.1</i> | <i>95</i> |
| <i>Silver</i> | <i>10.0</i> | <i>9.52</i> | <i>95</i> |
| <i>Sodium</i> | <i>10000</i> | <i>9645</i> | <i>96</i> |
| <i>Strontium</i> | <i>20.0</i> | <i>18.6</i> | <i>93</i> |
| <i>Thallium</i> | <i>10.0</i> | <i>9.08</i> | <i>91</i> |
| <i>Tin</i> | <i>20.0</i> | <i>18.7</i> | <i>93</i> |
| <i>Titanium</i> | <i>200</i> | <i>191</i> | <i>96</i> |
| <i>Uranium</i> | | <i>0.0127</i> | |
| <i>Vanadium</i> | <i>20.0</i> | <i>19.4</i> | <i>97</i> |

Calculations are performed before rounding to avoid round-off errors in calculated results.

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Lab Sample ID: ICSAB 580-306788/11

Instrument ID: SEA044

Lab File ID: 024SMPL.D

ICS Source: ICPMS-ICSC_00001

Concentration Units: ug/L

| Analyte | True | Found | Percent Recovery |
|-------------------|--------------|---------------|------------------|
| | Solution AB | Solution AB | |
| Arsenic | 20.0 | 19.1 | 96 |
| Cadmium | 20.0 | 19.1 | 95 |
| Copper | 20.0 | 18.9 | 95 |
| Lead | 20.0 | 18.7 | 93 |
| Zinc | 20.0 | 19.5 | 98 |
| <i>Aluminum</i> | <i>10000</i> | <i>9776</i> | <i>98</i> |
| <i>Antimony</i> | <i>10.0</i> | <i>8.76</i> | <i>88</i> |
| <i>Barium</i> | <i>20.0</i> | <i>18.6</i> | <i>93</i> |
| <i>Beryllium</i> | <i>20.0</i> | <i>18.2</i> | <i>91</i> |
| <i>Calcium</i> | <i>10000</i> | <i>9907</i> | <i>99</i> |
| <i>Chromium</i> | <i>20.0</i> | <i>18.7</i> | <i>94</i> |
| <i>Cobalt</i> | <i>20.0</i> | <i>18.7</i> | <i>94</i> |
| <i>Iron</i> | <i>10000</i> | <i>9796</i> | <i>98</i> |
| <i>Magnesium</i> | <i>10000</i> | <i>9672</i> | <i>97</i> |
| <i>Manganese</i> | <i>20.0</i> | <i>18.8</i> | <i>94</i> |
| <i>Mercury</i> | | <i>0.0510</i> | |
| <i>Molybdenum</i> | <i>200</i> | <i>200</i> | <i>100</i> |
| <i>Nickel</i> | <i>20.0</i> | <i>18.5</i> | <i>92</i> |
| <i>Phosphorus</i> | <i>10000</i> | <i>9633</i> | <i>96</i> |
| <i>Potassium</i> | <i>10000</i> | <i>9630</i> | <i>96</i> |
| <i>Selenium</i> | <i>20.0</i> | <i>19.1</i> | <i>95</i> |
| <i>Silver</i> | <i>10.0</i> | <i>9.52</i> | <i>95</i> |
| <i>Sodium</i> | <i>10000</i> | <i>9645</i> | <i>96</i> |
| <i>Strontium</i> | <i>20.0</i> | <i>18.6</i> | <i>93</i> |
| <i>Thallium</i> | <i>10.0</i> | <i>9.08</i> | <i>91</i> |
| <i>Tin</i> | <i>20.0</i> | <i>18.7</i> | <i>93</i> |
| <i>Titanium</i> | <i>200</i> | <i>191</i> | <i>96</i> |
| <i>Uranium</i> | | <i>0.0127</i> | |
| <i>Vanadium</i> | <i>20.0</i> | <i>19.4</i> | <i>97</i> |

Calculations are performed before rounding to avoid round-off errors in calculated results.

5A-IN
 MATRIX SPIKE SAMPLE RECOVERY
 METALS

Client ID: 22T-SG-01-RB-CR_20190718 MS Lab ID: 580-87761-29 MS
 Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2
 SDG No.: _____
 Matrix: Water Concentration Units: mg/L
 % Solids: _____

| Analyte | SSR C | Sample Result (SR) C | Spike Added (SA) | %R | Control Limit %R | Q | Method |
|---------|----------|----------------------------|---------------------|----|------------------------|---|--------|
| Mercury | 0.00193 | ND | 0.00200 | 96 | 80-120 | | 7470A |

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

5A-IN
 MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
 METALS

Client ID: 22T-SG-01-RB-CR_20190718 MSD Lab ID: 580-87761-29 MSD
 Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2
 SDG No.: _____
 Matrix: Water Concentration Units: mg/L
 % Solids: _____

| Analyte | (SDR) C | Spike Added (SA) | %R | Control Limit %R | RPD | RPD Limit | Q | Method |
|---------|------------|---------------------|----|------------------------|-----|--------------|---|--------|
| Mercury | 0.00184 | 0.00200 | 92 | 80-120 | 5 | 20 | | 7470A |

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.

6-IN
 DUPLICATES
 METALS

Client ID: 22T-SG-01-RB-CR_20190718 DU Lab ID: 580-87761-29 DU
 Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2
 SDG No.: _____
 % Solids for Sample: _____ % Solids for Duplicate: _____
 Matrix: Water Concentration Units: mg/L

| Analyte | Control Limit | Sample (S) C | Duplicate (D) C | RPD | Q | Method |
|---------|---------------|-----------------|--------------------|-----|---|--------|
| Mercury | 0.00030 | ND | ND | NC | | 7470A |

Calculations are performed before rounding to avoid round-off errors in calculated results.

7A-IN
 LAB CONTROL SAMPLE
 METALS - TOTAL RECOVERABLE

Lab ID: LCS 580-306640/23-A

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

Sample Matrix: Water

LCS Source: ICP CAL 1_00003

| Analyte | Water (mg/L) | | | | | | | |
|---------|--------------|-------|---|-----|--------|-----|---|--------|
| | True | Found | C | %R | Limits | | Q | Method |
| Arsenic | 1.00 | 1.02 | | 102 | 80 | 120 | | 6020A |
| Cadmium | 1.00 | 1.03 | | 103 | 80 | 120 | | 6020A |
| Copper | 1.00 | 1.02 | | 102 | 80 | 120 | | 6020A |
| Lead | 1.00 | 1.01 | | 101 | 80 | 120 | | 6020A |
| Zinc | 1.00 | 1.01 | | 101 | 80 | 120 | | 6020A |

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
 LAB CONTROL SAMPLE DUPLICATE
 METALS - TOTAL RECOVERABLE

Lab ID: LCSD 580-306640/24-A

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

Sample Matrix: Water

LCS Source: ICP CAL 1_00003

| Analyte | (SDR) C | Spike Added | %R | Control Limit %R | RPD | RPD Limit | Q | Method |
|---------|---------|-------------|-----|------------------|-----|-----------|---|--------|
| Arsenic | 1.00 | 1.00 | 100 | 80-120 | 2 | 20 | | 6020A |
| Cadmium | 1.03 | 1.00 | 103 | 80-120 | 0 | 20 | | 6020A |
| Copper | 0.997 | 1.00 | 100 | 80-120 | 2 | 20 | | 6020A |
| Lead | 1.01 | 1.00 | 101 | 80-120 | 0 | 20 | | 6020A |
| Zinc | 0.961 | 1.00 | 96 | 80-120 | 5 | 20 | | 6020A |

SDR = Spike Duplicate Results

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

7A-IN
LAB CONTROL SAMPLE
METALS

Lab ID: LCS 580-306478/12-A

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

Sample Matrix: Water

LCS Source: Hg_SPK_WORK_00043

| Analyte | Water (mg/L) | | | | | | | |
|---------|--------------|---------|---|-----|--------|-----|---|--------|
| | True | Found | C | %R | Limits | | Q | Method |
| Mercury | 0.00200 | 0.00207 | | 103 | 80 | 120 | | 7470A |

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA - IN

7D-IN
 LAB CONTROL SAMPLE DUPLICATE
 METALS

Lab ID: LCSD 580-306478/13-A

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

Sample Matrix: Water

LCS Source: Hg_SPK_WORK_00043

| Analyte | (SDR) C | Spike Added | %R | Control Limit %R | RPD | RPD Limit | Q | Method |
|---------|---------|-------------|-----|------------------|-----|-----------|---|--------|
| Mercury | 0.00203 | 0.00200 | 102 | 80-120 | 2 | 20 | | 7470A |

SDR = Spike Duplicate Results

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIID - IN

9-IN
DETECTION LIMITS
METALS - TOTAL RECOVERABLE

Lab Name: Eurofins TestAmerica, Seattle Job Number: 580-87761-2
SDG Number: _____
Matrix: Water Instrument ID: SEA044
Method: 6020A MDL Date: 04/09/2018 11:28
Prep Method: 3005A

| Analyte | Wavelength/ Mass | RL (mg/L) | MDL (mg/L) |
|---------|---------------------|--------------|---------------|
| Arsenic | | 0.005 | 0.00102 |
| Cadmium | | 0.002 | 0.0005 |
| Copper | | 0.01 | 0.003015 |
| Lead | | 0.004 | 0.000995 |
| Zinc | | 0.035 | 0.0095 |

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS - TOTAL RECOVERABLE

Lab Name: Eurofins TestAmerica, Seattle Job Number: 580-87761-2
SDG Number: _____
Matrix: Water Instrument ID: SEA044
Method: 6020A XMDL Date: 06/01/2018 00:00

| Analyte | Wavelength/ Mass | XRL (ug/L) | XMDL (ug/L) |
|---------|---------------------|---------------|----------------|
| Arsenic | | 1 | 0.204 |
| Cadmium | | 0.4 | 0.1 |
| Copper | | 2 | 0.603 |
| Lead | | 0.8 | 0.199 |
| Zinc | | 7 | 1.9 |

9-IN
DETECTION LIMITS
METALS

Lab Name: Eurofins TestAmerica, Seattle Job Number: 580-87761-2
SDG Number: _____
Matrix: Water Instrument ID: TAC104
Method: 7470A MDL Date: 03/30/2017 13:02
Prep Method: 7470A

| Analyte | Wavelength/ Mass | RL (mg/L) | MDL (mg/L) |
|---------|---------------------|--------------|---------------|
| Mercury | | 0.0003 | 0.00015 |

9-IN
CALIBRATION BLANK DETECTION LIMITS
METALS

Lab Name: Eurofins TestAmerica, Seattle Job Number: 580-87761-2
SDG Number: _____
Matrix: Water Instrument ID: TAC104
Method: 7470A XMDL Date: 05/03/2017 12:19

| Analyte | Wavelength/ Mass | XRL (mg/L) | XMDL (mg/L) |
|---------|---------------------|---------------|----------------|
| Mercury | | 0.0003 | 0.00015 |

11-IN
LINEAR RANGES
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No: 580-87761-2

SDG No.: _____

Instrument ID: SEA044

Date: 05/22/2017 10:22

| Analyte | Integ. Time (Sec.) | Concentration (mg/L) | Method |
|---------|--------------------------|-------------------------|--------|
| Arsenic | | 9000 | 6020A |
| Cadmium | | 9000 | 6020A |
| Copper | | 9000 | 6020A |
| Lead | | 9000 | 6020A |
| Zinc | | 9000 | 6020A |

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Prep Method: 3005A

| Lab Sample ID | Preparation Date | Prep Batch | Initial Weight | Initial Volume (mL) | Final Volume (mL) |
|----------------------|------------------|------------|----------------|---------------------|-------------------|
| 580-87761-28 | 07/25/2019 14:40 | 306640 | | 50 | 50 |
| 580-87761-29 | 07/25/2019 14:40 | 306640 | | 50 | 50 |
| MB 580-306640/22-A | 07/25/2019 14:41 | 306640 | | 50 | 50 |
| LCS 580-306640/23-A | 07/25/2019 14:41 | 306640 | | 50 | 50 |
| LCSD 580-306640/24-A | 07/25/2019 14:41 | 306640 | | 50 | 50 |

12-IN
PREPARATION LOG
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Prep Method: 7470A

| Lab Sample ID | Preparation Date | Prep Batch | Initial Weight | Initial Volume (mL) | Final Volume (mL) |
|----------------------|------------------|------------|----------------|---------------------|-------------------|
| 580-87761-29 | 07/24/2019 09:16 | 306478 | | 50 | 50 |
| 580-87761-29 DU | 07/24/2019 09:16 | 306478 | | 50 | 50 |
| 580-87761-29 MS | 07/24/2019 09:16 | 306478 | | 50 | 50 |
| 580-87761-29 MSD | 07/24/2019 09:16 | 306478 | | 50 | 50 |
| 580-87761-28 | 07/24/2019 09:16 | 306478 | | 50 | 50 |
| MB 580-306478/11-A | 07/24/2019 09:16 | 306478 | | 50 | 50 |
| LCS 580-306478/12-A | 07/24/2019 09:16 | 306478 | | 50 | 50 |
| LCSD 580-306478/13-A | 07/24/2019 09:16 | 306478 | | 50 | 50 |

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Instrument ID: SEA044

Analysis Method: 6020A

Start Date: 07/26/2019 08:37

End Date: 07/26/2019 14:06

| Lab Sample Id | D/F | Type | Time | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|-----|------|-------|----------|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | A | C | C | P | Z | | | | | | | | | | | | | | | | | | | | | | | |
| ICIS 580-306788/1 | | | 08:37 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| IC 580-306788/2 | 1 | | 08:42 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| IC 580-306788/3 | 1 | | 08:46 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| IC 580-306788/4 | 1 | | 08:50 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| IC 580-306788/5 | 1 | | 08:54 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| IC 580-306788/6 | 1 | | 08:59 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ICV 580-306788/7 | 1 | | 09:03 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ICB 580-306788/8 | 1 | | 09:11 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ICVL 580-306788/9 | 1 | | 09:16 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ICSA 580-306788/10 | 1 | | 09:20 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ICSAB 580-306788/11 | 1 | | 09:24 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306788/12 | 1 | | 09:33 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306788/13 | 1 | | 09:37 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| CCVL 580-306788/14 | 1 | | 09:41 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| MB 580-306640/22-A | 1 | R | 09:45 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| LCS 580-306640/23-A | 10 | R | 09:50 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| LCSD 580-306640/24-A | 10 | R | 09:54 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 09:58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306788/25 | 1 | | 10:28 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306788/26 | 1 | | 10:32 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| CCVL 580-306788/27 | 1 | | 10:37 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 10:54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 580-87761-28 | 5 | R | 10:58 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| 580-87761-29 | 5 | R | 11:02 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306788/38 | 1 | | 11:24 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306788/39 | 1 | | 11:28 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| CCVL 580-306788/40 | 1 | | 11:32 | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Instrument ID: SEA044 Analysis Method: 6020A

Start Date: 07/26/2019 08:37 End Date: 07/26/2019 14:06

| Lab Sample Id | D/F | Type | Time | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|-----|------|-------|----------|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | A | C | C | P | Z | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 11:58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306788/50 | | | 12:15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306788/51 | | | 12:19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCVL 580-306788/52 | | | 12:23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 12:58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306788/61 | | | 13:02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306788/62 | | | 13:06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCVL 580-306788/63 | | | 13:10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Prep Types: _____
R = Total Recoverable

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Seattle

Job No.: 580-87761-2

SDG No.: _____

Instrument ID: TAC104

Analysis Method: 7470A

Start Date: 07/24/2019 10:25

End Date: 07/24/2019 15:28

| Lab Sample Id | D/F | Type | Time | Hg | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|-----|------|-------|----|----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STD 580-306570/1 IC | | | 10:25 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STD 580-306570/2 IC | | | 10:27 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STD 580-306570/3 IC | | | 10:30 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STD 580-306570/4 IC | | | 10:32 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STD 580-306570/5 IC | | | 10:34 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STD 580-306570/6 IC | | | 10:36 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ICV 580-306570/7 | 1 | | 10:50 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ICB 580-306570/8 | 1 | | 10:57 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306570/9 | | | 12:57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306570/10 | | | 12:59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:06 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306570/21 | | | 13:24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306570/22 | | | 13:27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 13:47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306570/32 | 1 | | 13:50 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306570/33 | 1 | | 13:52 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MB 580-306478/11-A | 1 | T | 13:54 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LCS 580-306478/12-A | 1 | T | 13:57 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LCSD 580-306478/13-A | 1 | T | 13:59 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 580-87761-29 | 1 | T | 14:06 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 580-87761-29 DU | 1 | T | 14:08 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 580-87761-29 MS | 1 | T | 14:10 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 580-87761-29 MSD | 1 | T | 14:13 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306570/41 | 1 | | 14:15 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306570/42 | 1 | | 14:17 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

13-IN
ANALYSIS RUN LOG
METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Instrument ID: TAC104 Analysis Method: 7470A

Start Date: 07/24/2019 10:25 End Date: 07/24/2019 15:28

| Lab Sample Id | D/F | Type | Time | Hg | Analytes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------|-----|------|-------|----|----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 580-87761-28 | 1 | T | 14:20 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306570/53 | 1 | | 14:42 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306570/54 | 1 | | 14:44 | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 14:58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306570/65 | | | 15:10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306570/66 | | | 15:12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ZZZZZZ | | | 15:16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCV 580-306570/69 | | | 15:26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CCB 580-306570/70 | | | 15:28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Prep Types: _____
T = Total/NA

15-IN
ICP-MS INTERNAL STANDARDS RELATIVE INTENSITY SUMMARY
METALS

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

ICP-MS Instrument ID: SEA044 Start Date: 07/26/2019 End Date: 07/26/2019

| Lab Sample ID | Time | Internal Standards %RI For: | | | | | | | | | |
|-------------------------|-------|-----------------------------|---|------------|---|----------------|---|------------|---|------------|---|
| | | Element Sc | Q | Element Ge | Q | Element Rh-103 | Q | Element Ho | Q | Element Bi | Q |
| IC 580-306788/2 | 08:42 | 102 | | 102 | | 98 | | 101 | | 98 | |
| IC 580-306788/3 | 08:46 | 102 | | 104 | | 100 | | 102 | | 98 | |
| IC 580-306788/4 | 08:50 | 101 | | 102 | | 98 | | 99 | | 97 | |
| IC 580-306788/5 | 08:54 | 104 | | 102 | | 98 | | 100 | | 96 | |
| IC 580-306788/6 | 08:59 | 103 | | 101 | | 97 | | 99 | | 94 | |
| ICV 580-306788/7 | 09:03 | 104 | | 103 | | 98 | | 100 | | 96 | |
| ICB 580-306788/8 | 09:11 | 103 | | 107 | | 101 | | 102 | | 97 | |
| ICVL 580-306788/9 | 09:16 | 102 | | 103 | | 100 | | 98 | | 97 | |
| ICSA 580-306788/10 | 09:20 | 103 | | 103 | | 97 | | 99 | | 95 | |
| ICSAB 580-306788/11 | 09:24 | 106 | | 104 | | 98 | | 101 | | 95 | |
| CCV 580-306788/12 | 09:33 | 107 | | 103 | | 98 | | 99 | | 96 | |
| CCB 580-306788/13 | 09:37 | 104 | | 104 | | 99 | | 100 | | 98 | |
| CCVL 580-306788/14 | 09:41 | 102 | | 102 | | 101 | | 100 | | 97 | |
| MB 580-306640/22-A | 09:45 | 101 | | 100 | | 98 | | 99 | | 98 | |
| LCS 580-306640/23-A | 09:50 | 100 | | 101 | | 96 | | 99 | | 94 | |
| LCSD 580-306640/24-A | 09:54 | 102 | | 104 | | 98 | | 101 | | 96 | |
| CCV 580-306788/25 | 10:28 | 103 | | 103 | | 98 | | 98 | | 94 | |
| CCB 580-306788/26 | 10:32 | 102 | | 100 | | 99 | | 97 | | 95 | |
| CCVL 580-306788/27 | 10:37 | 103 | | 103 | | 102 | | 100 | | 98 | |
| 580-87761-28 | 10:58 | 104 | | 105 | | 102 | | 102 | | 98 | |
| 580-87761-29 | 11:02 | 105 | | 102 | | 98 | | 99 | | 97 | |
| CCV 580-306788/38 | 11:24 | 104 | | 103 | | 98 | | 101 | | 95 | |
| CCB 580-306788/39 | 11:28 | 103 | | 103 | | 102 | | 102 | | 98 | |
| CCVL 580-306788/40 | 11:32 | 99 | | 101 | | 102 | | 100 | | 99 | |

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Batch Number: 306640 Batch Start Date: 07/25/19 14:40 Batch Analyst: Pimentel, Joy C

Batch Method: 3005A Batch End Date: 07/25/19 19:24

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | FinalAmount | ICP CAL 1 00003 | ICP CAL 2 00003 | MET Spike 3C 00010 | MS-HgSpk 00021 |
|----------------------|------------------------------|--------------|-------|---------------|-------------|-----------------|-----------------|--------------------|----------------|
| 580-87761-L-28 | 22T-VB-01-RB-BRL 20190718 | 3005A, 6020A | R | 50 mL | 50 mL | | | | |
| 580-87761-L-29 | 22T-SG-01-RB-CR_ 20190718 | 3005A, 6020A | R | 50 mL | 50 mL | | | | |
| MB 580-306640/22 | | 3005A, 6020A | | 50 mL | 50 mL | | | | |
| LCS 580-306640/23 | | 3005A, 6020A | | 50 mL | 50 mL | 0.5 mL | 0.5 mL | 0.5 mL | 1 mL |
| LCS 580-306640/24 | | 3005A, 6020A | | 50 mL | 50 mL | 0.5 mL | 0.5 mL | 0.5 mL | 1 mL |

| Batch Notes | |
|-----------------------------------|------------------|
| Temperature - Corrected - End | 93.7 Degrees C |
| Temperature - Corrected - Start | 93.7 Degrees C |
| Digestion End Time | 07/25/2019 19:24 |
| Digestion Start Time | 07/25/2019 15:23 |
| Digestion Unit ID | 41291 |
| Hydrochloric Acid ID | 2426667 |
| Nitric Acid ID | 2402356 |
| Pipette/Syringe/Dispenser ID | METALS-PREP-2 |
| Analyst ID - Spike Analyst | see above |
| Sufficient Volume for Batch QC | yes |
| Thermometer ID | 1108438 |
| Digestion Tube/Cup ID | 2420489 |
| Temperature - Uncorrected - End | 94 Degrees C |
| Temperature - Uncorrected - Start | 94 Degrees C |

| Basis | Basis Description |
|-------|-------------------|
| R | Total Recoverable |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Batch Number: 306478 Batch Start Date: 07/24/19 10:18 Batch Analyst: Tubens, Andrea R

Batch Method: 7470A Batch End Date: 07/24/19 12:18

| Lab Sample ID | Client Sample ID | Method Chain | Basis | InitialAmount | FinalAmount | Hg_SPK_WORK 00043 | | | |
|-----------------------|--------------------------|--------------|-------|---------------|-------------|----------------------|--|--|--|
| 580-87761-L-29 | 22T-SG-01-RB-CR_20190718 | 7470A, 7470A | T | 50 mL | 50 mL | | | | |
| 580-87761-L-29 DU | 22T-SG-01-RB-CR_20190718 | 7470A, 7470A | T | 50 mL | 50 mL | | | | |
| 580-87761-L-29 MS | 22T-SG-01-RB-CR_20190718 | 7470A, 7470A | T | 50 mL | 50 mL | 1 mL | | | |
| 580-87761-L-29 MSD | 22T-SG-01-RB-CR_20190718 | 7470A, 7470A | T | 50 mL | 50 mL | 1 mL | | | |
| 580-87761-L-28 | 22T-VB-01-RB-BRL20190718 | 7470A, 7470A | T | 50 mL | 50 mL | | | | |
| MB 580-306478/11 | | 7470A, 7470A | | 50 mL | 50 mL | | | | |
| LCS 580-306478/12 | | 7470A, 7470A | | 50 mL | 50 mL | 1 mL | | | |
| LCSD 580-306478/13 | | 7470A, 7470A | | 50 mL | 50 mL | 1 mL | | | |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

METALS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Seattle Job No.: 580-87761-2

SDG No.: _____

Batch Number: 306478 Batch Start Date: 07/24/19 10:18 Batch Analyst: Tubens, Andrea R

Batch Method: 7470A Batch End Date: 07/24/19 12:18

| Batch Notes | |
|-----------------------------------|----------------|
| Temperature - Corrected - End | 96.5 Degrees C |
| Temperature - Corrected - Start | 96.2 Degrees C |
| Digestion End Time | see above |
| Digestion Start Time | see above |
| Digestion Unit ID | 41291 |
| Sulfuric Acid ID | 2305388 |
| Nitric Acid ID | 2376320 |
| Hydroxylamine ID | 96.2 |
| Potassium Persulfate ID | 2360624 |
| Potassium Permanganate ID | 2412067 |
| Pipette/Syringe/Dispenser ID | HG-PREP-1 |
| Analyst ID - Spike Analyst | see above |
| Sufficient Volume for Batch QC | yes |
| Thermometer ID | 1108438 |
| Digestion Tube/Cup ID | 2420489 |
| Temperature - Uncorrected - End | 95 Degrees C |
| Temperature - Uncorrected - Start | 96.5 Degrees C |

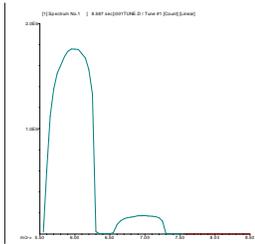
| Basis | Basis Description |
|-------|-------------------|
| T | Total/NA |

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

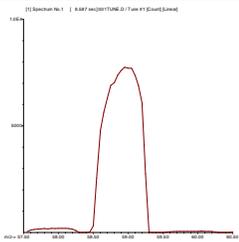
TA Seattle Agilent 7500ce ICP-MS Tune Report

Data File: C:\ICPCHEM\1\DATA\072619.B\001TUNE.D
 Date Acquired: Jul 26 2019 07:47 am
 Acq. Method: TUNE.M
 Operator: FCW ICP-MS ID#SEA44
 Sample Name: 10 PPB Li,Co,In,Tl TUNE
 Misc Info: MEASURE FIVE TIMES AT 5% PEAK HEIGHT
 Vial Number: 4512
 Current Method: C:\ICPCHEM\1\METHODS\TUNE1.M

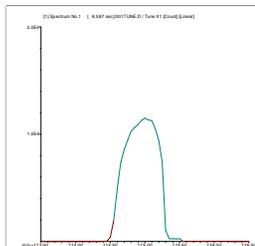
| Element | Actual | Required | Flag |
|---------|--------|----------|------|
| 7 Li | 1.35 | 5.00 | |
| 59 Co | 1.70 | 5.00 | |
| 115 In | 0.83 | 5.00 | |
| 205 Tl | 2.39 | 5.00 | |



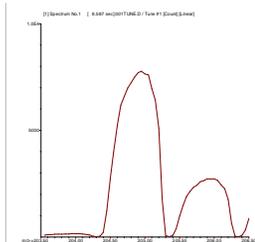
7 Li
Mass Calib.
 Actual: 7.00
 Required: 6.90 - 7.10
 Flag:
Peak Width
 Actual: 0.65
 Required: 0.90
 Flag:



59 Co
Mass Calib.
 Actual: 58.95
 Required: 58.90 - 59.10
 Flag:
Peak Width
 Actual: 0.70
 Required: 0.90
 Flag:



115 In
Mass Calib.
 Actual: 115.00
 Required: 114.90 - 115.10
 Flag:
Peak Width
 Actual: 0.70
 Required: 0.90
 Flag:



205 Tl
Mass Calib.
 Actual: 204.95
 Required: 204.90 - 205.10
 Flag:
Peak Width
 Actual: 0.65
 Required: 0.90
 Flag:

| Step | Mass | Element | r | a | b(blank) | DL | BEC | Unit |
|------|------|---------|--------|-----------|-----------|-----|-----------|------------|
| 1 | 9 | Be | 1.0000 | 5.610E-04 | 1.022E-05 | | 2.499E-02 | 1.822E-02 |
| | ug/l | | | | | | | |
| 1 | 23 | Na | 0.9999 | 3.207E-03 | 7.285E-01 | | 11.60 | 227.1 ug/l |
| 1 | 24 | Mg | 1.0000 | 1.684E-03 | 1.092E-03 | | 2.001E-01 | 6.486E-01 |
| | ug/l | | | | | | | |
| 1 | 27 | Al | 0.9997 | 8.611E-04 | 4.093E-04 | | 3.433E-01 | 4.753E-01 |
| | ug/l | | | | | | | |
| 1 | 31 | P | 1.0000 | 7.408E-05 | 1.258E-02 | | 25.45 | 169.8 ug/l |
| 1 | 39 | K | 1.0000 | 2.340E-03 | 9.811E-01 | | 35.29 | 419.3 ug/l |
| 1 | 44 | Ca | 1.0000 | 9.596E-05 | 2.544E-03 | | 7.167E-01 | 26.51 |
| | ug/l | | | | | | | |
| 1 | 45 | Sc | 0.0000 | --- | --- | --- | --- | ug/l |
| 1 | 47 | Ti | 1.0000 | 5.729E-04 | 9.661E-05 | | 1.737E-01 | 1.686E-01 |
| | ug/l | | | | | | | |
| 1 | 51 | V | 1.0000 | 1.363E-02 | 9.972E-02 | | 7.284E-01 | 7.314 |
| | ug/l | | | | | | | |
| 1 | 52 | Cr | 1.0000 | 1.444E-02 | 8.846E-03 | | 1.036E-01 | 6.126E-01 |
| | ug/l | | | | | | | |
| 1 | 55 | Mn | 1.0000 | 1.117E-02 | 2.547E-03 | | 4.541E-02 | 2.281E-01 |
| | ug/l | | | | | | | |
| 1 | 56 | Fe | 1.0000 | 1.276E-02 | 1.869E-01 | | 9.447E-01 | 14.65 |
| | ug/l | | | | | | | |
| 1 | 59 | Co | 1.0000 | 2.021E-02 | 6.124E-04 | | 3.683E-02 | 3.030E-02 |
| | ug/l | | | | | | | |
| 1 | 60 | Ni | 1.0000 | 5.142E-03 | 2.296E-03 | | 2.193E-01 | 4.465E-01 |
| | ug/l | | | | | | | |
| 1 | 63 | Cu | 0.9999 | 1.333E-02 | 3.583E-03 | | 4.485E-02 | 2.687E-01 |
| | ug/l | | | | | | | |
| 1 | 66 | Zn | 0.9997 | 2.367E-03 | 6.552E-04 | | 1.992E-01 | 2.768E-01 |
| | ug/l | | | | | | | |
| 1 | 74 | Ge | 0.0000 | --- | --- | --- | --- | ug/l |
| 1 | 75 | As | 1.0000 | 2.361E-03 | 4.286E-03 | | 3.337E-01 | 1.816 |
| | ug/l | | | | | | | |
| 1 | 78 | Se | 1.0000 | 2.668E-04 | 1.152E-03 | | 5.073E-01 | 4.316 |
| | ug/l | | | | | | | |
| 1 | 88 | Sr | 1.0000 | 1.652E-02 | 5.362E-03 | | 1.349E-01 | 3.245E-01 |
| | ug/l | | | | | | | |
| 1 | 95 | Mo | 1.0000 | 1.735E-02 | 1.418E-03 | | 1.654E-02 | 8.173E-02 |
| | ug/l | | | | | | | |
| 1 | 103 | Rh | 0.0000 | --- | --- | --- | --- | ug/l |
| 1 | 109 | Ag | 1.0000 | 4.872E-02 | 9.714E-04 | | 3.779E-03 | 1.994E-02 |
| | ug/l | | | | | | | |
| 1 | 114 | Cd | 1.0000 | 2.102E-02 | 1.793E-04 | | 1.776E-02 | 8.529E-03 |
| | ug/l | | | | | | | |
| 1 | 118 | Sn | 1.0000 | 2.341E-02 | 3.077E-03 | | 1.333E-01 | 1.314E-01 |
| | ug/l | | | | | | | |
| 1 | 123 | Sb | 1.0000 | 2.681E-02 | 4.089E-04 | | 1.828E-02 | 1.525E-02 |
| | ug/l | | | | | | | |
| 1 | 135 | Ba | 1.0000 | 6.978E-03 | 6.441E-04 | | 8.423E-02 | 9.231E-02 |
| | ug/l | | | | | | | |
| 1 | 165 | Ho | 0.0000 | --- | --- | --- | --- | ug/l |
| 1 | 201 | Hg | 1.0000 | 4.555E-03 | 1.870E-04 | | 1.058E-02 | 4.104E-02 |
| | ug/l | | | | | | | |
| 1 | 205 | Tl | 1.0000 | 6.241E-02 | 3.305E-04 | | 6.555E-03 | 5.295E-03 |
| | ug/l | | | | | | | |
| 1 | 208 | Pb | 1.0000 | 8.400E-02 | 3.058E-03 | | 2.180E-02 | 3.640E-02 |
| | ug/l | | | | | | | |
| 1 | 209 | Bi | 0.0000 | --- | --- | --- | --- | ug/l |
| 1 | 238 | U | 1.0000 | 9.062E-02 | 1.678E-04 | | 4.813E-03 | 1.852E-03 |
| | ug/l | | | | | | | |

TA Seattle Calibration Blank QC Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D#
Date Acquired: Jul 26 2019 08:37 am Acq. Method: 1002RUN.m
Sample Name: ICIS-2226111 Vial Number: 1306
Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219
Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Tune # Name
Operator: FCW ICP-MS ID#SEA44 1 c:\icpchem\1\7500\he.u
Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 2 C:\ICPCHEM\1\7500\
Last Cal. Update: Jul 26 2019 04:44 pm 3 C:\ICPCHEM\1\7500\
ISTD Ref File : --- Sample Type: CalBlk

QC&ISTD Elements

| Element | Tune | CPS Mean | SD | RSD(%) |
|---------|------|-------------|-----------|--------|
| 9 | Be | 1.2 P | 0.52 | 44.61 |
| 23 | Na | 83335.4 P | 893.20 | 1.07 |
| 24 | Mg | 125.0 P | 13.23 | 10.58 |
| 27 | Al | 46.7 P | 10.41 | 22.31 |
| 31 | P | 1438.4 P | 54.86 | 3.81 |
| 39 | K | 112205.6 P | 853.80 | 0.76 |
| 44 | Ca | 291.0 P | 3.78 | 1.30 |
| 45 | Sc | 6900786.0 A | 196300.00 | 2.84 |
| 47 | Ti | 11.0 P | 3.61 | 32.78 |
| 51 | V | 11403.9 P | 139.40 | 1.22 |
| 52 | Cr | 1012.7 P | 75.01 | 7.41 |
| 55 | Mn | 291.7 P | 25.66 | 8.80 |
| 56 | Fe | 21376.7 P | 357.40 | 1.67 |
| 59 | Co | 70.0 P | 27.84 | 39.77 |
| 60 | Ni | 263.3 P | 49.33 | 18.73 |
| 63 | Cu | 410.0 P | 25.98 | 6.34 |
| 66 | Zn | 75.0 P | 18.03 | 24.04 |
| 74 | Ge | 5720954.0 A | 126500.00 | 2.21 |
| 75 | As | 490.0 P | 19.98 | 4.08 |
| 78 | Se | 131.7 P | 4.55 | 3.45 |
| 88 | Sr | 614.7 P | 99.63 | 16.21 |
| 95 | Mo | 63.3 P | 5.77 | 9.12 |
| 99 | (Mo) | P | | |
| 103 | Rh | 2230466.0 A | 52020.00 | 2.33 |
| 106 | (Cd) | P | | |
| 108 | (Cd) | P | | |
| 109 | Ag | 43.3 P | 2.89 | 6.66 |
| 114 | Cd | 8.1 P | 5.63 | 69.92 |
| 118 | Sn | 136.7 P | 43.69 | 31.97 |
| 123 | Sb | 18.3 P | 7.64 | 41.66 |
| 135 | Ba | 28.7 P | 8.33 | 29.05 |
| 165 | Ho | 3774033.0 A | 81740.00 | 2.17 |
| 184 | W | P | | |
| 201 | Hg | 15.0 P | 1.00 | 6.67 |
| 205 | Tl | 26.7 P | 11.55 | 43.31 |
| 206 | Pb | P | | |
| 207 | Pb | P | | |
| 208 | Pb | 245.0 P | 45.83 | 18.71 |
| 209 | Bi | 4014568.0 A | 78830.00 | 1.96 |
| 238 | U | 13.3 P | 11.55 | 86.62 |

TA Seattle Calibration Standard QC Report 200.8/6020/6020A

ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\014CAL.S.D\014CAL.S.D#
 Date Acquired: Jul 26 2019 08:42 am
 Sample Name: STD1-2361378
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219
 Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C
 Last Cal. Update: Jul 26 2019 04:44 pm
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D#

Acq. Method: 1002RUN.m
 Vial Number: 1305
 Operator: FCW ICP-MS ID#SEA44
 Tune # Name
 1 icpchem\1\7500\he.u
 2 C:\ICPCHEM\1\7500\
 3 C:\ICPCHEM\1\7500\
 Sample Type: CalStd

QC&ISTD Elements

| Element | IS | T# | CPS Mean | SD | RSD(%) |
|---------|----|-----|------------|---------|--------|
| 9 | Be | 74 | 9.8 P | 1.32 | 13.57 |
| 23 | Na | 74 | 92126.0 P | 557.30 | 0.60 |
| 24 | Mg | 74 | 2520.3 P | 175.50 | 6.96 |
| 27 | Al | 74 | 1316.8 P | 146.80 | 11.15 |
| 31 | P | 74 | 1600.1 P | 86.76 | 5.42 |
| 39 | K | 74 | 120891.9 P | 701.90 | 0.58 |
| 44 | Ca | 74 | 582.7 P | 23.06 | 3.96 |
| 47 | Ti | 74 | 23.7 P | 3.51 | 14.84 |
| 51 | V | 74 | 12731.1 P | 110.40 | 0.87 |
| 52 | Cr | 74 | 1406.1 P | 45.74 | 3.25 |
| 55 | Mn | 74 | 730.0 P | 43.59 | 5.97 |
| 56 | Fe | 74 | 39025.3 P | 1041.00 | 2.67 |
| 59 | Co | 74 | 361.7 P | 50.58 | 13.99 |
| 60 | Ni | 74 | 528.4 P | 35.12 | 6.65 |
| 63 | Cu | 74 | 1671.8 P | 40.42 | 2.42 |
| 66 | Zn | 74 | 586.7 P | 110.70 | 18.87 |
| 75 | As | 74 | 585.3 P | 20.60 | 3.52 |
| 78 | Se | 74 | 134.7 P | 3.89 | 2.89 |
| 88 | Sr | 74 | 784.4 P | 77.63 | 9.90 |
| 95 | Mo | 103 | 143.3 P | 55.75 | 38.89 |
| 109 | Ag | 103 | 345.0 P | 34.64 | 10.04 |
| 114 | Cd | 103 | 110.0 P | 25.71 | 23.37 |
| 118 | Sn | 103 | 666.7 P | 30.55 | 4.58 |
| 123 | Sb | 103 | 181.7 P | 18.93 | 10.42 |
| 135 | Ba | 103 | 82.0 P | 14.00 | 17.07 |
| 201 | Hg | 209 | 12.7 P | 2.08 | 16.43 |
| 205 | Tl | 209 | 510.0 P | 115.30 | 22.61 |
| 208 | Pb | 209 | 1283.4 P | 77.68 | 6.05 |
| 238 | U | 209 | 940.1 P | 20.00 | 2.13 |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7032771 | 0.63 | 6901000 | 101.9 | 30 - 150 |
| 74 | Ge | 1 | 5848897 | 0.33 | 5721000 | 102.2 | 30 - 150 |
| 103 | Rh | 1 | 2194300 | 1.56 | 2230000 | 98.4 | 30 - 150 |
| 165 | Ho | 1 | 3797629 | 1.35 | 3774000 | 100.6 | 30 - 150 |
| 209 | Bi | 1 | 3918504 | 1.66 | 4015000 | 97.6 | 30 - 150 |

Analytes:

0 :Element Failures
 0 :ISTD Failures

Pass

ISTD: Pass

:Max. Number of Failures Allowed
 :Max. Number of ISTD Failures Allowed

TA Seattle Calibration Standard QC Report 200.8/6020/6020A

ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\015CAL.S.D\015CAL.S.D#
 Date Acquired: Jul 26 2019 08:46 am
 Sample Name: STD2-2361402
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219
 Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C
 Last Cal. Update: Jul 26 2019 04:44 pm
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D#

Acq. Method: 1002RUN.m
 Vial Number: 1304
 Operator: FCW ICP-MS ID#SEA44
 Tune # Name
 1 icpchem\1\7500\he.u
 2 C:\ICPCHEM\1\7500\
 3 C:\ICPCHEM\1\7500\
 Sample Type: CalStd

QC&ISTD Elements

| Element | IS | T# | CPS Mean | SD | RSD(%) |
|---------|----|-----|------------|---------|--------|
| 9 | Be | 74 | 68.8 P | 1.73 | 2.52 |
| 23 | Na | 74 | 126279.2 P | 2521.00 | 2.00 |
| 24 | Mg | 74 | 20738.6 P | 867.00 | 4.18 |
| 27 | Al | 74 | 2513.6 P | 106.90 | 4.25 |
| 31 | P | 74 | 2517.0 P | 176.60 | 7.02 |
| 39 | K | 74 | 145731.7 P | 1649.00 | 1.13 |
| 44 | Ca | 74 | 1715.3 P | 90.45 | 5.27 |
| 47 | Ti | 74 | 83.0 P | 5.29 | 6.38 |
| 51 | V | 74 | 14263.4 P | 230.70 | 1.62 |
| 52 | Cr | 74 | 3021.7 P | 173.90 | 5.76 |
| 55 | Mn | 74 | 2003.5 P | 103.00 | 5.14 |
| 56 | Fe | 74 | 185904.7 P | 6360.00 | 3.42 |
| 59 | Co | 74 | 2607.0 P | 200.40 | 7.69 |
| 60 | Ni | 74 | 1011.7 P | 7.64 | 0.75 |
| 63 | Cu | 74 | 2803.7 P | 81.46 | 2.91 |
| 66 | Zn | 74 | 765.0 P | 22.92 | 3.00 |
| 75 | As | 74 | 828.4 P | 57.98 | 7.00 |
| 78 | Se | 74 | 163.6 P | 5.06 | 3.09 |
| 88 | Sr | 74 | 2573.6 P | 182.00 | 7.07 |
| 95 | Mo | 103 | 865.0 P | 52.92 | 6.12 |
| 109 | Ag | 103 | 2428.6 P | 82.53 | 3.40 |
| 114 | Cd | 103 | 973.3 P | 36.52 | 3.75 |
| 118 | Sn | 103 | 1421.8 P | 20.82 | 1.46 |
| 123 | Sb | 103 | 1250.1 P | 52.92 | 4.23 |
| 135 | Ba | 103 | 368.7 P | 14.74 | 4.00 |
| 201 | Hg | 209 | 36.0 P | 6.56 | 18.22 |
| 205 | Tl | 209 | 5248.1 P | 502.70 | 9.58 |
| 208 | Pb | 209 | 7179.4 P | 405.60 | 5.65 |
| 238 | U | 209 | 7663.3 P | 242.70 | 3.17 |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7020117 | 1.25 | 6901000 | 101.7 | 30 - 150 |
| 74 | Ge | 1 | 5926919 | 1.83 | 5721000 | 103.6 | 30 - 150 |
| 103 | Rh | 1 | 2234536 | 0.55 | 2230000 | 100.2 | 30 - 150 |
| 165 | Ho | 1 | 3858247 | 2.36 | 3774000 | 102.2 | 30 - 150 |
| 209 | Bi | 1 | 3913570 | 0.34 | 4015000 | 97.5 | 30 - 150 |

Analytes:

0 :Element Failures
 0 :ISTD Failures

Pass

ISTD:

Pass

:Max. Number of Failures Allowed
 :Max. Number of ISTD Failures Allowed

TA Seattle Calibration Standard QC Report 200.8/6020/6020A

ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\016CAL.S.D\016CAL.S.D#
 Date Acquired: Jul 26 2019 08:50 am
 Sample Name: STD3-2361403
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219
 Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C
 Last Cal. Update: Jul 26 2019 04:44 pm
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D#

Acq. Method: 1002RUN.m
 Vial Number: 1303
 Operator: FCW ICP-MS ID#SEA44
 Tune # Name
 1 icpchem\1\7500\he.u
 2 C:\ICPCHEM\1\7500\
 3 C:\ICPCHEM\1\7500\
 Sample Type: CalStd

QC&ISTD Elements

| Element | IS | T# | CPS Mean | SD | RSD(%) |
|---------|----|-----|-------------|----------|--------|
| 9 | Be | 74 | 676.1 P | 32.31 | 4.78 |
| 23 | Na | 74 | 459190.7 P | 16580.00 | 3.61 |
| 24 | Mg | 74 | 196350.1 P | 9425.00 | 4.80 |
| 27 | Al | 74 | 11311.9 P | 138.60 | 1.23 |
| 31 | P | 74 | 10259.3 P | 291.30 | 2.84 |
| 39 | K | 74 | 397769.3 P | 8571.00 | 2.15 |
| 44 | Ca | 74 | 12147.3 P | 502.60 | 4.14 |
| 47 | Ti | 74 | 698.7 P | 23.29 | 3.33 |
| 51 | V | 74 | 28814.0 P | 419.10 | 1.45 |
| 52 | Cr | 74 | 18870.1 P | 796.20 | 4.22 |
| 55 | Mn | 74 | 14196.5 P | 645.70 | 4.55 |
| 56 | Fe | 74 | 1624097.0 A | 43880.00 | 2.70 |
| 59 | Co | 74 | 24562.6 P | 627.20 | 2.55 |
| 60 | Ni | 74 | 6471.8 P | 376.10 | 5.81 |
| 63 | Cu | 74 | 17604.3 P | 1068.00 | 6.07 |
| 66 | Zn | 74 | 3588.9 P | 197.80 | 5.51 |
| 75 | As | 74 | 3367.5 P | 106.90 | 3.17 |
| 78 | Se | 74 | 455.7 P | 12.73 | 2.79 |
| 88 | Sr | 74 | 20609.9 P | 954.90 | 4.63 |
| 95 | Mo | 103 | 7814.3 P | 283.30 | 3.63 |
| 109 | Ag | 103 | 22429.2 P | 964.70 | 4.30 |
| 114 | Cd | 103 | 9742.8 P | 367.20 | 3.77 |
| 118 | Sn | 103 | 11307.1 P | 544.40 | 4.81 |
| 123 | Sb | 103 | 11994.5 P | 355.10 | 2.96 |
| 135 | Ba | 103 | 3268.5 P | 59.04 | 1.81 |
| 201 | Hg | 209 | 188.7 P | 5.51 | 2.92 |
| 205 | Tl | 209 | 50278.4 P | 3026.00 | 6.02 |
| 208 | Pb | 209 | 68300.1 P | 1184.00 | 1.73 |
| 238 | U | 209 | 72185.0 P | 3146.00 | 4.36 |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6999247 | 0.43 | 6901000 | 101.4 | 30 - 150 |
| 74 | Ge | 1 | 5838650 | 1.04 | 5721000 | 102.1 | 30 - 150 |
| 103 | Rh | 1 | 2179793 | 1.29 | 2230000 | 97.7 | 30 - 150 |
| 165 | Ho | 1 | 3718599 | 0.95 | 3774000 | 98.5 | 30 - 150 |
| 209 | Bi | 1 | 3878246 | 1.32 | 4015000 | 96.6 | 30 - 150 |

Analytes:

0 :Element Failures
 0 :ISTD Failures

Pass

ISTD:

Pass

:Max. Number of Failures Allowed
 :Max. Number of ISTD Failures Allowed

TA Seattle Calibration Standard QC Report 200.8/6020/6020A

ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\017CAL.S.D\017CAL.S.D#
 Date Acquired: Jul 26 2019 08:54 am
 Sample Name: STD4-2361404
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219
 Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C
 Last Cal. Update: Jul 26 2019 04:44 pm
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D#

Acq. Method: 1002RUN.m
 Vial Number: 1302
 Operator: FCW ICP-MS ID#SEA44
 Tune # Name
 1 icpchem\1\7500\he.u
 2 C:\ICPCHEM\1\7500\
 3 C:\ICPCHEM\1\7500\
 Sample Type: CalStd

QC&ISTD Elements

| Element | IS | T# | CPS Mean | SD | RSD(%) |
|---------|----|-----|-------------|-----------|--------|
| 9 | Be | 74 | 3264.4 P | 104.60 | 3.20 |
| 23 | Na | 74 | 2006188.0 A | 56980.00 | 2.84 |
| 24 | Mg | 74 | 989427.9 A | 20180.00 | 2.04 |
| 27 | Al | 74 | 52269.6 P | 1605.00 | 3.07 |
| 31 | P | 74 | 44079.2 P | 1613.00 | 3.66 |
| 39 | K | 74 | 1491625.0 A | 18220.00 | 1.22 |
| 44 | Ca | 74 | 56148.0 P | 1261.00 | 2.25 |
| 47 | Ti | 74 | 3374.1 P | 89.25 | 2.65 |
| 51 | V | 74 | 91382.7 P | 2194.00 | 2.40 |
| 52 | Cr | 74 | 85962.4 P | 2529.00 | 2.94 |
| 55 | Mn | 74 | 65767.3 P | 2411.00 | 3.67 |
| 56 | Fe | 74 | 7540108.0 A | 214300.00 | 2.84 |
| 59 | Co | 74 | 119294.0 P | 3678.00 | 3.08 |
| 60 | Ni | 74 | 30417.0 P | 474.50 | 1.56 |
| 63 | Cu | 74 | 79621.1 P | 2261.00 | 2.84 |
| 66 | Zn | 74 | 14128.2 P | 214.20 | 1.52 |
| 75 | As | 74 | 14262.4 P | 422.30 | 2.96 |
| 78 | Se | 74 | 1680.3 P | 44.64 | 2.66 |
| 88 | Sr | 74 | 96658.0 P | 2813.00 | 2.91 |
| 95 | Mo | 103 | 37248.3 P | 1029.00 | 2.76 |
| 109 | Ag | 103 | 106585.5 P | 1235.00 | 1.16 |
| 114 | Cd | 103 | 45840.0 P | 1722.00 | 3.76 |
| 118 | Sn | 103 | 51500.7 P | 667.50 | 1.30 |
| 123 | Sb | 103 | 58509.1 P | 1767.00 | 3.02 |
| 135 | Ba | 103 | 15340.5 P | 434.30 | 2.83 |
| 201 | Hg | 209 | 894.4 P | 57.47 | 6.43 |
| 205 | Tl | 209 | 239772.0 P | 6889.00 | 2.87 |
| 208 | Pb | 209 | 326062.5 P | 8351.00 | 2.56 |
| 238 | U | 209 | 347095.9 P | 4427.00 | 1.28 |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7150144 | 2.03 | 6901000 | 103.6 | 30 - 150 |
| 74 | Ge | 1 | 5839347 | 1.92 | 5721000 | 102.1 | 30 - 150 |
| 103 | Rh | 1 | 2173623 | 0.67 | 2230000 | 97.5 | 30 - 150 |
| 165 | Ho | 1 | 3754925 | 0.46 | 3774000 | 99.5 | 30 - 150 |
| 209 | Bi | 1 | 3867971 | 1.66 | 4015000 | 96.3 | 30 - 150 |

Analytes:

0 :Element Failures
 0 :ISTD Failures

Pass

ISTD:

Pass

:Max. Number of Failures Allowed
 :Max. Number of ISTD Failures Allowed

TA Seattle Calibration Standard QC Report 200.8/6020/6020A

ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\018CALB.D\018CALB.D#
 Date Acquired: Jul 26 2019 08:59 am
 Sample Name: STD5-2361405
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219
 Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C
 Last Cal. Update: Jul 26 2019 04:44 pm
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D#

Acq. Method: 1002RUN.m
 Vial Number: 1301
 Operator: FCW ICP-MS ID#SEA44
 Tune # Name
 1 icpchem\1\7500\he.u
 2 C:\ICPCHEM\1\7500\
 3 C:\ICPCHEM\1\7500\
 Sample Type: CalStd

QC&ISTD Elements

| Element | IS | T# | CPS Mean | SD | RSD(%) | |
|---------|----|-----|----------|--------------|-----------|------|
| 9 | Be | 74 | 1 | 6502.0 P | 199.60 | 3.07 |
| 23 | Na | 74 | 1 | 3774411.0 A | 108400.00 | 2.87 |
| 24 | Mg | 74 | 1 | 1947616.0 A | 49050.00 | 2.52 |
| 27 | Al | 74 | 1 | 98666.7 P | 2608.00 | 2.64 |
| 31 | P | 74 | 1 | 87551.6 P | 1849.00 | 2.11 |
| 39 | K | 74 | 1 | 2816810.0 A | 73140.00 | 2.60 |
| 44 | Ca | 74 | 1 | 111446.4 P | 2882.00 | 2.59 |
| 47 | Ti | 74 | 1 | 6634.4 P | 131.20 | 1.98 |
| 51 | V | 74 | 1 | 169241.3 P | 4281.00 | 2.53 |
| 52 | Cr | 74 | 1 | 167813.6 P | 4840.00 | 2.88 |
| 55 | Mn | 74 | 1 | 129379.0 P | 4647.00 | 3.59 |
| 56 | Fe | 74 | 1 | 14747550.0 A | 255500.00 | 1.73 |
| 59 | Co | 74 | 1 | 233453.8 P | 8317.00 | 3.56 |
| 60 | Ni | 74 | 1 | 59723.3 P | 2392.00 | 4.01 |
| 63 | Cu | 74 | 1 | 153952.0 P | 4672.00 | 3.03 |
| 66 | Zn | 74 | 1 | 27291.6 P | 710.80 | 2.60 |
| 75 | As | 74 | 1 | 27837.7 P | 642.20 | 2.31 |
| 78 | Se | 74 | 1 | 3227.7 P | 77.96 | 2.42 |
| 88 | Sr | 74 | 1 | 192074.2 P | 7322.00 | 3.81 |
| 95 | Mo | 103 | 1 | 75443.3 P | 1673.00 | 2.22 |
| 109 | Ag | 103 | 1 | 210508.2 P | 5765.00 | 2.74 |
| 114 | Cd | 103 | 1 | 90876.1 P | 2556.00 | 2.81 |
| 118 | Sn | 103 | 1 | 101169.4 P | 2759.00 | 2.73 |
| 123 | Sb | 103 | 1 | 115943.0 P | 3324.00 | 2.87 |
| 135 | Ba | 103 | 1 | 30145.6 P | 700.10 | 2.32 |
| 201 | Hg | 209 | 1 | 1729.5 P | 45.19 | 2.61 |
| 205 | Tl | 209 | 1 | 470537.1 P | 17500.00 | 3.72 |
| 208 | Pb | 209 | 1 | 631885.3 P | 17610.00 | 2.79 |
| 238 | U | 209 | 1 | 683706.0 P | 28830.00 | 4.22 |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7097075 | 0.52 | 6901000 | 102.8 | 30 - 150 |
| 74 | Ge | 1 | 5791826 | 1.01 | 5721000 | 101.2 | 30 - 150 |
| 103 | Rh | 1 | 2164759 | 0.37 | 2230000 | 97.1 | 30 - 150 |
| 165 | Ho | 1 | 3723065 | 1.57 | 3774000 | 98.7 | 30 - 150 |
| 209 | Bi | 1 | 3764732 | 0.36 | 4015000 | 93.8 | 30 - 150 |

Analytes:

0 :Element Failures
 0 :ISTD Failures

Pass

ISTD:

Pass

:Max. Number of Failures Allowed
 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\019SMPL.D\019SMPL.D#
 Date Acquired: Jul 26 2019 09:03 am Acq. Method: 1002RUN.m
 Sample Name: ICV-2361377 Vial Number: 1105
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|------|--------|-----|------|
| 9 | Be | 1 | 39.220 ug/l | 39.22 | 2.9 | 9000 | 74 | P |
| 23 | Na | 1 | 4078.000 ug/l | 4,078.00 | 3.6 | 225000 | 74 | A |
| 24 | Mg | 1 | 3797.000 ug/l | 3,797.00 | 1.8 | 225000 | 74 | P |
| 27 | Al | 1 | 386.200 ug/l | 386.20 | 3.8 | 225000 | 74 | P |
| 31 | P | 1 | 3917.000 ug/l | 3,917.00 | 2.5 | 225000 | 74 | P |
| 39 | K | 1 | 4065.000 ug/l | 4,065.00 | 4.1 | 225000 | 74 | A |
| 44 | Ca | 1 | 3956.000 ug/l | 3,956.00 | 5.0 | 225000 | 74 | P |
| 47 | Ti | 1 | 39.050 ug/l | 39.05 | 4.8 | 900 | 74 | P |
| 51 | V | 1 | 39.350 ug/l | 39.35 | 4.1 | 9000 | 74 | P |
| 52 | Cr | 1 | 39.330 ug/l | 39.33 | 3.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 39.970 ug/l | 39.97 | 4.7 | 9000 | 74 | P |
| 56 | Fe | 1 | 4045.000 ug/l | 4,045.00 | 2.9 | 225000 | 74 | A |
| 59 | Co | 1 | 39.860 ug/l | 39.86 | 3.0 | 9000 | 74 | P |
| 60 | Ni | 1 | 38.960 ug/l | 38.96 | 2.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 39.320 ug/l | 39.32 | 4.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 39.660 ug/l | 39.66 | 4.2 | 9000 | 74 | P |
| 75 | As | 1 | 39.220 ug/l | 39.22 | 2.6 | 9000 | 74 | P |
| 78 | Se | 1 | 39.460 ug/l | 39.46 | 3.9 | 9000 | 74 | P |
| 88 | Sr | 1 | 38.830 ug/l | 38.83 | 3.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 39.910 ug/l | 39.91 | 4.4 | 900 | 103 | P |
| 109 | Ag | 1 | 39.410 ug/l | 39.41 | 4.8 | 900 | 103 | P |
| 114 | Cd | 1 | 39.740 ug/l | 39.74 | 4.7 | 9000 | 103 | P |
| 118 | Sn | 1 | 39.600 ug/l | 39.60 | 5.0 | 900 | 103 | P |
| 123 | Sb | 1 | 39.340 ug/l | 39.34 | 5.7 | 900 | 103 | P |
| 135 | Ba | 1 | 39.130 ug/l | 39.13 | 3.4 | 9000 | 103 | P |
| 201 | Hg | 1 | 2.000 ug/l | 2.00 | 8.6 | 45 | 209 | P |
| 205 | Tl | 1 | 38.590 ug/l | 38.59 | 10.6 | 900 | 209 | P |
| 208 | Pb | 1 | 39.250 ug/l | 39.25 | 8.0 | 9000 | 209 | P |
| 238 | U | 1 | 38.180 ug/l | 38.18 | 4.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7182047 | 2.75 | 6901000 | 104.1 | 30 - 150 |
| 74 | Ge | 1 | 5891831 | 0.97 | 5721000 | 103.0 | 30 - 150 |
| 103 | Rh | 1 | 2193011 | 2.85 | 2230000 | 98.3 | 30 - 150 |
| 165 | Ho | 1 | 3757732 | 2.56 | 3774000 | 99.6 | 30 - 150 |
| 209 | Bi | 1 | 3856809 | 3.44 | 4015000 | 96.1 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\021SMPL.D\021SMPL.D#
 Date Acquired: Jul 26 2019 09:11 am Acq. Method: 1002RUN.m
 Sample Name: ICB Vial Number: 1306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|---------|--------|-----|------|
| 9 | Be | 1 | 0.017 ug/l | 0.02 | 39.5 | 9000 | 74 | P |
| 23 | Na | 1 | -17.650 ug/l | -17.65 | 26.4 | 225000 | 74 | P |
| 24 | Mg | 1 | 0.698 ug/l | 0.70 | 23.4 | 225000 | 74 | P |
| 27 | Al | 1 | -0.002 ug/l | 0.00 | 5448.1 | 225000 | 74 | P |
| 31 | P | 1 | -1.879 ug/l | -1.88 | 779.1 | 225000 | 74 | P |
| 39 | K | 1 | -10.840 ug/l | -10.84 | 136.3 | 225000 | 74 | P |
| 44 | Ca | 1 | 1.012 ug/l | 1.01 | 344.2 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.108 ug/l | 0.11 | 36.1 | 900 | 74 | P |
| 51 | V | 1 | -0.173 ug/l | -0.17 | 193.7 | 9000 | 74 | P |
| 52 | Cr | 1 | -0.001 ug/l | 0.00 | 4201.1 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.012 ug/l | -0.01 | 305.3 | 9000 | 74 | P |
| 56 | Fe | 1 | 2.432 ug/l | 2.43 | 37.5 | 225000 | 74 | P |
| 59 | Co | 1 | 0.000 ug/l | 0.00 | 42506.0 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.069 ug/l | -0.07 | 89.5 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.030 ug/l | 0.03 | 80.7 | 9000 | 74 | P |
| 66 | Zn | 1 | -0.001 ug/l | 0.00 | 9629.3 | 9000 | 74 | P |
| 75 | As | 1 | 0.077 ug/l | 0.08 | 146.6 | 9000 | 74 | P |
| 78 | Se | 1 | -0.037 ug/l | -0.04 | 722.2 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.012 ug/l | -0.01 | 228.7 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.045 ug/l | 0.05 | 78.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.004 ug/l | 0.00 | 244.8 | 900 | 103 | P |
| 114 | Cd | 1 | 0.004 ug/l | 0.00 | 339.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.188 ug/l | 0.19 | 24.8 | 900 | 103 | P |
| 123 | Sb | 1 | 0.026 ug/l | 0.03 | 32.0 | 900 | 103 | P |
| 135 | Ba | 1 | -0.017 ug/l | -0.02 | 85.6 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.013 ug/l | 0.01 | 124.7 | 45 | 209 | P |
| 205 | Tl | 1 | 0.004 ug/l | 0.00 | 127.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.006 ug/l | 0.01 | 31.4 | 9000 | 209 | P |
| 238 | U | 1 | 0.042 ug/l | 0.04 | 53.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7108334 | 0.16 | 6901000 | 103.0 | 30 - 150 |
| 74 | Ge | 1 | 6111043 | 2.43 | 5721000 | 106.8 | 30 - 150 |
| 103 | Rh | 1 | 2260367 | 3.81 | 2230000 | 101.4 | 30 - 150 |
| 165 | Ho | 1 | 3851722 | 2.19 | 3774000 | 102.1 | 30 - 150 |
| 209 | Bi | 1 | 3888226 | 2.87 | 4015000 | 96.8 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\022SMPL.D\022SMPL.D#
 Date Acquired: Jul 26 2019 09:16 am Acq. Method: 1002RUN.m
 Sample Name: ICVL-2361376 Vial Number: 1106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.396 ug/l | 0.40 | 10.1 | 9000 | 74 | P |
| 23 | Na | 1 | -10.850 ug/l | -10.85 | 32.4 | 225000 | 74 | P |
| 24 | Mg | 1 | 0.687 ug/l | 0.69 | 14.1 | 225000 | 74 | P |
| 27 | Al | 1 | 95.480 ug/l | 95.48 | 8.4 | 225000 | 74 | P |
| 31 | P | 1 | 472.500 ug/l | 472.50 | 5.7 | 225000 | 74 | P |
| 39 | K | 1 | 3.358 ug/l | 3.36 | 245.9 | 225000 | 74 | P |
| 44 | Ca | 1 | 6.026 ug/l | 6.03 | 52.2 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.033 ug/l | 1.03 | 17.9 | 900 | 74 | P |
| 51 | V | 1 | 3.655 ug/l | 3.66 | 10.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.382 ug/l | 0.38 | 2.9 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.892 ug/l | 1.89 | 4.0 | 9000 | 74 | P |
| 56 | Fe | 1 | 194.000 ug/l | 194.00 | 4.0 | 225000 | 74 | P |
| 59 | Co | 1 | 0.381 ug/l | 0.38 | 8.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 2.844 ug/l | 2.84 | 3.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.888 ug/l | 1.89 | 5.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.884 ug/l | 6.88 | 7.3 | 9000 | 74 | P |
| 75 | As | 1 | 0.969 ug/l | 0.97 | 21.6 | 9000 | 74 | P |
| 78 | Se | 1 | 7.614 ug/l | 7.61 | 3.8 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.321 ug/l | 0.32 | 35.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.794 ug/l | 0.79 | 3.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.374 ug/l | 0.37 | 8.8 | 900 | 103 | P |
| 114 | Cd | 1 | 0.379 ug/l | 0.38 | 10.5 | 9000 | 103 | P |
| 118 | Sn | 1 | 9.441 ug/l | 9.44 | 2.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.367 ug/l | 0.37 | 6.6 | 900 | 103 | P |
| 135 | Ba | 1 | 1.194 ug/l | 1.19 | 16.3 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.260 ug/l | 0.26 | 11.5 | 45 | 209 | P |
| 205 | Tl | 1 | 0.904 ug/l | 0.90 | 12.1 | 900 | 209 | P |
| 208 | Pb | 1 | 0.749 ug/l | 0.75 | 5.1 | 9000 | 209 | P |
| 238 | U | 1 | 0.604 ug/l | 0.60 | 8.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7049585 | 2.99 | 6901000 | 102.2 | 30 - 150 |
| 74 | Ge | 1 | 5895911 | 2.38 | 5721000 | 103.1 | 30 - 150 |
| 103 | Rh | 1 | 2223017 | 2.86 | 2230000 | 99.7 | 30 - 150 |
| 165 | Ho | 1 | 3705101 | 1.31 | 3774000 | 98.2 | 30 - 150 |
| 209 | Bi | 1 | 3878159 | 2.70 | 4015000 | 96.6 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\023SMPL.D\023SMPL.D#
 Date Acquired: Jul 26 2019 09:20 am Acq. Method: 1002RUN.m
 Sample Name: ICSA-2419951 Vial Number: 1101
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.019 ug/l | 0.02 | 62.1 | 9000 | 74 | P |
| 23 | Na | 1 | 9779.000 ug/l | 9,779.00 | 1.3 | 225000 | 74 | A |
| 24 | Mg | 1 | 9508.000 ug/l | 9,508.00 | 2.1 | 225000 | 74 | A |
| 27 | Al | 1 | 9527.000 ug/l | 9,527.00 | 1.6 | 225000 | 74 | M |
| 31 | P | 1 | 9596.000 ug/l | 9,596.00 | 2.2 | 225000 | 74 | P |
| 39 | K | 1 | 9622.000 ug/l | 9,622.00 | 0.8 | 225000 | 74 | A |
| 44 | Ca | 1 | 9878.000 ug/l | 9,878.00 | 2.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 188.800 ug/l | 188.80 | 1.7 | 900 | 74 | P |
| 51 | V | 1 | 0.638 ug/l | 0.64 | 17.1 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.203 ug/l | 0.20 | 11.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.021 ug/l | 0.02 | 94.5 | 9000 | 74 | P |
| 56 | Fe | 1 | 9697.000 ug/l | 9,697.00 | 1.3 | 225000 | 74 | A |
| 59 | Co | 1 | 0.027 ug/l | 0.03 | 77.5 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.075 ug/l | 0.07 | 162.0 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.065 ug/l | 0.06 | 68.1 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.190 ug/l | 0.19 | 69.7 | 9000 | 74 | P |
| 75 | As | 1 | 0.236 ug/l | 0.24 | 62.9 | 9000 | 74 | P |
| 78 | Se | 1 | 0.207 ug/l | 0.21 | 48.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.108 ug/l | 0.11 | 10.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 196.600 ug/l | 196.60 | 3.2 | 900 | 103 | P |
| 109 | Ag | 1 | 0.002 ug/l | 0.00 | 225.0 | 900 | 103 | P |
| 114 | Cd | 1 | 0.154 ug/l | 0.15 | 19.8 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.150 ug/l | 0.15 | 26.8 | 900 | 103 | P |
| 123 | Sb | 1 | 0.041 ug/l | 0.04 | 20.7 | 900 | 103 | P |
| 135 | Ba | 1 | 0.084 ug/l | 0.08 | 29.2 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.006 ug/l | 0.01 | 295.6 | 45 | 209 | P |
| 205 | Tl | 1 | 0.002 ug/l | 0.00 | 219.8 | 900 | 209 | P |
| 208 | Pb | 1 | 0.026 ug/l | 0.03 | 48.3 | 9000 | 209 | P |
| 238 | U | 1 | 0.015 ug/l | 0.01 | 30.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7131468 | 1.08 | 6901000 | 103.3 | 30 - 150 |
| 74 | Ge | 1 | 5873027 | 1.36 | 5721000 | 102.7 | 30 - 150 |
| 103 | Rh | 1 | 2164281 | 0.37 | 2230000 | 97.1 | 30 - 150 |
| 165 | Ho | 1 | 3718790 | 0.43 | 3774000 | 98.5 | 30 - 150 |
| 209 | Bi | 1 | 3813093 | 0.20 | 4015000 | 95.0 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\024SMPL.D\024SMPL.D#
 Date Acquired: Jul 26 2019 09:24 am Acq. Method: 1002RUN.m
 Sample Name: ICSAB-2419952 Vial Number: 1102
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|------|--------|-----|------|
| 9 | Be | 1 | 18.160 ug/l | 18.16 | 0.5 | 9000 | 74 | P |
| 23 | Na | 1 | 9645.000 ug/l | 9,645.00 | 1.3 | 225000 | 74 | A |
| 24 | Mg | 1 | 9672.000 ug/l | 9,672.00 | 1.4 | 225000 | 74 | A |
| 27 | Al | 1 | 9776.000 ug/l | 9,776.00 | 1.0 | 225000 | 74 | M |
| 31 | P | 1 | 9633.000 ug/l | 9,633.00 | 0.3 | 225000 | 74 | P |
| 39 | K | 1 | 9630.000 ug/l | 9,630.00 | 1.6 | 225000 | 74 | A |
| 44 | Ca | 1 | 9907.000 ug/l | 9,907.00 | 1.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 191.300 ug/l | 191.30 | 1.1 | 900 | 74 | P |
| 51 | V | 1 | 19.400 ug/l | 19.40 | 0.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 18.730 ug/l | 18.73 | 0.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 18.760 ug/l | 18.76 | 1.3 | 9000 | 74 | P |
| 56 | Fe | 1 | 9796.000 ug/l | 9,796.00 | 1.6 | 225000 | 74 | A |
| 59 | Co | 1 | 18.710 ug/l | 18.71 | 0.9 | 9000 | 74 | P |
| 60 | Ni | 1 | 18.450 ug/l | 18.45 | 2.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 18.920 ug/l | 18.92 | 1.8 | 9000 | 74 | P |
| 66 | Zn | 1 | 19.500 ug/l | 19.50 | 2.2 | 9000 | 74 | P |
| 75 | As | 1 | 19.130 ug/l | 19.13 | 1.6 | 9000 | 74 | P |
| 78 | Se | 1 | 19.070 ug/l | 19.07 | 0.8 | 9000 | 74 | P |
| 88 | Sr | 1 | 18.610 ug/l | 18.61 | 0.2 | 9000 | 74 | P |
| 95 | Mo | 1 | 199.900 ug/l | 199.90 | 0.7 | 900 | 103 | P |
| 109 | Ag | 1 | 9.515 ug/l | 9.52 | 1.3 | 900 | 103 | P |
| 114 | Cd | 1 | 19.070 ug/l | 19.07 | 1.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 18.670 ug/l | 18.67 | 0.7 | 900 | 103 | P |
| 123 | Sb | 1 | 8.764 ug/l | 8.76 | 3.1 | 900 | 103 | P |
| 135 | Ba | 1 | 18.580 ug/l | 18.58 | 0.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.051 ug/l | 0.05 | 28.9 | 45 | 209 | P |
| 205 | Tl | 1 | 9.083 ug/l | 9.08 | 4.3 | 900 | 209 | P |
| 208 | Pb | 1 | 18.680 ug/l | 18.68 | 1.6 | 9000 | 209 | P |
| 238 | U | 1 | 0.013 ug/l | 0.01 | 22.2 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7294199 | 0.96 | 6901000 | 105.7 | 30 - 150 |
| 74 | Ge | 1 | 5936391 | 1.21 | 5721000 | 103.8 | 30 - 150 |
| 103 | Rh | 1 | 2185198 | 2.21 | 2230000 | 98.0 | 30 - 150 |
| 165 | Ho | 1 | 3794155 | 0.62 | 3774000 | 100.5 | 30 - 150 |
| 209 | Bi | 1 | 3797380 | 1.10 | 4015000 | 94.6 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\026SMPL.D\026SMPL.D#
 Date Acquired: Jul 26 2019 09:33 am Acq. Method: 1002RUN.m
 Sample Name: CCV-2361404 Vial Number: 1104
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|-----|--------|-----|------|
| 9 | Be | 1 | 49.040 ug/l | 49.04 | 0.9 | 9000 | 74 | P |
| 23 | Na | 1 | 5107.000 ug/l | 5,107.00 | 1.8 | 225000 | 74 | A |
| 24 | Mg | 1 | 4883.000 ug/l | 4,883.00 | 2.7 | 225000 | 74 | M |
| 27 | Al | 1 | 496.400 ug/l | 496.40 | 1.1 | 225000 | 74 | P |
| 31 | P | 1 | 4919.000 ug/l | 4,919.00 | 0.6 | 225000 | 74 | P |
| 39 | K | 1 | 4978.000 ug/l | 4,978.00 | 1.7 | 225000 | 74 | A |
| 44 | Ca | 1 | 4941.000 ug/l | 4,941.00 | 0.4 | 225000 | 74 | P |
| 47 | Ti | 1 | 50.160 ug/l | 50.16 | 1.2 | 900 | 74 | P |
| 51 | V | 1 | 49.310 ug/l | 49.31 | 0.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 49.290 ug/l | 49.29 | 1.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 49.640 ug/l | 49.64 | 1.3 | 9000 | 74 | P |
| 56 | Fe | 1 | 4931.000 ug/l | 4,931.00 | 1.7 | 225000 | 74 | A |
| 59 | Co | 1 | 49.590 ug/l | 49.59 | 1.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 48.800 ug/l | 48.80 | 1.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 49.110 ug/l | 49.11 | 1.0 | 9000 | 74 | P |
| 66 | Zn | 1 | 49.190 ug/l | 49.19 | 1.0 | 9000 | 74 | P |
| 75 | As | 1 | 49.290 ug/l | 49.29 | 1.0 | 9000 | 74 | P |
| 78 | Se | 1 | 48.980 ug/l | 48.98 | 1.7 | 9000 | 74 | P |
| 88 | Sr | 1 | 48.850 ug/l | 48.85 | 0.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 50.240 ug/l | 50.24 | 1.3 | 900 | 103 | P |
| 109 | Ag | 1 | 49.520 ug/l | 49.52 | 0.3 | 900 | 103 | P |
| 114 | Cd | 1 | 49.880 ug/l | 49.88 | 0.9 | 9000 | 103 | P |
| 118 | Sn | 1 | 49.780 ug/l | 49.78 | 1.3 | 900 | 103 | P |
| 123 | Sb | 1 | 50.090 ug/l | 50.09 | 0.7 | 900 | 103 | P |
| 135 | Ba | 1 | 49.860 ug/l | 49.86 | 1.5 | 9000 | 103 | P |
| 201 | Hg | 1 | 2.327 ug/l | 2.33 | 2.8 | 45 | 209 | P |
| 205 | Tl | 1 | 49.250 ug/l | 49.25 | 2.9 | 900 | 209 | P |
| 208 | Pb | 1 | 49.070 ug/l | 49.07 | 1.4 | 9000 | 209 | P |
| 238 | U | 1 | 48.650 ug/l | 48.65 | 4.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7397486 | 4.80 | 6901000 | 107.2 | 30 - 150 |
| 74 | Ge | 1 | 5911676 | 2.54 | 5721000 | 103.3 | 30 - 150 |
| 103 | Rh | 1 | 2180798 | 1.97 | 2230000 | 97.8 | 30 - 150 |
| 165 | Ho | 1 | 3740653 | 1.64 | 3774000 | 99.1 | 30 - 150 |
| 209 | Bi | 1 | 3850036 | 0.63 | 4015000 | 95.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\027SMPL.D\027SMPL.D#
 Date Acquired: Jul 26 2019 09:37 am Acq. Method: 1002RUN.m
 Sample Name: CCB Vial Number: 1306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|---------|--------|-----|------|
| 9 | Be | 1 | 0.032 ug/l | 0.03 | 42.9 | 9000 | 74 | P |
| 23 | Na | 1 | -11.600 ug/l | -11.60 | 94.3 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.464 ug/l | 1.46 | 20.6 | 225000 | 74 | P |
| 27 | Al | 1 | 0.161 ug/l | 0.16 | 108.5 | 225000 | 74 | P |
| 31 | P | 1 | 7.895 ug/l | 7.90 | 210.1 | 225000 | 74 | P |
| 39 | K | 1 | 8.771 ug/l | 8.77 | 247.6 | 225000 | 74 | P |
| 44 | Ca | 1 | -1.778 ug/l | -1.78 | 80.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.290 ug/l | 0.29 | 47.7 | 900 | 74 | P |
| 51 | V | 1 | 0.260 ug/l | 0.26 | 134.5 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.024 ug/l | 0.02 | 208.5 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.030 ug/l | -0.03 | 95.7 | 9000 | 74 | P |
| 56 | Fe | 1 | 7.101 ug/l | 7.10 | 14.6 | 225000 | 74 | P |
| 59 | Co | 1 | 0.012 ug/l | 0.01 | 91.1 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.077 ug/l | -0.08 | 135.0 | 9000 | 74 | P |
| 63 | Cu | 1 | -0.005 ug/l | 0.00 | 171.6 | 9000 | 74 | P |
| 66 | Zn | 1 | -0.058 ug/l | -0.06 | 53.2 | 9000 | 74 | P |
| 75 | As | 1 | 0.035 ug/l | 0.03 | 396.1 | 9000 | 74 | P |
| 78 | Se | 1 | 0.159 ug/l | 0.16 | 169.6 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.018 ug/l | -0.02 | 69.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.201 ug/l | 0.20 | 32.8 | 900 | 103 | P |
| 109 | Ag | 1 | 0.009 ug/l | 0.01 | 21.7 | 900 | 103 | P |
| 114 | Cd | 1 | 0.008 ug/l | 0.01 | 105.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.252 ug/l | 0.25 | 10.3 | 900 | 103 | P |
| 123 | Sb | 1 | 0.087 ug/l | 0.09 | 22.4 | 900 | 103 | P |
| 135 | Ba | 1 | -0.004 ug/l | 0.00 | 291.9 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.000 ug/l | 0.00 | 10041.0 | 45 | 209 | P |
| 205 | Tl | 1 | 0.016 ug/l | 0.02 | 44.8 | 900 | 209 | P |
| 208 | Pb | 1 | 0.005 ug/l | 0.01 | 93.1 | 9000 | 209 | P |
| 238 | U | 1 | 0.061 ug/l | 0.06 | 19.3 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7166917 | 4.83 | 6901000 | 103.9 | 30 - 150 |
| 74 | Ge | 1 | 5926531 | 4.37 | 5721000 | 103.6 | 30 - 150 |
| 103 | Rh | 1 | 2217325 | 1.80 | 2230000 | 99.4 | 30 - 150 |
| 165 | Ho | 1 | 3757180 | 0.74 | 3774000 | 99.6 | 30 - 150 |
| 209 | Bi | 1 | 3931731 | 4.10 | 4015000 | 97.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\028SMPL.D\028SMPL.D#
 Date Acquired: Jul 26 2019 09:41 am Acq. Method: 1002RUN.m
 Sample Name: CCVL-2361376 Vial Number: 1106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:44 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|------|--------|-----|------|
| 9 | Be | 1 | 0.392 ug/l | 0.39 | 2.8 | 9000 | 74 | P |
| 23 | Na | 1 | -10.500 ug/l | -10.50 | 85.5 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.291 ug/l | 1.29 | 10.9 | 225000 | 74 | P |
| 27 | Al | 1 | 96.700 ug/l | 96.70 | 1.6 | 225000 | 74 | P |
| 31 | P | 1 | 473.900 ug/l | 473.90 | 1.4 | 225000 | 74 | P |
| 39 | K | 1 | 17.240 ug/l | 17.24 | 95.3 | 225000 | 74 | P |
| 44 | Ca | 1 | 2.195 ug/l | 2.20 | 96.0 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.217 ug/l | 1.22 | 8.6 | 900 | 74 | P |
| 51 | V | 1 | 3.787 ug/l | 3.79 | 10.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.354 ug/l | 0.35 | 2.9 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.986 ug/l | 1.99 | 2.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 198.100 ug/l | 198.10 | 1.2 | 225000 | 74 | P |
| 59 | Co | 1 | 0.411 ug/l | 0.41 | 6.6 | 9000 | 74 | P |
| 60 | Ni | 1 | 2.942 ug/l | 2.94 | 0.7 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.876 ug/l | 1.88 | 7.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.875 ug/l | 6.88 | 7.6 | 9000 | 74 | P |
| 75 | As | 1 | 1.004 ug/l | 1.00 | 2.1 | 9000 | 74 | P |
| 78 | Se | 1 | 7.741 ug/l | 7.74 | 5.4 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.405 ug/l | 0.41 | 9.7 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.841 ug/l | 0.84 | 17.5 | 900 | 103 | P |
| 109 | Ag | 1 | 0.393 ug/l | 0.39 | 7.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.402 ug/l | 0.40 | 13.7 | 9000 | 103 | P |
| 118 | Sn | 1 | 9.317 ug/l | 9.32 | 4.3 | 900 | 103 | P |
| 123 | Sb | 1 | 0.431 ug/l | 0.43 | 6.4 | 900 | 103 | P |
| 135 | Ba | 1 | 1.144 ug/l | 1.14 | 2.6 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.261 ug/l | 0.26 | 3.6 | 45 | 209 | P |
| 205 | Tl | 1 | 0.915 ug/l | 0.91 | 10.7 | 900 | 209 | P |
| 208 | Pb | 1 | 0.752 ug/l | 0.75 | 8.5 | 9000 | 209 | P |
| 238 | U | 1 | 0.568 ug/l | 0.57 | 11.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7035899 | 0.86 | 6901000 | 102.0 | 30 - 150 |
| 74 | Ge | 1 | 5849221 | 3.58 | 5721000 | 102.2 | 30 - 150 |
| 103 | Rh | 1 | 2261478 | 3.77 | 2230000 | 101.4 | 30 - 150 |
| 165 | Ho | 1 | 3766151 | 5.68 | 3774000 | 99.8 | 30 - 150 |
| 209 | Bi | 1 | 3893228 | 2.23 | 4015000 | 97.0 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\029SMPL.D\029SMPL.D#
 Date Acquired: Jul 26 2019 09:45 am Acq. Method: 1002RUN.m
 Sample Name: MB 580-306640/22-A Vial Number: 2101
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:46 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.013 ug/l | 0.01 | 32.7 | 9000 | 74 | P |
| 23 | Na | 1 | 11.680 ug/l | 11.68 | 30.8 | 225000 | 74 | P |
| 24 | Mg | 1 | 7.825 ug/l | 7.83 | 4.4 | 225000 | 74 | P |
| 27 | Al | 1 | 4.634 ug/l | 4.63 | 5.9 | 225000 | 74 | P |
| 31 | P | 1 | 10.930 ug/l | 10.93 | 89.7 | 225000 | 74 | P |
| 39 | K | 1 | 19.050 ug/l | 19.05 | 10.5 | 225000 | 74 | P |
| 44 | Ca | 1 | 11.570 ug/l | 11.57 | 36.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.172 ug/l | 0.17 | 43.0 | 900 | 74 | P |
| 51 | V | 1 | 11.830 ug/l | 11.83 | 1.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.393 ug/l | 0.39 | 3.6 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.090 ug/l | 0.09 | 48.0 | 9000 | 74 | P |
| 56 | Fe | 1 | 6.261 ug/l | 6.26 | 24.0 | 225000 | 74 | P |
| 59 | Co | 1 | 0.012 ug/l | 0.01 | 80.8 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.408 ug/l | 0.41 | 32.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.193 ug/l | 0.19 | 24.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.504 ug/l | 0.50 | 18.5 | 9000 | 74 | P |
| 75 | As | 1 | 0.853 ug/l | 0.85 | 4.3 | 9000 | 74 | P |
| 78 | Se | 1 | 0.097 ug/l | 0.10 | 135.1 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.016 ug/l | -0.02 | 160.9 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.092 ug/l | 0.09 | 33.8 | 900 | 103 | P |
| 109 | Ag | 1 | 0.015 ug/l | 0.02 | 23.4 | 900 | 103 | P |
| 114 | Cd | 1 | 0.002 ug/l | 0.00 | 367.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.409 ug/l | 0.41 | 13.9 | 900 | 103 | P |
| 123 | Sb | 1 | 0.026 ug/l | 0.03 | 8.9 | 900 | 103 | P |
| 135 | Ba | 1 | 0.052 ug/l | 0.05 | 40.3 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.003 ug/l | 0.00 | 221.4 | 45 | 209 | P |
| 205 | Tl | 1 | 0.007 ug/l | 0.01 | 62.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.013 ug/l | 0.01 | 97.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.026 ug/l | 0.03 | 57.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6958071 | 1.29 | 6901000 | 100.8 | 30 - 150 |
| 74 | Ge | 1 | 5722156 | 1.12 | 5721000 | 100.0 | 30 - 150 |
| 103 | Rh | 1 | 2187987 | 3.90 | 2230000 | 98.1 | 30 - 150 |
| 165 | Ho | 1 | 3732505 | 1.99 | 3774000 | 98.9 | 30 - 150 |
| 209 | Bi | 1 | 3923542 | 3.06 | 4015000 | 97.7 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\030SMPL.D\030SMPL.D#
 Date Acquired: Jul 26 2019 09:50 am Acq. Method: 1002RUN.m
 Sample Name: LCS 580-306640/23-A Vial Number: 2102
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|-----------|-----|--------|-----|------|
| 9 | Be | 1 | 102.200 ug/l | 1,022.00 | 3.7 | 9000 | 74 | P |
| 23 | Na | 1 | 1971.000 ug/l | 19,710.00 | 3.8 | 225000 | 74 | P |
| 24 | Mg | 1 | 1964.000 ug/l | 19,640.00 | 3.4 | 225000 | 74 | P |
| 27 | Al | 1 | 2019.000 ug/l | 20,190.00 | 4.5 | 225000 | 74 | P |
| 31 | P | 1 | 493.100 ug/l | 4,931.00 | 6.3 | 225000 | 74 | P |
| 39 | K | 1 | 2014.000 ug/l | 20,140.00 | 3.2 | 225000 | 74 | P |
| 44 | Ca | 1 | 1902.000 ug/l | 19,020.00 | 5.9 | 225000 | 74 | P |
| 47 | Ti | 1 | 98.840 ug/l | 988.40 | 4.1 | 900 | 74 | P |
| 51 | V | 1 | 101.400 ug/l | 1,014.00 | 4.4 | 9000 | 74 | P |
| 52 | Cr | 1 | 101.900 ug/l | 1,019.00 | 4.6 | 9000 | 74 | P |
| 55 | Mn | 1 | 100.300 ug/l | 1,003.00 | 3.2 | 9000 | 74 | P |
| 56 | Fe | 1 | 2065.000 ug/l | 20,650.00 | 4.1 | 225000 | 74 | A |
| 59 | Co | 1 | 101.000 ug/l | 1,010.00 | 3.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 99.780 ug/l | 997.80 | 4.7 | 9000 | 74 | P |
| 63 | Cu | 1 | 102.100 ug/l | 1,021.00 | 3.2 | 9000 | 74 | P |
| 66 | Zn | 1 | 100.800 ug/l | 1,008.00 | 3.5 | 9000 | 74 | P |
| 75 | As | 1 | 102.100 ug/l | 1,021.00 | 3.7 | 9000 | 74 | P |
| 78 | Se | 1 | 101.400 ug/l | 1,014.00 | 3.5 | 9000 | 74 | P |
| 88 | Sr | 1 | 100.900 ug/l | 1,009.00 | 3.9 | 9000 | 74 | P |
| 95 | Mo | 1 | 102.400 ug/l | 1,024.00 | 3.5 | 900 | 103 | P |
| 109 | Ag | 1 | 99.700 ug/l | 997.00 | 2.5 | 900 | 103 | P |
| 114 | Cd | 1 | 102.800 ug/l | 1,028.00 | 3.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 101.400 ug/l | 1,014.00 | 2.7 | 900 | 103 | P |
| 123 | Sb | 1 | 96.640 ug/l | 966.40 | 2.2 | 900 | 103 | P |
| 135 | Ba | 1 | 102.600 ug/l | 1,026.00 | 2.0 | 9000 | 103 | P |
| 201 | Hg | 1 | 4.797 ug/l | 47.97 | 3.2 | 45 | 209 | P |
| 205 | Tl | 1 | 96.780 ug/l | 967.80 | 2.2 | 900 | 209 | P |
| 208 | Pb | 1 | 101.300 ug/l | 1,013.00 | 1.7 | 9000 | 209 | P |
| 238 | U | 1 | 50.210 ug/l | 502.10 | 3.7 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6924302 | 5.27 | 6901000 | 100.3 | 30 - 150 |
| 74 | Ge | 1 | 5756605 | 1.61 | 5721000 | 100.6 | 30 - 150 |
| 103 | Rh | 1 | 2138925 | 1.85 | 2230000 | 95.9 | 30 - 150 |
| 165 | Ho | 1 | 3717045 | 1.95 | 3774000 | 98.5 | 30 - 150 |
| 209 | Bi | 1 | 3789089 | 0.15 | 4015000 | 94.4 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\031SMPL.D\031SMPL.D#
 Date Acquired: Jul 26 2019 09:54 am Acq. Method: 1002RUN.m
 Sample Name: LCSD 580-306640/24-A Vial Number: 2103
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|-----------|-----|--------|-----|------|
| 9 | Be | 1 | 99.250 ug/l | 992.50 | 4.1 | 9000 | 74 | P |
| 23 | Na | 1 | 1896.000 ug/l | 18,960.00 | 4.2 | 225000 | 74 | P |
| 24 | Mg | 1 | 1894.000 ug/l | 18,940.00 | 5.2 | 225000 | 74 | P |
| 27 | Al | 1 | 1937.000 ug/l | 19,370.00 | 4.3 | 225000 | 74 | P |
| 31 | P | 1 | 482.900 ug/l | 4,829.00 | 2.2 | 225000 | 74 | P |
| 39 | K | 1 | 1954.000 ug/l | 19,540.00 | 4.3 | 225000 | 74 | P |
| 44 | Ca | 1 | 1819.000 ug/l | 18,190.00 | 4.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 96.010 ug/l | 960.10 | 4.8 | 900 | 74 | P |
| 51 | V | 1 | 99.170 ug/l | 991.70 | 4.6 | 9000 | 74 | P |
| 52 | Cr | 1 | 100.100 ug/l | 1,001.00 | 4.3 | 9000 | 74 | P |
| 55 | Mn | 1 | 98.400 ug/l | 984.00 | 4.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 1996.000 ug/l | 19,960.00 | 5.0 | 225000 | 74 | A |
| 59 | Co | 1 | 99.810 ug/l | 998.10 | 4.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 99.980 ug/l | 999.80 | 5.5 | 9000 | 74 | P |
| 63 | Cu | 1 | 99.710 ug/l | 997.10 | 4.1 | 9000 | 74 | P |
| 66 | Zn | 1 | 96.090 ug/l | 960.90 | 4.9 | 9000 | 74 | P |
| 75 | As | 1 | 100.300 ug/l | 1,003.00 | 4.7 | 9000 | 74 | P |
| 78 | Se | 1 | 100.300 ug/l | 1,003.00 | 4.7 | 9000 | 74 | P |
| 88 | Sr | 1 | 99.880 ug/l | 998.80 | 4.6 | 9000 | 74 | P |
| 95 | Mo | 1 | 101.400 ug/l | 1,014.00 | 4.7 | 900 | 103 | P |
| 109 | Ag | 1 | 99.220 ug/l | 992.20 | 4.7 | 900 | 103 | P |
| 114 | Cd | 1 | 102.700 ug/l | 1,027.00 | 4.6 | 9000 | 103 | P |
| 118 | Sn | 1 | 101.500 ug/l | 1,015.00 | 4.9 | 900 | 103 | P |
| 123 | Sb | 1 | 96.720 ug/l | 967.20 | 5.2 | 900 | 103 | P |
| 135 | Ba | 1 | 101.900 ug/l | 1,019.00 | 3.9 | 9000 | 103 | P |
| 201 | Hg | 1 | 4.861 ug/l | 48.61 | 5.7 | 45 | 209 | P |
| 205 | Tl | 1 | 98.170 ug/l | 981.70 | 4.7 | 900 | 209 | P |
| 208 | Pb | 1 | 101.000 ug/l | 1,010.00 | 4.8 | 9000 | 209 | P |
| 238 | U | 1 | 50.400 ug/l | 504.00 | 2.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7056692 | 1.27 | 6901000 | 102.3 | 30 - 150 |
| 74 | Ge | 1 | 5970910 | 1.72 | 5721000 | 104.4 | 30 - 150 |
| 103 | Rh | 1 | 2185344 | 2.12 | 2230000 | 98.0 | 30 - 150 |
| 165 | Ho | 1 | 3808466 | 1.15 | 3774000 | 100.9 | 30 - 150 |
| 209 | Bi | 1 | 3837660 | 1.83 | 4015000 | 95.6 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\032SMPL.D\032SMPL.D#
 Date Acquired: Jul 26 2019 09:58 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-1-A Vial Number: 2104
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|-----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.093 ug/l | 0.09 | 15.0 | 9000 | 74 | P |
| 23 | Na | 1 | 1778.000 ug/l | 1,778.00 | 3.5 | 225000 | 74 | P |
| 24 | Mg | 1 | 3548.000 ug/l | 3,548.00 | 2.4 | 225000 | 74 | P |
| 27 | Al | 1 | 14.900 ug/l | 14.90 | 3.4 | 225000 | 74 | P |
| 31 | P | 1 | -0.436 ug/l | -0.44 | 687.1 | 225000 | 74 | P |
| 39 | K | 1 | 929.700 ug/l | 929.70 | 4.1 | 225000 | 74 | P |
| 44 | Ca | 1 | 17770.000 ug/l | 17,770.00 | 5.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.809 ug/l | 0.81 | 11.0 | 900 | 74 | P |
| 51 | V | 1 | 14.720 ug/l | 14.72 | 3.5 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.197 ug/l | 1.20 | 8.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.478 ug/l | 1.48 | 5.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 39.590 ug/l | 39.59 | 7.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.064 ug/l | 0.06 | 15.8 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.755 ug/l | 0.75 | 7.5 | 9000 | 74 | P |
| 63 | Cu | 1 | 75.890 ug/l | 75.89 | 4.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 17.790 ug/l | 17.79 | 7.4 | 9000 | 74 | P |
| 75 | As | 1 | 3.538 ug/l | 3.54 | 6.9 | 9000 | 74 | P |
| 78 | Se | 1 | 0.736 ug/l | 0.74 | 18.5 | 9000 | 74 | P |
| 88 | Sr | 1 | 76.450 ug/l | 76.45 | 2.1 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.561 ug/l | 0.56 | 26.9 | 900 | 103 | P |
| 109 | Ag | 1 | 0.042 ug/l | 0.04 | 9.0 | 900 | 103 | P |
| 114 | Cd | 1 | 0.033 ug/l | 0.03 | 43.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 2.480 ug/l | 2.48 | 4.3 | 900 | 103 | P |
| 123 | Sb | 1 | 0.283 ug/l | 0.28 | 3.3 | 900 | 103 | P |
| 135 | Ba | 1 | 41.730 ug/l | 41.73 | 4.8 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.034 ug/l | 0.03 | 38.9 | 45 | 209 | P |
| 205 | Tl | 1 | 0.056 ug/l | 0.06 | 25.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.386 ug/l | 0.39 | 5.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.143 ug/l | 0.14 | 14.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7005351 | 2.47 | 6901000 | 101.5 | 30 - 150 |
| 74 | Ge | 1 | 5738182 | 2.81 | 5721000 | 100.3 | 30 - 150 |
| 103 | Rh | 1 | 2119857 | 4.51 | 2230000 | 95.1 | 30 - 150 |
| 165 | Ho | 1 | 3740665 | 1.68 | 3774000 | 99.1 | 30 - 150 |
| 209 | Bi | 1 | 3752103 | 4.31 | 4015000 | 93.5 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\033SMPL.D\033SMPL.D#
 Date Acquired: Jul 26 2019 10:03 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-1-B DU Vial Number: 2105
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|-----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.060 ug/l | 0.06 | 1.2 | 9000 | 74 | P |
| 23 | Na | 1 | 1575.000 ug/l | 1,575.00 | 3.8 | 225000 | 74 | P |
| 24 | Mg | 1 | 3495.000 ug/l | 3,495.00 | 3.6 | 225000 | 74 | P |
| 27 | Al | 1 | 7.339 ug/l | 7.34 | 9.8 | 225000 | 74 | P |
| 31 | P | 1 | 4.564 ug/l | 4.56 | 337.2 | 225000 | 74 | P |
| 39 | K | 1 | 900.500 ug/l | 900.50 | 4.5 | 225000 | 74 | P |
| 44 | Ca | 1 | 17590.000 ug/l | 17,590.00 | 4.6 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.219 ug/l | 0.22 | 37.6 | 900 | 74 | P |
| 51 | V | 1 | 14.980 ug/l | 14.98 | 4.0 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.048 ug/l | 1.05 | 1.4 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.937 ug/l | 0.94 | 14.7 | 9000 | 74 | P |
| 56 | Fe | 1 | 26.920 ug/l | 26.92 | 8.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.019 ug/l | 0.02 | 19.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.560 ug/l | 0.56 | 15.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 65.000 ug/l | 65.00 | 5.5 | 9000 | 74 | P |
| 66 | Zn | 1 | 10.810 ug/l | 10.81 | 5.5 | 9000 | 74 | P |
| 75 | As | 1 | 3.654 ug/l | 3.65 | 3.1 | 9000 | 74 | P |
| 78 | Se | 1 | 0.465 ug/l | 0.46 | 51.3 | 9000 | 74 | P |
| 88 | Sr | 1 | 74.460 ug/l | 74.46 | 4.1 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.348 ug/l | 0.35 | 6.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.035 ug/l | 0.03 | 19.2 | 900 | 103 | P |
| 114 | Cd | 1 | 0.016 ug/l | 0.02 | 26.5 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.473 ug/l | 0.47 | 9.8 | 900 | 103 | P |
| 123 | Sb | 1 | 0.145 ug/l | 0.15 | 9.5 | 900 | 103 | P |
| 135 | Ba | 1 | 40.060 ug/l | 40.06 | 4.4 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.036 ug/l | 0.04 | 24.2 | 45 | 209 | P |
| 205 | Tl | 1 | 0.013 ug/l | 0.01 | 6.9 | 900 | 209 | P |
| 208 | Pb | 1 | 0.053 ug/l | 0.05 | 18.0 | 9000 | 209 | P |
| 238 | U | 1 | 0.046 ug/l | 0.05 | 22.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6966442 | 2.88 | 6901000 | 100.9 | 30 - 150 |
| 74 | Ge | 1 | 5764312 | 2.26 | 5721000 | 100.8 | 30 - 150 |
| 103 | Rh | 1 | 2131383 | 1.35 | 2230000 | 95.6 | 30 - 150 |
| 165 | Ho | 1 | 3712205 | 1.39 | 3774000 | 98.4 | 30 - 150 |
| 209 | Bi | 1 | 3770878 | 3.11 | 4015000 | 93.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\034SMPL.D\034SMPL.D#
 Date Acquired: Jul 26 2019 10:07 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-1-A PDS Vial Number: 2106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|-----------|-----|--------|-----|------|
| 9 | Be | 1 | 103.800 ug/l | 1,038.00 | 1.4 | 9000 | 74 | P |
| 23 | Na | 1 | 2338.000 ug/l | 23,380.00 | 1.2 | 225000 | 74 | A |
| 24 | Mg | 1 | 2405.000 ug/l | 24,050.00 | 1.4 | 225000 | 74 | P |
| 27 | Al | 1 | 2052.000 ug/l | 20,520.00 | 1.1 | 225000 | 74 | P |
| 31 | P | 1 | 493.600 ug/l | 4,936.00 | 1.8 | 225000 | 74 | P |
| 39 | K | 1 | 2171.000 ug/l | 21,710.00 | 1.0 | 225000 | 74 | P |
| 44 | Ca | 1 | 3909.000 ug/l | 39,090.00 | 1.4 | 225000 | 74 | P |
| 47 | Ti | 1 | 99.260 ug/l | 992.60 | 0.5 | 900 | 74 | P |
| 51 | V | 1 | 104.400 ug/l | 1,044.00 | 0.6 | 9000 | 74 | P |
| 52 | Cr | 1 | 103.800 ug/l | 1,038.00 | 0.9 | 9000 | 74 | P |
| 55 | Mn | 1 | 102.300 ug/l | 1,023.00 | 1.5 | 9000 | 74 | P |
| 56 | Fe | 1 | 2146.000 ug/l | 21,460.00 | 1.2 | 225000 | 74 | A |
| 59 | Co | 1 | 102.800 ug/l | 1,028.00 | 0.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 103.400 ug/l | 1,034.00 | 1.2 | 9000 | 74 | P |
| 63 | Cu | 1 | 110.500 ug/l | 1,105.00 | 0.7 | 9000 | 74 | P |
| 66 | Zn | 1 | 101.700 ug/l | 1,017.00 | 1.8 | 9000 | 74 | P |
| 75 | As | 1 | 104.000 ug/l | 1,040.00 | 0.2 | 9000 | 74 | P |
| 78 | Se | 1 | 103.600 ug/l | 1,036.00 | 1.1 | 9000 | 74 | P |
| 88 | Sr | 1 | 110.700 ug/l | 1,107.00 | 1.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 105.200 ug/l | 1,052.00 | 1.2 | 900 | 103 | P |
| 109 | Ag | 1 | 100.300 ug/l | 1,003.00 | 0.9 | 900 | 103 | P |
| 114 | Cd | 1 | 104.300 ug/l | 1,043.00 | 1.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 104.600 ug/l | 1,046.00 | 2.7 | 900 | 103 | P |
| 123 | Sb | 1 | 98.160 ug/l | 981.60 | 2.1 | 900 | 103 | P |
| 135 | Ba | 1 | 108.400 ug/l | 1,084.00 | 2.8 | 9000 | 103 | P |
| 201 | Hg | 1 | 5.026 ug/l | 50.26 | 2.4 | 45 | 209 | P |
| 205 | Tl | 1 | 99.490 ug/l | 994.90 | 2.8 | 900 | 209 | P |
| 208 | Pb | 1 | 104.200 ug/l | 1,042.00 | 0.2 | 9000 | 209 | P |
| 238 | U | 1 | 50.320 ug/l | 503.20 | 2.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7204091 | 0.10 | 6901000 | 104.4 | 30 - 150 |
| 74 | Ge | 1 | 5967165 | 0.83 | 5721000 | 104.3 | 30 - 150 |
| 103 | Rh | 1 | 2209918 | 0.90 | 2230000 | 99.1 | 30 - 150 |
| 165 | Ho | 1 | 3773158 | 1.67 | 3774000 | 100.0 | 30 - 150 |
| 209 | Bi | 1 | 3856445 | 1.33 | 4015000 | 96.1 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\035SMPL.D\035SMPL.D#
 Date Acquired: Jul 26 2019 10:11 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-1-C MS Vial Number: 2107
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|-----------|-----|--------|-----|------|
| 9 | Be | 1 | 98.640 ug/l | 986.40 | 2.4 | 9000 | 74 | P |
| 23 | Na | 1 | 2058.000 ug/l | 20,580.00 | 2.5 | 225000 | 74 | P |
| 24 | Mg | 1 | 2277.000 ug/l | 22,770.00 | 3.1 | 225000 | 74 | P |
| 27 | Al | 1 | 1944.000 ug/l | 19,440.00 | 3.4 | 225000 | 74 | P |
| 31 | P | 1 | 477.400 ug/l | 4,774.00 | 4.2 | 225000 | 74 | P |
| 39 | K | 1 | 2064.000 ug/l | 20,640.00 | 2.7 | 225000 | 74 | P |
| 44 | Ca | 1 | 3698.000 ug/l | 36,980.00 | 3.6 | 225000 | 74 | P |
| 47 | Ti | 1 | 97.360 ug/l | 973.60 | 2.6 | 900 | 74 | P |
| 51 | V | 1 | 99.280 ug/l | 992.80 | 2.3 | 9000 | 74 | P |
| 52 | Cr | 1 | 98.920 ug/l | 989.20 | 2.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 98.030 ug/l | 980.30 | 3.7 | 9000 | 74 | P |
| 56 | Fe | 1 | 2055.000 ug/l | 20,550.00 | 2.3 | 225000 | 74 | A |
| 59 | Co | 1 | 98.280 ug/l | 982.80 | 3.0 | 9000 | 74 | P |
| 60 | Ni | 1 | 97.510 ug/l | 975.10 | 2.7 | 9000 | 74 | P |
| 63 | Cu | 1 | 104.200 ug/l | 1,042.00 | 3.2 | 9000 | 74 | P |
| 66 | Zn | 1 | 97.640 ug/l | 976.40 | 1.8 | 9000 | 74 | P |
| 75 | As | 1 | 98.550 ug/l | 985.50 | 2.5 | 9000 | 74 | P |
| 78 | Se | 1 | 99.100 ug/l | 991.00 | 3.3 | 9000 | 74 | P |
| 88 | Sr | 1 | 105.100 ug/l | 1,051.00 | 2.6 | 9000 | 74 | P |
| 95 | Mo | 1 | 98.040 ug/l | 980.40 | 4.4 | 900 | 103 | P |
| 109 | Ag | 1 | 95.380 ug/l | 953.80 | 2.2 | 900 | 103 | P |
| 114 | Cd | 1 | 99.050 ug/l | 990.50 | 2.1 | 9000 | 103 | P |
| 118 | Sn | 1 | 97.720 ug/l | 977.20 | 1.6 | 900 | 103 | P |
| 123 | Sb | 1 | 92.740 ug/l | 927.40 | 2.6 | 900 | 103 | P |
| 135 | Ba | 1 | 103.200 ug/l | 1,032.00 | 2.6 | 9000 | 103 | P |
| 201 | Hg | 1 | 4.647 ug/l | 46.47 | 6.4 | 45 | 209 | P |
| 205 | Tl | 1 | 92.140 ug/l | 921.40 | 3.6 | 900 | 209 | P |
| 208 | Pb | 1 | 96.790 ug/l | 967.90 | 1.6 | 9000 | 209 | P |
| 238 | U | 1 | 48.010 ug/l | 480.10 | 3.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7166623 | 0.86 | 6901000 | 103.8 | 30 - 150 |
| 74 | Ge | 1 | 5956193 | 1.79 | 5721000 | 104.1 | 30 - 150 |
| 103 | Rh | 1 | 2214511 | 0.78 | 2230000 | 99.3 | 30 - 150 |
| 165 | Ho | 1 | 3793838 | 0.60 | 3774000 | 100.5 | 30 - 150 |
| 209 | Bi | 1 | 3885132 | 0.23 | 4015000 | 96.8 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\036SMPL.D\036SMPL.D#
 Date Acquired: Jul 26 2019 10:15 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-1-D MSD Vial Number: 2108
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|-----------|------|--------|-----|------|
| 9 | Be | 1 | 94.890 ug/l | 948.90 | 2.5 | 9000 | 74 | P |
| 23 | Na | 1 | 2261.000 ug/l | 22,610.00 | 6.9 | 225000 | 74 | M |
| 24 | Mg | 1 | 2200.000 ug/l | 22,000.00 | 1.6 | 225000 | 74 | P |
| 27 | Al | 1 | 1871.000 ug/l | 18,710.00 | 1.9 | 225000 | 74 | P |
| 31 | P | 1 | 456.000 ug/l | 4,560.00 | 3.0 | 225000 | 74 | P |
| 39 | K | 1 | 1963.000 ug/l | 19,630.00 | 1.5 | 225000 | 74 | P |
| 44 | Ca | 1 | 3610.000 ug/l | 36,100.00 | 2.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 91.800 ug/l | 918.00 | 3.0 | 900 | 74 | P |
| 51 | V | 1 | 94.610 ug/l | 946.10 | 1.4 | 9000 | 74 | P |
| 52 | Cr | 1 | 94.530 ug/l | 945.30 | 2.1 | 9000 | 74 | P |
| 55 | Mn | 1 | 94.440 ug/l | 944.40 | 3.4 | 9000 | 74 | P |
| 56 | Fe | 1 | 1926.000 ug/l | 19,260.00 | 1.9 | 225000 | 74 | A |
| 59 | Co | 1 | 93.220 ug/l | 932.20 | 2.0 | 9000 | 74 | P |
| 60 | Ni | 1 | 92.280 ug/l | 922.80 | 1.9 | 9000 | 74 | P |
| 63 | Cu | 1 | 102.300 ug/l | 1,023.00 | 2.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 93.850 ug/l | 938.50 | 4.4 | 9000 | 74 | P |
| 75 | As | 1 | 95.390 ug/l | 953.90 | 1.9 | 9000 | 74 | P |
| 78 | Se | 1 | 94.110 ug/l | 941.10 | 2.2 | 9000 | 74 | P |
| 88 | Sr | 1 | 101.800 ug/l | 1,018.00 | 2.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 96.100 ug/l | 961.00 | 1.7 | 900 | 103 | P |
| 109 | Ag | 1 | 93.540 ug/l | 935.40 | 1.3 | 900 | 103 | P |
| 114 | Cd | 1 | 96.360 ug/l | 963.60 | 1.1 | 9000 | 103 | P |
| 118 | Sn | 1 | 96.900 ug/l | 969.00 | 2.8 | 900 | 103 | P |
| 123 | Sb | 1 | 83.050 ug/l | 830.50 | 1.2 | 900 | 103 | P |
| 135 | Ba | 1 | 99.700 ug/l | 997.00 | 1.2 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.012 ug/l | 0.12 | 84.1 | 45 | 209 | P |
| 205 | Tl | 1 | 93.380 ug/l | 933.80 | 0.8 | 900 | 209 | P |
| 208 | Pb | 1 | 94.600 ug/l | 946.00 | 1.5 | 9000 | 209 | P |
| 238 | U | 1 | 45.450 ug/l | 454.50 | 0.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7055752 | 0.72 | 6901000 | 102.2 | 30 - 150 |
| 74 | Ge | 1 | 5888842 | 0.67 | 5721000 | 102.9 | 30 - 150 |
| 103 | Rh | 1 | 2164074 | 1.84 | 2230000 | 97.0 | 30 - 150 |
| 165 | Ho | 1 | 3707560 | 1.46 | 3774000 | 98.2 | 30 - 150 |
| 209 | Bi | 1 | 3815683 | 0.82 | 4015000 | 95.0 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\037SMPL.D\037SMPL.D#
 Date Acquired: Jul 26 2019 10:20 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-1-A SD Vial Number: 2109
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **5.00** Final Dil Factor: **5.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|-----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.080 ug/l | 0.40 | 21.9 | 9000 | 74 | P |
| 23 | Na | 1 | 352.700 ug/l | 1,763.50 | 4.2 | 225000 | 74 | P |
| 24 | Mg | 1 | 784.500 ug/l | 3,922.50 | 3.7 | 225000 | 74 | P |
| 27 | Al | 1 | 17.960 ug/l | 89.80 | 13.9 | 225000 | 74 | P |
| 31 | P | 1 | 5.862 ug/l | 29.31 | 187.3 | 225000 | 74 | P |
| 39 | K | 1 | 206.800 ug/l | 1,034.00 | 8.3 | 225000 | 74 | P |
| 44 | Ca | 1 | 4011.000 ug/l | 20,055.00 | 7.3 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.497 ug/l | 2.48 | 9.1 | 900 | 74 | P |
| 51 | V | 1 | 3.734 ug/l | 18.67 | 8.2 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.318 ug/l | 1.59 | 7.7 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.235 ug/l | 1.18 | 10.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 5.632 ug/l | 28.16 | 18.9 | 225000 | 74 | P |
| 59 | Co | 1 | 0.032 ug/l | 0.16 | 35.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.110 ug/l | 0.55 | 49.9 | 9000 | 74 | P |
| 63 | Cu | 1 | 16.550 ug/l | 82.75 | 6.0 | 9000 | 74 | P |
| 66 | Zn | 1 | 4.341 ug/l | 21.71 | 4.0 | 9000 | 74 | P |
| 75 | As | 1 | 0.923 ug/l | 4.62 | 2.9 | 9000 | 74 | P |
| 78 | Se | 1 | 0.223 ug/l | 1.12 | 96.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 16.930 ug/l | 84.65 | 3.6 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.265 ug/l | 1.33 | 3.7 | 900 | 103 | P |
| 109 | Ag | 1 | 0.028 ug/l | 0.14 | 13.5 | 900 | 103 | P |
| 114 | Cd | 1 | 0.025 ug/l | 0.13 | 50.9 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.809 ug/l | 4.05 | 9.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.809 ug/l | 4.04 | 14.7 | 900 | 103 | P |
| 135 | Ba | 1 | 8.715 ug/l | 43.58 | 3.3 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.006 ug/l | 0.03 | 133.1 | 45 | 209 | P |
| 205 | Tl | 1 | 0.029 ug/l | 0.14 | 6.3 | 900 | 209 | P |
| 208 | Pb | 1 | 0.072 ug/l | 0.36 | 1.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.084 ug/l | 0.42 | 29.1 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6870854 | 1.12 | 6901000 | 99.6 | 30 - 150 |
| 74 | Ge | 1 | 5816606 | 3.11 | 5721000 | 101.7 | 30 - 150 |
| 103 | Rh | 1 | 2270382 | 0.63 | 2230000 | 101.8 | 30 - 150 |
| 165 | Ho | 1 | 3877058 | 1.67 | 3774000 | 102.7 | 30 - 150 |
| 209 | Bi | 1 | 3909599 | 1.68 | 4015000 | 97.4 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\038SMPL.D\038SMPL.D#
 Date Acquired: Jul 26 2019 10:24 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-2-A Vial Number: 2201
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|-----------|------|--------|-----|------|
| 9 | Be | 1 | 0.079 ug/l | 0.08 | 15.6 | 9000 | 74 | P |
| 23 | Na | 1 | 1557.000 ug/l | 1,557.00 | 1.6 | 225000 | 74 | P |
| 24 | Mg | 1 | 3449.000 ug/l | 3,449.00 | 2.0 | 225000 | 74 | P |
| 27 | Al | 1 | 5.111 ug/l | 5.11 | 16.5 | 225000 | 74 | P |
| 31 | P | 1 | 5.383 ug/l | 5.38 | 45.9 | 225000 | 74 | P |
| 39 | K | 1 | 904.100 ug/l | 904.10 | 1.6 | 225000 | 74 | P |
| 44 | Ca | 1 | 17190.000 ug/l | 17,190.00 | 4.0 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.269 ug/l | 0.27 | 27.2 | 900 | 74 | P |
| 51 | V | 1 | 14.810 ug/l | 14.81 | 2.0 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.997 ug/l | 1.00 | 2.4 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.062 ug/l | 1.06 | 9.0 | 9000 | 74 | P |
| 56 | Fe | 1 | 28.170 ug/l | 28.17 | 6.9 | 225000 | 74 | P |
| 59 | Co | 1 | 0.033 ug/l | 0.03 | 26.9 | 9000 | 74 | P |
| 60 | Ni | 1 | 1.196 ug/l | 1.20 | 6.2 | 9000 | 74 | P |
| 63 | Cu | 1 | 169.500 ug/l | 169.50 | 0.9 | 9000 | 74 | P |
| 66 | Zn | 1 | 39.140 ug/l | 39.14 | 4.1 | 9000 | 74 | P |
| 75 | As | 1 | 3.487 ug/l | 3.49 | 2.7 | 9000 | 74 | P |
| 78 | Se | 1 | 0.710 ug/l | 0.71 | 23.1 | 9000 | 74 | P |
| 88 | Sr | 1 | 74.260 ug/l | 74.26 | 1.8 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.426 ug/l | 0.43 | 20.1 | 900 | 103 | P |
| 109 | Ag | 1 | 0.030 ug/l | 0.03 | 55.4 | 900 | 103 | P |
| 114 | Cd | 1 | 0.029 ug/l | 0.03 | 43.8 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.596 ug/l | 0.60 | 11.2 | 900 | 103 | P |
| 123 | Sb | 1 | 0.566 ug/l | 0.57 | 4.4 | 900 | 103 | P |
| 135 | Ba | 1 | 40.880 ug/l | 40.88 | 1.2 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.026 ug/l | 0.03 | 52.7 | 45 | 209 | P |
| 205 | Tl | 1 | 0.019 ug/l | 0.02 | 11.9 | 900 | 209 | P |
| 208 | Pb | 1 | 0.175 ug/l | 0.18 | 5.6 | 9000 | 209 | P |
| 238 | U | 1 | 0.064 ug/l | 0.06 | 10.0 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6895584 | 1.24 | 6901000 | 99.9 | 30 - 150 |
| 74 | Ge | 1 | 5709712 | 1.32 | 5721000 | 99.8 | 30 - 150 |
| 103 | Rh | 1 | 2161638 | 2.56 | 2230000 | 96.9 | 30 - 150 |
| 165 | Ho | 1 | 3664740 | 3.80 | 3774000 | 97.1 | 30 - 150 |
| 209 | Bi | 1 | 3779741 | 0.55 | 4015000 | 94.1 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\039SMPL.D\039SMPL.D#
 Date Acquired: Jul 26 2019 10:28 am Acq. Method: 1002RUN.m
 Sample Name: CCV-2361404 Vial Number: 1104
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|-----|--------|-----|------|
| 9 | Be | 1 | 47.800 ug/l | 47.80 | 2.9 | 9000 | 74 | P |
| 23 | Na | 1 | 4978.000 ug/l | 4,978.00 | 1.7 | 225000 | 74 | A |
| 24 | Mg | 1 | 4941.000 ug/l | 4,941.00 | 3.6 | 225000 | 74 | A |
| 27 | Al | 1 | 476.100 ug/l | 476.10 | 2.3 | 225000 | 74 | P |
| 31 | P | 1 | 4791.000 ug/l | 4,791.00 | 1.7 | 225000 | 74 | P |
| 39 | K | 1 | 4938.000 ug/l | 4,938.00 | 3.0 | 225000 | 74 | A |
| 44 | Ca | 1 | 4833.000 ug/l | 4,833.00 | 3.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 47.910 ug/l | 47.91 | 3.9 | 900 | 74 | P |
| 51 | V | 1 | 48.690 ug/l | 48.69 | 2.9 | 9000 | 74 | P |
| 52 | Cr | 1 | 48.480 ug/l | 48.48 | 2.0 | 9000 | 74 | P |
| 55 | Mn | 1 | 48.470 ug/l | 48.47 | 2.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 4913.000 ug/l | 4,913.00 | 2.6 | 225000 | 74 | A |
| 59 | Co | 1 | 47.900 ug/l | 47.90 | 3.2 | 9000 | 74 | P |
| 60 | Ni | 1 | 47.170 ug/l | 47.17 | 2.0 | 9000 | 74 | P |
| 63 | Cu | 1 | 47.980 ug/l | 47.98 | 2.5 | 9000 | 74 | P |
| 66 | Zn | 1 | 47.220 ug/l | 47.22 | 3.5 | 9000 | 74 | P |
| 75 | As | 1 | 48.230 ug/l | 48.23 | 2.4 | 9000 | 74 | P |
| 78 | Se | 1 | 48.240 ug/l | 48.24 | 3.5 | 9000 | 74 | P |
| 88 | Sr | 1 | 48.430 ug/l | 48.43 | 2.6 | 9000 | 74 | P |
| 95 | Mo | 1 | 48.160 ug/l | 48.16 | 3.5 | 900 | 103 | P |
| 109 | Ag | 1 | 47.780 ug/l | 47.78 | 3.0 | 900 | 103 | P |
| 114 | Cd | 1 | 48.530 ug/l | 48.53 | 3.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 47.900 ug/l | 47.90 | 2.4 | 900 | 103 | P |
| 123 | Sb | 1 | 48.550 ug/l | 48.55 | 3.9 | 900 | 103 | P |
| 135 | Ba | 1 | 48.590 ug/l | 48.59 | 3.0 | 9000 | 103 | P |
| 201 | Hg | 1 | 2.341 ug/l | 2.34 | 4.8 | 45 | 209 | P |
| 205 | Tl | 1 | 47.380 ug/l | 47.38 | 4.6 | 900 | 209 | P |
| 208 | Pb | 1 | 47.850 ug/l | 47.85 | 3.9 | 9000 | 209 | P |
| 238 | U | 1 | 46.650 ug/l | 46.65 | 5.2 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7080358 | 0.75 | 6901000 | 102.6 | 30 - 150 |
| 74 | Ge | 1 | 5865393 | 1.51 | 5721000 | 102.5 | 30 - 150 |
| 103 | Rh | 1 | 2179351 | 0.34 | 2230000 | 97.7 | 30 - 150 |
| 165 | Ho | 1 | 3699339 | 1.46 | 3774000 | 98.0 | 30 - 150 |
| 209 | Bi | 1 | 3788363 | 1.58 | 4015000 | 94.4 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\040SMPL.D\040SMPL.D#
 Date Acquired: Jul 26 2019 10:32 am Acq. Method: 1002RUN.m
 Sample Name: CCB Vial Number: 1306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-------------|--------|--------|--------|-----|------|
| 9 | Be | 1 | 0.057 ug/l | 0.06 | 46.1 | 9000 | 74 | P |
| 23 | Na | 1 | -8.625 ug/l | -8.63 | 126.4 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.170 ug/l | 1.17 | 25.5 | 225000 | 74 | P |
| 27 | Al | 1 | 0.089 ug/l | 0.09 | 145.7 | 225000 | 74 | P |
| 31 | P | 1 | -1.977 ug/l | -1.98 | 164.0 | 225000 | 74 | P |
| 39 | K | 1 | 14.350 ug/l | 14.35 | 138.8 | 225000 | 74 | P |
| 44 | Ca | 1 | 1.367 ug/l | 1.37 | 347.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.198 ug/l | 0.20 | 23.2 | 900 | 74 | P |
| 51 | V | 1 | 0.753 ug/l | 0.75 | 38.2 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.074 ug/l | 0.07 | 41.4 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.009 ug/l | -0.01 | 283.0 | 9000 | 74 | P |
| 56 | Fe | 1 | 3.950 ug/l | 3.95 | 12.9 | 225000 | 74 | P |
| 59 | Co | 1 | 0.028 ug/l | 0.03 | 40.2 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.061 ug/l | -0.06 | 47.7 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.015 ug/l | 0.01 | 248.4 | 9000 | 74 | P |
| 66 | Zn | 1 | -0.016 ug/l | -0.02 | 283.3 | 9000 | 74 | P |
| 75 | As | 1 | 0.184 ug/l | 0.18 | 17.3 | 9000 | 74 | P |
| 78 | Se | 1 | 0.328 ug/l | 0.33 | 54.9 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.022 ug/l | -0.02 | 88.8 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.146 ug/l | 0.15 | 46.2 | 900 | 103 | P |
| 109 | Ag | 1 | 0.013 ug/l | 0.01 | 81.0 | 900 | 103 | P |
| 114 | Cd | 1 | 0.009 ug/l | 0.01 | 105.1 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.255 ug/l | 0.25 | 40.8 | 900 | 103 | P |
| 123 | Sb | 1 | 0.109 ug/l | 0.11 | 4.9 | 900 | 103 | P |
| 135 | Ba | 1 | -0.002 ug/l | 0.00 | 1884.5 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.020 ug/l | 0.02 | 37.8 | 45 | 209 | P |
| 205 | Tl | 1 | 0.025 ug/l | 0.02 | 17.3 | 900 | 209 | P |
| 208 | Pb | 1 | 0.010 ug/l | 0.01 | 48.4 | 9000 | 209 | P |
| 238 | U | 1 | 0.045 ug/l | 0.05 | 19.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7042287 | 3.62 | 6901000 | 102.0 | 30 - 150 |
| 74 | Ge | 1 | 5703600 | 4.77 | 5721000 | 99.7 | 30 - 150 |
| 103 | Rh | 1 | 2199729 | 4.24 | 2230000 | 98.6 | 30 - 150 |
| 165 | Ho | 1 | 3663578 | 4.77 | 3774000 | 97.1 | 30 - 150 |
| 209 | Bi | 1 | 3826268 | 3.84 | 4015000 | 95.3 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\041SMPL.D\041SMPL.D#
 Date Acquired: Jul 26 2019 10:37 am Acq. Method: 1002RUN.m
 Sample Name: CCVL-2361376 Vial Number: 1106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.394 ug/l | 0.39 | 6.9 | 9000 | 74 | P |
| 23 | Na | 1 | -19.970 ug/l | -19.97 | 2.3 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.109 ug/l | 1.11 | 3.7 | 225000 | 74 | P |
| 27 | Al | 1 | 93.160 ug/l | 93.16 | 1.3 | 225000 | 74 | P |
| 31 | P | 1 | 478.700 ug/l | 478.70 | 2.5 | 225000 | 74 | P |
| 39 | K | 1 | 3.376 ug/l | 3.38 | 122.0 | 225000 | 74 | P |
| 44 | Ca | 1 | -3.258 ug/l | -3.26 | 75.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.052 ug/l | 1.05 | 12.4 | 900 | 74 | P |
| 51 | V | 1 | 4.062 ug/l | 4.06 | 4.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.427 ug/l | 0.43 | 14.7 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.862 ug/l | 1.86 | 5.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 192.900 ug/l | 192.90 | 2.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.364 ug/l | 0.36 | 11.3 | 9000 | 74 | P |
| 60 | Ni | 1 | 2.789 ug/l | 2.79 | 9.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.889 ug/l | 1.89 | 7.8 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.862 ug/l | 6.86 | 6.3 | 9000 | 74 | P |
| 75 | As | 1 | 0.977 ug/l | 0.98 | 7.9 | 9000 | 74 | P |
| 78 | Se | 1 | 8.012 ug/l | 8.01 | 4.8 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.390 ug/l | 0.39 | 10.8 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.811 ug/l | 0.81 | 14.6 | 900 | 103 | P |
| 109 | Ag | 1 | 0.374 ug/l | 0.37 | 2.3 | 900 | 103 | P |
| 114 | Cd | 1 | 0.394 ug/l | 0.39 | 8.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 9.240 ug/l | 9.24 | 2.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.415 ug/l | 0.41 | 8.1 | 900 | 103 | P |
| 135 | Ba | 1 | 1.112 ug/l | 1.11 | 3.8 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.264 ug/l | 0.26 | 20.4 | 45 | 209 | P |
| 205 | Tl | 1 | 0.916 ug/l | 0.92 | 2.6 | 900 | 209 | P |
| 208 | Pb | 1 | 0.732 ug/l | 0.73 | 2.2 | 9000 | 209 | P |
| 238 | U | 1 | 0.510 ug/l | 0.51 | 5.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7118649 | 0.78 | 6901000 | 103.2 | 30 - 150 |
| 74 | Ge | 1 | 5910415 | 0.56 | 5721000 | 103.3 | 30 - 150 |
| 103 | Rh | 1 | 2265532 | 1.94 | 2230000 | 101.6 | 30 - 150 |
| 165 | Ho | 1 | 3784440 | 1.73 | 3774000 | 100.3 | 30 - 150 |
| 209 | Bi | 1 | 3914515 | 1.46 | 4015000 | 97.5 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\042SMPL.D\042SMPL.D#
 Date Acquired: Jul 26 2019 10:41 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-3-A Vial Number: 2202
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|-----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.038 ug/l | 0.04 | 54.8 | 9000 | 74 | P |
| 23 | Na | 1 | 1552.000 ug/l | 1,552.00 | 1.1 | 225000 | 74 | P |
| 24 | Mg | 1 | 3443.000 ug/l | 3,443.00 | 2.4 | 225000 | 74 | P |
| 27 | Al | 1 | 9.019 ug/l | 9.02 | 11.3 | 225000 | 74 | P |
| 31 | P | 1 | 15.230 ug/l | 15.23 | 53.4 | 225000 | 74 | P |
| 39 | K | 1 | 881.600 ug/l | 881.60 | 2.5 | 225000 | 74 | P |
| 44 | Ca | 1 | 17030.000 ug/l | 17,030.00 | 1.6 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.127 ug/l | 0.13 | 116.1 | 900 | 74 | P |
| 51 | V | 1 | 14.770 ug/l | 14.77 | 1.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.107 ug/l | 1.11 | 7.6 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.399 ug/l | 1.40 | 5.4 | 9000 | 74 | P |
| 56 | Fe | 1 | 27.260 ug/l | 27.26 | 2.9 | 225000 | 74 | P |
| 59 | Co | 1 | 0.041 ug/l | 0.04 | 41.3 | 9000 | 74 | P |
| 60 | Ni | 1 | 8.195 ug/l | 8.20 | 6.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 48.100 ug/l | 48.10 | 2.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 352.200 ug/l | 352.20 | 1.8 | 9000 | 74 | P |
| 75 | As | 1 | 3.659 ug/l | 3.66 | 2.8 | 9000 | 74 | P |
| 78 | Se | 1 | 0.348 ug/l | 0.35 | 13.1 | 9000 | 74 | P |
| 88 | Sr | 1 | 73.950 ug/l | 73.95 | 1.9 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.430 ug/l | 0.43 | 23.7 | 900 | 103 | P |
| 109 | Ag | 1 | 0.021 ug/l | 0.02 | 44.5 | 900 | 103 | P |
| 114 | Cd | 1 | 0.026 ug/l | 0.03 | 26.7 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.429 ug/l | 0.43 | 13.5 | 900 | 103 | P |
| 123 | Sb | 1 | 0.197 ug/l | 0.20 | 18.2 | 900 | 103 | P |
| 135 | Ba | 1 | 41.700 ug/l | 41.70 | 4.9 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.018 ug/l | 0.02 | 49.0 | 45 | 209 | P |
| 205 | Tl | 1 | 0.022 ug/l | 0.02 | 24.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.460 ug/l | 0.46 | 9.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.044 ug/l | 0.04 | 14.1 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7131356 | 3.38 | 6901000 | 103.3 | 30 - 150 |
| 74 | Ge | 1 | 5803083 | 1.87 | 5721000 | 101.4 | 30 - 150 |
| 103 | Rh | 1 | 2133796 | 4.11 | 2230000 | 95.7 | 30 - 150 |
| 165 | Ho | 1 | 3691351 | 1.55 | 3774000 | 97.8 | 30 - 150 |
| 209 | Bi | 1 | 3759989 | 3.99 | 4015000 | 93.6 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\043SMPL.D\043SMPL.D#
 Date Acquired: Jul 26 2019 10:45 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-4-A Vial Number: 2203
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|-----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.038 ug/l | 0.04 | 25.4 | 9000 | 74 | P |
| 23 | Na | 1 | 1589.000 ug/l | 1,589.00 | 2.9 | 225000 | 74 | P |
| 24 | Mg | 1 | 3528.000 ug/l | 3,528.00 | 3.5 | 225000 | 74 | P |
| 27 | Al | 1 | 7.194 ug/l | 7.19 | 3.6 | 225000 | 74 | P |
| 31 | P | 1 | 7.071 ug/l | 7.07 | 141.1 | 225000 | 74 | P |
| 39 | K | 1 | 917.900 ug/l | 917.90 | 3.9 | 225000 | 74 | P |
| 44 | Ca | 1 | 17550.000 ug/l | 17,550.00 | 2.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.154 ug/l | 0.15 | 54.4 | 900 | 74 | P |
| 51 | V | 1 | 15.170 ug/l | 15.17 | 3.3 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.071 ug/l | 1.07 | 4.7 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.318 ug/l | 1.32 | 2.3 | 9000 | 74 | P |
| 56 | Fe | 1 | 31.830 ug/l | 31.83 | 4.4 | 225000 | 74 | P |
| 59 | Co | 1 | 0.021 ug/l | 0.02 | 124.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 1.199 ug/l | 1.20 | 16.9 | 9000 | 74 | P |
| 63 | Cu | 1 | 69.100 ug/l | 69.10 | 5.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 52.120 ug/l | 52.12 | 4.0 | 9000 | 74 | P |
| 75 | As | 1 | 3.665 ug/l | 3.67 | 0.3 | 9000 | 74 | P |
| 78 | Se | 1 | 0.487 ug/l | 0.49 | 62.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 75.540 ug/l | 75.54 | 2.9 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.349 ug/l | 0.35 | 5.6 | 900 | 103 | P |
| 109 | Ag | 1 | 0.033 ug/l | 0.03 | 37.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.017 ug/l | 0.02 | 35.6 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.544 ug/l | 0.54 | 4.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.182 ug/l | 0.18 | 20.1 | 900 | 103 | P |
| 135 | Ba | 1 | 42.630 ug/l | 42.63 | 1.6 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.003 ug/l | 0.00 | 530.3 | 45 | 209 | P |
| 205 | Tl | 1 | 0.011 ug/l | 0.01 | 19.5 | 900 | 209 | P |
| 208 | Pb | 1 | 0.704 ug/l | 0.70 | 3.3 | 9000 | 209 | P |
| 238 | U | 1 | 0.033 ug/l | 0.03 | 44.5 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7038558 | 1.62 | 6901000 | 102.0 | 30 - 150 |
| 74 | Ge | 1 | 5677069 | 1.58 | 5721000 | 99.2 | 30 - 150 |
| 103 | Rh | 1 | 2139148 | 2.15 | 2230000 | 95.9 | 30 - 150 |
| 165 | Ho | 1 | 3639330 | 4.25 | 3774000 | 96.4 | 30 - 150 |
| 209 | Bi | 1 | 3775430 | 1.91 | 4015000 | 94.0 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\044SMPL.D\044SMPL.D#
 Date Acquired: Jul 26 2019 10:50 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-5-A Vial Number: 2204
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|-----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.024 ug/l | 0.02 | 101.2 | 9000 | 74 | P |
| 23 | Na | 1 | 1603.000 ug/l | 1,603.00 | 2.9 | 225000 | 74 | P |
| 24 | Mg | 1 | 3563.000 ug/l | 3,563.00 | 3.0 | 225000 | 74 | P |
| 27 | Al | 1 | 6.644 ug/l | 6.64 | 2.5 | 225000 | 74 | P |
| 31 | P | 1 | 10.120 ug/l | 10.12 | 9.1 | 225000 | 74 | P |
| 39 | K | 1 | 928.700 ug/l | 928.70 | 3.7 | 225000 | 74 | P |
| 44 | Ca | 1 | 18020.000 ug/l | 18,020.00 | 2.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.137 ug/l | 0.14 | 65.1 | 900 | 74 | P |
| 51 | V | 1 | 16.160 ug/l | 16.16 | 2.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.060 ug/l | 1.06 | 3.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.712 ug/l | 1.71 | 6.0 | 9000 | 74 | P |
| 56 | Fe | 1 | 41.380 ug/l | 41.38 | 3.0 | 225000 | 74 | P |
| 59 | Co | 1 | 0.038 ug/l | 0.04 | 34.5 | 9000 | 74 | P |
| 60 | Ni | 1 | 1.331 ug/l | 1.33 | 12.2 | 9000 | 74 | P |
| 63 | Cu | 1 | 115.500 ug/l | 115.50 | 4.1 | 9000 | 74 | P |
| 66 | Zn | 1 | 172.400 ug/l | 172.40 | 2.3 | 9000 | 74 | P |
| 75 | As | 1 | 3.962 ug/l | 3.96 | 2.6 | 9000 | 74 | P |
| 78 | Se | 1 | 0.462 ug/l | 0.46 | 76.3 | 9000 | 74 | P |
| 88 | Sr | 1 | 77.820 ug/l | 77.82 | 2.1 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.364 ug/l | 0.36 | 14.3 | 900 | 103 | P |
| 109 | Ag | 1 | 0.038 ug/l | 0.04 | 32.0 | 900 | 103 | P |
| 114 | Cd | 1 | 0.035 ug/l | 0.04 | 30.7 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.643 ug/l | 0.64 | 6.4 | 900 | 103 | P |
| 123 | Sb | 1 | 0.177 ug/l | 0.18 | 27.1 | 900 | 103 | P |
| 135 | Ba | 1 | 43.600 ug/l | 43.60 | 1.3 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.012 ug/l | 0.01 | 13.5 | 45 | 209 | P |
| 205 | Tl | 1 | 0.007 ug/l | 0.01 | 28.4 | 900 | 209 | P |
| 208 | Pb | 1 | 1.025 ug/l | 1.03 | 2.5 | 9000 | 209 | P |
| 238 | U | 1 | 0.017 ug/l | 0.02 | 36.5 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7087411 | 1.95 | 6901000 | 102.7 | 30 - 150 |
| 74 | Ge | 1 | 5790870 | 1.97 | 5721000 | 101.2 | 30 - 150 |
| 103 | Rh | 1 | 2168250 | 0.60 | 2230000 | 97.2 | 30 - 150 |
| 165 | Ho | 1 | 3779487 | 1.55 | 3774000 | 100.1 | 30 - 150 |
| 209 | Bi | 1 | 3786932 | 0.09 | 4015000 | 94.3 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\045SMPL.D\045SMPL.D#
 Date Acquired: Jul 26 2019 10:54 am Acq. Method: 1002RUN.m
 Sample Name: 580-87867-A-6-A Vial Number: 2205
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|-----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.044 ug/l | 0.04 | 73.8 | 9000 | 74 | P |
| 23 | Na | 1 | 1532.000 ug/l | 1,532.00 | 0.7 | 225000 | 74 | P |
| 24 | Mg | 1 | 3434.000 ug/l | 3,434.00 | 0.9 | 225000 | 74 | P |
| 27 | Al | 1 | 6.052 ug/l | 6.05 | 2.4 | 225000 | 74 | P |
| 31 | P | 1 | 0.454 ug/l | 0.45 | 742.9 | 225000 | 74 | P |
| 39 | K | 1 | 870.000 ug/l | 870.00 | 0.9 | 225000 | 74 | P |
| 44 | Ca | 1 | 17020.000 ug/l | 17,020.00 | 1.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.145 ug/l | 0.14 | 54.1 | 900 | 74 | P |
| 51 | V | 1 | 15.250 ug/l | 15.25 | 1.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.035 ug/l | 1.04 | 5.5 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.001 ug/l | 1.00 | 8.4 | 9000 | 74 | P |
| 56 | Fe | 1 | 27.430 ug/l | 27.43 | 0.8 | 225000 | 74 | P |
| 59 | Co | 1 | 0.026 ug/l | 0.03 | 86.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.728 ug/l | 0.73 | 9.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 63.830 ug/l | 63.83 | 2.1 | 9000 | 74 | P |
| 66 | Zn | 1 | 38.730 ug/l | 38.73 | 0.7 | 9000 | 74 | P |
| 75 | As | 1 | 3.748 ug/l | 3.75 | 5.8 | 9000 | 74 | P |
| 78 | Se | 1 | 0.390 ug/l | 0.39 | 18.0 | 9000 | 74 | P |
| 88 | Sr | 1 | 73.140 ug/l | 73.14 | 0.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.290 ug/l | 0.29 | 12.2 | 900 | 103 | P |
| 109 | Ag | 1 | 0.037 ug/l | 0.04 | 46.5 | 900 | 103 | P |
| 114 | Cd | 1 | 0.018 ug/l | 0.02 | 106.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.397 ug/l | 0.40 | 1.9 | 900 | 103 | P |
| 123 | Sb | 1 | 0.133 ug/l | 0.13 | 15.4 | 900 | 103 | P |
| 135 | Ba | 1 | 40.900 ug/l | 40.90 | 3.5 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.016 ug/l | 0.02 | 99.4 | 45 | 209 | P |
| 205 | Tl | 1 | 0.019 ug/l | 0.02 | 16.7 | 900 | 209 | P |
| 208 | Pb | 1 | 0.078 ug/l | 0.08 | 9.8 | 9000 | 209 | P |
| 238 | U | 1 | 0.024 ug/l | 0.02 | 20.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7012687 | 1.16 | 6901000 | 101.6 | 30 - 150 |
| 74 | Ge | 1 | 5783466 | 2.37 | 5721000 | 101.1 | 30 - 150 |
| 103 | Rh | 1 | 2198014 | 0.88 | 2230000 | 98.6 | 30 - 150 |
| 165 | Ho | 1 | 3706760 | 1.02 | 3774000 | 98.2 | 30 - 150 |
| 209 | Bi | 1 | 3786073 | 0.34 | 4015000 | 94.3 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\046SMPL.D\046SMPL.D#
 Date Acquired: Jul 26 2019 10:58 am Acq. Method: 1002RUN.m
 Sample Name: 580-87761-L-28-B Vial Number: 2206
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **5.00** Final Dil Factor: **5.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|---------|--------|-----|------|
| 9 | Be | 1 | 0.018 ug/l | 0.09 | 26.5 | 9000 | 74 | P |
| 23 | Na | 1 | -18.190 ug/l | -90.95 | 44.5 | 225000 | 74 | P |
| 24 | Mg | 1 | 2.758 ug/l | 13.79 | 10.9 | 225000 | 74 | P |
| 27 | Al | 1 | 2.921 ug/l | 14.61 | 29.8 | 225000 | 74 | P |
| 31 | P | 1 | 11.030 ug/l | 55.15 | 69.0 | 225000 | 74 | P |
| 39 | K | 1 | -4.605 ug/l | -23.03 | 379.2 | 225000 | 74 | P |
| 44 | Ca | 1 | 2.497 ug/l | 12.49 | 85.9 | 225000 | 74 | P |
| 47 | Ti | 1 | -0.009 ug/l | -0.05 | 101.5 | 900 | 74 | P |
| 51 | V | 1 | 4.153 ug/l | 20.77 | 10.5 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.241 ug/l | 1.20 | 26.8 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.001 ug/l | 0.00 | 3495.6 | 9000 | 74 | P |
| 56 | Fe | 1 | -6.632 ug/l | -33.16 | 2.7 | 225000 | 74 | P |
| 59 | Co | 1 | -0.001 ug/l | -0.01 | 582.6 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.032 ug/l | -0.16 | 198.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.048 ug/l | 0.24 | 54.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.110 ug/l | 0.55 | 58.0 | 9000 | 74 | P |
| 75 | As | 1 | 0.848 ug/l | 4.24 | 11.4 | 9000 | 74 | P |
| 78 | Se | 1 | 0.011 ug/l | 0.05 | 2100.4 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.010 ug/l | -0.05 | 224.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.015 ug/l | 0.08 | 216.3 | 900 | 103 | P |
| 109 | Ag | 1 | 0.005 ug/l | 0.03 | 255.0 | 900 | 103 | P |
| 114 | Cd | 1 | 0.000 ug/l | 0.00 | 17346.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.098 ug/l | 0.49 | 62.0 | 900 | 103 | P |
| 123 | Sb | 1 | 0.024 ug/l | 0.12 | 121.7 | 900 | 103 | P |
| 135 | Ba | 1 | 0.005 ug/l | 0.03 | 235.9 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.006 ug/l | -0.03 | 176.3 | 45 | 209 | P |
| 205 | Tl | 1 | 0.000 ug/l | 0.00 | 2331.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.011 ug/l | 0.06 | 41.7 | 9000 | 209 | P |
| 238 | U | 1 | 0.007 ug/l | 0.03 | 155.2 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7196878 | 1.08 | 6901000 | 104.3 | 30 - 150 |
| 74 | Ge | 1 | 6014355 | 4.10 | 5721000 | 105.1 | 30 - 150 |
| 103 | Rh | 1 | 2267069 | 5.01 | 2230000 | 101.7 | 30 - 150 |
| 165 | Ho | 1 | 3851113 | 5.63 | 3774000 | 102.0 | 30 - 150 |
| 209 | Bi | 1 | 3913088 | 1.92 | 4015000 | 97.5 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\047SMPL.D\047SMPL.D#
 Date Acquired: Jul 26 2019 11:02 am Acq. Method: 1002RUN.m
 Sample Name: 580-87761-L-29-E Vial Number: 2207
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **5.00** Final Dil Factor: **5.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|--------|--------|-----|------|
| 9 | Be | 1 | 0.026 ug/l | 0.13 | 28.9 | 9000 | 74 | P |
| 23 | Na | 1 | -15.450 ug/l | -77.25 | 22.9 | 225000 | 74 | P |
| 24 | Mg | 1 | 2.546 ug/l | 12.73 | 6.2 | 225000 | 74 | P |
| 27 | Al | 1 | 7.408 ug/l | 37.04 | 12.5 | 225000 | 74 | P |
| 31 | P | 1 | -5.097 ug/l | -25.49 | 381.6 | 225000 | 74 | P |
| 39 | K | 1 | 0.405 ug/l | 2.03 | 621.6 | 225000 | 74 | P |
| 44 | Ca | 1 | 2.306 ug/l | 11.53 | 125.6 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.065 ug/l | 0.32 | 73.7 | 900 | 74 | P |
| 51 | V | 1 | 4.417 ug/l | 22.09 | 1.2 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.306 ug/l | 1.53 | 26.7 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.015 ug/l | 0.08 | 106.0 | 9000 | 74 | P |
| 56 | Fe | 1 | -6.497 ug/l | -32.49 | 3.3 | 225000 | 74 | P |
| 59 | Co | 1 | 0.018 ug/l | 0.09 | 43.2 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.035 ug/l | 0.18 | 108.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.042 ug/l | 0.21 | 84.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.493 ug/l | 2.46 | 7.6 | 9000 | 74 | P |
| 75 | As | 1 | 0.932 ug/l | 4.66 | 9.0 | 9000 | 74 | P |
| 78 | Se | 1 | -0.234 ug/l | -1.17 | 29.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.009 ug/l | 0.04 | 191.0 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.021 ug/l | 0.11 | 88.9 | 900 | 103 | P |
| 109 | Ag | 1 | 0.000 ug/l | 0.00 | 1372.3 | 900 | 103 | P |
| 114 | Cd | 1 | 0.016 ug/l | 0.08 | 34.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.085 ug/l | 0.42 | 13.1 | 900 | 103 | P |
| 123 | Sb | 1 | 0.024 ug/l | 0.12 | 44.0 | 900 | 103 | P |
| 135 | Ba | 1 | 0.043 ug/l | 0.21 | 74.8 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.005 ug/l | -0.03 | 136.2 | 45 | 209 | P |
| 205 | Tl | 1 | 0.001 ug/l | 0.00 | 458.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.009 ug/l | 0.05 | 84.6 | 9000 | 209 | P |
| 238 | U | 1 | 0.007 ug/l | 0.03 | 42.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7211867 | 1.50 | 6901000 | 104.5 | 30 - 150 |
| 74 | Ge | 1 | 5853875 | 0.82 | 5721000 | 102.3 | 30 - 150 |
| 103 | Rh | 1 | 2191888 | 0.97 | 2230000 | 98.3 | 30 - 150 |
| 165 | Ho | 1 | 3720527 | 0.14 | 3774000 | 98.6 | 30 - 150 |
| 209 | Bi | 1 | 3879158 | 0.12 | 4015000 | 96.6 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\048SMPL.D\048SMPL.D#
 Date Acquired: Jul 26 2019 11:07 am Acq. Method: 1002RUN.m
 Sample Name: 580-87524-A-2-B Vial Number: 2208
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **5.00** Final Dil Factor: **5.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|--------|--------|-----|------|
| 9 | Be | 1 | 0.018 ug/l | 0.09 | 64.0 | 9000 | 74 | P |
| 23 | Na | 1 | -10.930 ug/l | -54.65 | 28.0 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.793 ug/l | 8.97 | 12.1 | 225000 | 74 | P |
| 27 | Al | 1 | 3.039 ug/l | 15.20 | 12.0 | 225000 | 74 | P |
| 31 | P | 1 | -9.019 ug/l | -45.10 | 125.7 | 225000 | 74 | P |
| 39 | K | 1 | 10.790 ug/l | 53.95 | 36.1 | 225000 | 74 | P |
| 44 | Ca | 1 | 3.277 ug/l | 16.39 | 131.6 | 225000 | 74 | P |
| 47 | Ti | 1 | -0.016 ug/l | -0.08 | 231.2 | 900 | 74 | P |
| 51 | V | 1 | 4.055 ug/l | 20.28 | 1.3 | 9000 | 74 | P |
| 52 | Cr | 1 | 22.100 ug/l | 110.50 | 1.9 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.026 ug/l | -0.13 | 217.6 | 9000 | 74 | P |
| 56 | Fe | 1 | -6.553 ug/l | -32.77 | 1.5 | 225000 | 74 | P |
| 59 | Co | 1 | 0.000 ug/l | 0.00 | 2225.2 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.046 ug/l | 0.23 | 229.7 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.010 ug/l | 0.05 | 218.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.294 ug/l | 1.47 | 41.9 | 9000 | 74 | P |
| 75 | As | 1 | 0.838 ug/l | 4.19 | 16.1 | 9000 | 74 | P |
| 78 | Se | 1 | -0.101 ug/l | -0.51 | 181.0 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.012 ug/l | 0.06 | 248.0 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.012 ug/l | 0.06 | 209.6 | 900 | 103 | P |
| 109 | Ag | 1 | 0.009 ug/l | 0.04 | 86.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.006 ug/l | 0.03 | 114.7 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.152 ug/l | 0.76 | 17.9 | 900 | 103 | P |
| 123 | Sb | 1 | 0.015 ug/l | 0.08 | 80.7 | 900 | 103 | P |
| 135 | Ba | 1 | 0.007 ug/l | 0.03 | 203.2 | 9000 | 103 | P |
| 201 | Hg | 1 | 3.298 ug/l | 16.49 | 6.3 | 45 | 209 | P |
| 205 | Tl | 1 | 0.000 ug/l | 0.00 | 2242.8 | 900 | 209 | P |
| 208 | Pb | 1 | 0.007 ug/l | 0.03 | 132.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.006 ug/l | 0.03 | 74.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7188001 | 2.21 | 6901000 | 104.2 | 30 - 150 |
| 74 | Ge | 1 | 5917364 | 0.94 | 5721000 | 103.4 | 30 - 150 |
| 103 | Rh | 1 | 2258822 | 2.26 | 2230000 | 101.3 | 30 - 150 |
| 165 | Ho | 1 | 3794203 | 1.56 | 3774000 | 100.5 | 30 - 150 |
| 209 | Bi | 1 | 3897534 | 3.80 | 4015000 | 97.1 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\049SMPL.D\049SMPL.D#
 Date Acquired: Jul 26 2019 11:11 am Acq. Method: 1002RUN.m
 Sample Name: 580-87524-A-19-A Vial Number: 2209
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **5.00** Final Dil Factor: **5.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|-----------|---------|--------|-----|------|
| 9 | Be | 1 | 0.020 ug/l | 0.10 | 51.7 | 9000 | 74 | P |
| 23 | Na | 1 | 8873.000 ug/l | 44,365.00 | 1.7 | 225000 | 74 | A |
| 24 | Mg | 1 | 2.079 ug/l | 10.40 | 9.3 | 225000 | 74 | P |
| 27 | Al | 1 | 6.262 ug/l | 31.31 | 11.4 | 225000 | 74 | P |
| 31 | P | 1 | -1.298 ug/l | -6.49 | 1134.8 | 225000 | 74 | P |
| 39 | K | 1 | -2.748 ug/l | -13.74 | 179.6 | 225000 | 74 | P |
| 44 | Ca | 1 | 17.480 ug/l | 87.40 | 7.3 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.596 ug/l | 2.98 | 5.4 | 900 | 74 | P |
| 51 | V | 1 | 4.073 ug/l | 20.37 | 5.9 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.249 ug/l | 1.25 | 14.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.037 ug/l | 0.18 | 109.4 | 9000 | 74 | P |
| 56 | Fe | 1 | -6.839 ug/l | -34.20 | 3.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.000 ug/l | 0.00 | 11550.0 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.032 ug/l | 0.16 | 213.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.044 ug/l | 0.22 | 63.5 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.246 ug/l | 1.23 | 19.6 | 9000 | 74 | P |
| 75 | As | 1 | 0.751 ug/l | 3.76 | 9.9 | 9000 | 74 | P |
| 78 | Se | 1 | 0.030 ug/l | 0.15 | 444.5 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.019 ug/l | -0.10 | 201.2 | 9000 | 74 | P |
| 95 | Mo | 1 | -0.005 ug/l | -0.03 | 229.1 | 900 | 103 | P |
| 109 | Ag | 1 | 0.001 ug/l | 0.01 | 31.9 | 900 | 103 | P |
| 114 | Cd | 1 | 0.002 ug/l | 0.01 | 100.1 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.055 ug/l | 0.27 | 88.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.012 ug/l | 0.06 | 75.5 | 900 | 103 | P |
| 135 | Ba | 1 | 0.016 ug/l | 0.08 | 59.1 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.001 ug/l | 0.00 | 2164.8 | 45 | 209 | P |
| 205 | Tl | 1 | 0.006 ug/l | 0.03 | 112.8 | 900 | 209 | P |
| 208 | Pb | 1 | 0.004 ug/l | 0.02 | 295.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.001 ug/l | 0.00 | 283.7 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7156402 | 1.10 | 6901000 | 103.7 | 30 - 150 |
| 74 | Ge | 1 | 5860354 | 0.71 | 5721000 | 102.4 | 30 - 150 |
| 103 | Rh | 1 | 2198383 | 1.64 | 2230000 | 98.6 | 30 - 150 |
| 165 | Ho | 1 | 3771426 | 1.12 | 3774000 | 99.9 | 30 - 150 |
| 209 | Bi | 1 | 3835739 | 1.36 | 4015000 | 95.5 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\050SMPL.D\050SMPL.D#
 Date Acquired: Jul 26 2019 11:15 am Acq. Method: 1002RUN.m
 Sample Name: 580-87524-A-20-A Vial Number: 2210
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **5.00** Final Dil Factor: **5.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.013 ug/l | 0.07 | 46.3 | 9000 | 74 | P |
| 23 | Na | 1 | -13.370 ug/l | -66.85 | 26.7 | 225000 | 74 | P |
| 24 | Mg | 1 | 2.029 ug/l | 10.15 | 5.2 | 225000 | 74 | P |
| 27 | Al | 1 | 4.308 ug/l | 21.54 | 8.5 | 225000 | 74 | P |
| 31 | P | 1 | -12.890 ug/l | -64.45 | 100.1 | 225000 | 74 | P |
| 39 | K | 1 | -9.581 ug/l | -47.91 | 65.9 | 225000 | 74 | P |
| 44 | Ca | 1 | 5.550 ug/l | 27.75 | 66.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.019 ug/l | 0.09 | 226.8 | 900 | 74 | P |
| 51 | V | 1 | 3.627 ug/l | 18.14 | 5.3 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.233 ug/l | 1.17 | 9.3 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.020 ug/l | 0.10 | 110.9 | 9000 | 74 | P |
| 56 | Fe | 1 | -6.663 ug/l | -33.32 | 3.2 | 225000 | 74 | P |
| 59 | Co | 1 | -0.004 ug/l | -0.02 | 136.4 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.032 ug/l | -0.16 | 153.9 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.024 ug/l | 0.12 | 103.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.303 ug/l | 1.51 | 19.9 | 9000 | 74 | P |
| 75 | As | 1 | 0.770 ug/l | 3.85 | 6.3 | 9000 | 74 | P |
| 78 | Se | 1 | -0.102 ug/l | -0.51 | 213.8 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.016 ug/l | -0.08 | 149.1 | 9000 | 74 | P |
| 95 | Mo | 1 | -0.004 ug/l | -0.02 | 917.2 | 900 | 103 | P |
| 109 | Ag | 1 | -0.001 ug/l | -0.01 | 597.5 | 900 | 103 | P |
| 114 | Cd | 1 | 0.009 ug/l | 0.05 | 84.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.128 ug/l | 0.64 | 23.8 | 900 | 103 | P |
| 123 | Sb | 1 | 0.031 ug/l | 0.15 | 46.2 | 900 | 103 | P |
| 135 | Ba | 1 | 0.011 ug/l | 0.06 | 275.1 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.007 ug/l | 0.04 | 306.0 | 45 | 209 | P |
| 205 | Tl | 1 | 0.002 ug/l | 0.01 | 265.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.004 ug/l | 0.02 | 178.2 | 9000 | 209 | P |
| 238 | U | 1 | 6.016 ug/l | 30.08 | 1.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7237713 | 2.56 | 6901000 | 104.9 | 30 - 150 |
| 74 | Ge | 1 | 5892210 | 1.65 | 5721000 | 103.0 | 30 - 150 |
| 103 | Rh | 1 | 2164938 | 0.96 | 2230000 | 97.1 | 30 - 150 |
| 165 | Ho | 1 | 3757484 | 0.98 | 3774000 | 99.6 | 30 - 150 |
| 209 | Bi | 1 | 3848286 | 0.88 | 4015000 | 95.8 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\051SMPL.D\051SMPL.D#
 Date Acquired: Jul 26 2019 11:20 am Acq. Method: 1002RUN.m
 Sample Name: 580-87790-A-5-B Vial Number: 2211
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **5.00** Final Dil Factor: **5.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|----------|-------|--------|-----|------|
| 9 | Be | 1 | 0.006 ug/l | 0.03 | 99.7 | 9000 | 74 | P |
| 23 | Na | 1 | -11.910 ug/l | -59.55 | 7.9 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.756 ug/l | 8.78 | 20.1 | 225000 | 74 | P |
| 27 | Al | 1 | 5.069 ug/l | 25.35 | 3.9 | 225000 | 74 | P |
| 31 | P | 1 | -9.011 ug/l | -45.06 | 151.9 | 225000 | 74 | P |
| 39 | K | 1 | 200.500 ug/l | 1,002.50 | 2.8 | 225000 | 74 | P |
| 44 | Ca | 1 | 4.025 ug/l | 20.13 | 84.0 | 225000 | 74 | P |
| 47 | Ti | 1 | -0.014 ug/l | -0.07 | 214.7 | 900 | 74 | P |
| 51 | V | 1 | 3.665 ug/l | 18.33 | 2.4 | 9000 | 74 | P |
| 52 | Cr | 1 | 278.600 ug/l | 1,393.00 | 2.1 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.010 ug/l | -0.05 | 219.7 | 9000 | 74 | P |
| 56 | Fe | 1 | -6.859 ug/l | -34.30 | 3.4 | 225000 | 74 | P |
| 59 | Co | 1 | 0.001 ug/l | 0.01 | 838.6 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.031 ug/l | -0.15 | 182.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.145 ug/l | 0.73 | 22.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.343 ug/l | 1.71 | 37.8 | 9000 | 74 | P |
| 75 | As | 1 | 0.736 ug/l | 3.68 | 13.1 | 9000 | 74 | P |
| 78 | Se | 1 | -0.129 ug/l | -0.64 | 61.7 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.031 ug/l | 0.16 | 87.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.021 ug/l | 0.10 | 47.6 | 900 | 103 | P |
| 109 | Ag | 1 | 0.089 ug/l | 0.44 | 14.5 | 900 | 103 | P |
| 114 | Cd | 1 | 0.003 ug/l | 0.01 | 201.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.098 ug/l | 0.49 | 17.8 | 900 | 103 | P |
| 123 | Sb | 1 | 0.014 ug/l | 0.07 | 53.8 | 900 | 103 | P |
| 135 | Ba | 1 | 0.045 ug/l | 0.22 | 106.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.954 ug/l | 4.77 | 7.3 | 45 | 209 | P |
| 205 | Tl | 1 | 0.004 ug/l | 0.02 | 141.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.009 ug/l | 0.04 | 43.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.013 ug/l | 0.07 | 68.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7047233 | 0.35 | 6901000 | 102.1 | 30 - 150 |
| 74 | Ge | 1 | 5847542 | 0.87 | 5721000 | 102.2 | 30 - 150 |
| 103 | Rh | 1 | 2203337 | 2.28 | 2230000 | 98.8 | 30 - 150 |
| 165 | Ho | 1 | 3789650 | 4.60 | 3774000 | 100.4 | 30 - 150 |
| 209 | Bi | 1 | 3849512 | 0.60 | 4015000 | 95.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\052SMPL.D\052SMPL.D#
 Date Acquired: Jul 26 2019 11:24 am Acq. Method: 1002RUN.m
 Sample Name: CCV-2361404 Vial Number: 1104
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|-----|--------|-----|------|
| 9 | Be | 1 | 48.910 ug/l | 48.91 | 1.9 | 9000 | 74 | P |
| 23 | Na | 1 | 5011.000 ug/l | 5,011.00 | 1.4 | 225000 | 74 | A |
| 24 | Mg | 1 | 4984.000 ug/l | 4,984.00 | 2.1 | 225000 | 74 | A |
| 27 | Al | 1 | 476.000 ug/l | 476.00 | 1.2 | 225000 | 74 | P |
| 31 | P | 1 | 4743.000 ug/l | 4,743.00 | 0.7 | 225000 | 74 | P |
| 39 | K | 1 | 4995.000 ug/l | 4,995.00 | 0.9 | 225000 | 74 | A |
| 44 | Ca | 1 | 4882.000 ug/l | 4,882.00 | 1.2 | 225000 | 74 | P |
| 47 | Ti | 1 | 48.080 ug/l | 48.08 | 1.6 | 900 | 74 | P |
| 51 | V | 1 | 48.820 ug/l | 48.82 | 0.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 48.650 ug/l | 48.65 | 0.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 48.510 ug/l | 48.51 | 1.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 4977.000 ug/l | 4,977.00 | 1.6 | 225000 | 74 | A |
| 59 | Co | 1 | 48.170 ug/l | 48.17 | 0.8 | 9000 | 74 | P |
| 60 | Ni | 1 | 48.330 ug/l | 48.33 | 1.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 47.720 ug/l | 47.72 | 0.5 | 9000 | 74 | P |
| 66 | Zn | 1 | 47.740 ug/l | 47.74 | 2.7 | 9000 | 74 | P |
| 75 | As | 1 | 48.600 ug/l | 48.60 | 1.2 | 9000 | 74 | P |
| 78 | Se | 1 | 48.310 ug/l | 48.31 | 2.1 | 9000 | 74 | P |
| 88 | Sr | 1 | 48.640 ug/l | 48.64 | 1.1 | 9000 | 74 | P |
| 95 | Mo | 1 | 48.710 ug/l | 48.71 | 2.7 | 900 | 103 | P |
| 109 | Ag | 1 | 48.510 ug/l | 48.51 | 3.0 | 900 | 103 | P |
| 114 | Cd | 1 | 49.100 ug/l | 49.10 | 3.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 48.490 ug/l | 48.49 | 1.5 | 900 | 103 | P |
| 123 | Sb | 1 | 49.420 ug/l | 49.42 | 4.7 | 900 | 103 | P |
| 135 | Ba | 1 | 48.730 ug/l | 48.73 | 2.2 | 9000 | 103 | P |
| 201 | Hg | 1 | 2.412 ug/l | 2.41 | 3.4 | 45 | 209 | P |
| 205 | Tl | 1 | 49.060 ug/l | 49.06 | 2.3 | 900 | 209 | P |
| 208 | Pb | 1 | 48.060 ug/l | 48.06 | 0.8 | 9000 | 209 | P |
| 238 | U | 1 | 47.340 ug/l | 47.34 | 1.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7164594 | 1.14 | 6901000 | 103.8 | 30 - 150 |
| 74 | Ge | 1 | 5903045 | 1.24 | 5721000 | 103.2 | 30 - 150 |
| 103 | Rh | 1 | 2185304 | 2.74 | 2230000 | 98.0 | 30 - 150 |
| 165 | Ho | 1 | 3803483 | 1.36 | 3774000 | 100.8 | 30 - 150 |
| 209 | Bi | 1 | 3811380 | 0.41 | 4015000 | 94.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\053SMPL.D\053SMPL.D#
 Date Acquired: Jul 26 2019 11:28 am Acq. Method: 1002RUN.m
 Sample Name: CCB Vial Number: 1306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.035 ug/l | 0.03 | 58.0 | 9000 | 74 | P |
| 23 | Na | 1 | -22.990 ug/l | -22.99 | 8.0 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.116 ug/l | 1.12 | 9.1 | 225000 | 74 | P |
| 27 | Al | 1 | 0.245 ug/l | 0.24 | 62.0 | 225000 | 74 | P |
| 31 | P | 1 | -9.703 ug/l | -9.70 | 66.6 | 225000 | 74 | P |
| 39 | K | 1 | -12.650 ug/l | -12.65 | 24.7 | 225000 | 74 | P |
| 44 | Ca | 1 | -1.141 ug/l | -1.14 | 518.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.112 ug/l | 0.11 | 38.8 | 900 | 74 | P |
| 51 | V | 1 | 0.293 ug/l | 0.29 | 103.3 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.035 ug/l | 0.03 | 144.8 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.063 ug/l | -0.06 | 45.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 2.451 ug/l | 2.45 | 28.2 | 225000 | 74 | P |
| 59 | Co | 1 | 0.007 ug/l | 0.01 | 147.8 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.129 ug/l | -0.13 | 38.4 | 9000 | 74 | P |
| 63 | Cu | 1 | -0.028 ug/l | -0.03 | 77.8 | 9000 | 74 | P |
| 66 | Zn | 1 | -0.021 ug/l | -0.02 | 177.5 | 9000 | 74 | P |
| 75 | As | 1 | 0.149 ug/l | 0.15 | 46.8 | 9000 | 74 | P |
| 78 | Se | 1 | -0.107 ug/l | -0.11 | 31.8 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.021 ug/l | -0.02 | 54.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.124 ug/l | 0.12 | 29.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.024 ug/l | 0.02 | 49.1 | 900 | 103 | P |
| 114 | Cd | 1 | 0.006 ug/l | 0.01 | 154.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.146 ug/l | 0.15 | 13.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.064 ug/l | 0.06 | 16.6 | 900 | 103 | P |
| 135 | Ba | 1 | 0.011 ug/l | 0.01 | 249.0 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.007 ug/l | 0.01 | 108.1 | 45 | 209 | P |
| 205 | Tl | 1 | 0.025 ug/l | 0.02 | 36.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.004 ug/l | 0.00 | 187.2 | 9000 | 209 | P |
| 238 | U | 1 | 0.050 ug/l | 0.05 | 3.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7092081 | 2.42 | 6901000 | 102.8 | 30 - 150 |
| 74 | Ge | 1 | 5916413 | 0.41 | 5721000 | 103.4 | 30 - 150 |
| 103 | Rh | 1 | 2265885 | 2.04 | 2230000 | 101.6 | 30 - 150 |
| 165 | Ho | 1 | 3829537 | 2.75 | 3774000 | 101.5 | 30 - 150 |
| 209 | Bi | 1 | 3919626 | 2.24 | 4015000 | 97.6 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\054SMPL.D\054SMPL.D#
 Date Acquired: Jul 26 2019 11:32 am Acq. Method: 1002RUN.m
 Sample Name: CCVL-2361376 Vial Number: 1106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.400 ug/l | 0.40 | 12.9 | 9000 | 74 | P |
| 23 | Na | 1 | -20.490 ug/l | -20.49 | 39.2 | 225000 | 74 | P |
| 24 | Mg | 1 | 0.601 ug/l | 0.60 | 21.5 | 225000 | 74 | P |
| 27 | Al | 1 | 95.240 ug/l | 95.24 | 2.8 | 225000 | 74 | P |
| 31 | P | 1 | 451.000 ug/l | 451.00 | 6.2 | 225000 | 74 | P |
| 39 | K | 1 | -5.619 ug/l | -5.62 | 313.2 | 225000 | 74 | P |
| 44 | Ca | 1 | 1.595 ug/l | 1.60 | 294.2 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.006 ug/l | 1.01 | 9.6 | 900 | 74 | P |
| 51 | V | 1 | 4.016 ug/l | 4.02 | 10.5 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.375 ug/l | 0.37 | 3.4 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.798 ug/l | 1.80 | 3.9 | 9000 | 74 | P |
| 56 | Fe | 1 | 188.900 ug/l | 188.90 | 1.2 | 225000 | 74 | P |
| 59 | Co | 1 | 0.379 ug/l | 0.38 | 9.9 | 9000 | 74 | P |
| 60 | Ni | 1 | 2.708 ug/l | 2.71 | 2.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.837 ug/l | 1.84 | 8.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.740 ug/l | 6.74 | 6.3 | 9000 | 74 | P |
| 75 | As | 1 | 0.991 ug/l | 0.99 | 10.4 | 9000 | 74 | P |
| 78 | Se | 1 | 7.508 ug/l | 7.51 | 9.2 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.397 ug/l | 0.40 | 6.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.719 ug/l | 0.72 | 2.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.344 ug/l | 0.34 | 22.9 | 900 | 103 | P |
| 114 | Cd | 1 | 0.373 ug/l | 0.37 | 5.1 | 9000 | 103 | P |
| 118 | Sn | 1 | 8.953 ug/l | 8.95 | 3.6 | 900 | 103 | P |
| 123 | Sb | 1 | 0.407 ug/l | 0.41 | 5.7 | 900 | 103 | P |
| 135 | Ba | 1 | 1.116 ug/l | 1.12 | 4.6 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.224 ug/l | 0.22 | 8.7 | 45 | 209 | P |
| 205 | Tl | 1 | 0.873 ug/l | 0.87 | 9.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.706 ug/l | 0.71 | 3.4 | 9000 | 209 | P |
| 238 | U | 1 | 0.531 ug/l | 0.53 | 15.2 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6843768 | 2.07 | 6901000 | 99.2 | 30 - 150 |
| 74 | Ge | 1 | 5785459 | 4.21 | 5721000 | 101.1 | 30 - 150 |
| 103 | Rh | 1 | 2267754 | 1.45 | 2230000 | 101.7 | 30 - 150 |
| 165 | Ho | 1 | 3778655 | 3.92 | 3774000 | 100.1 | 30 - 150 |
| 209 | Bi | 1 | 3976796 | 1.57 | 4015000 | 99.0 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\055SMPL.D\055SMPL.D#
 Date Acquired: Jul 26 2019 11:37 am Acq. Method: 1002RUN.m
 Sample Name: MB 580-306507/1-C Vial Number: 2301
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|--------|--------|-----|------|
| 9 | Be | 1 | 0.017 ug/l | 0.17 | 110.3 | 9000 | 74 | P |
| 23 | Na | 1 | 141700.000 ug/l | 1,417,000.00 | 2.6 | 225000 | 74 | A |
| 24 | Mg | 1 | 1.480 ug/l | 14.80 | 17.5 | 225000 | 74 | P |
| 27 | Al | 1 | 2.683 ug/l | 26.83 | 0.9 | 225000 | 74 | P |
| 31 | P | 1 | 4.991 ug/l | 49.91 | 58.4 | 225000 | 74 | P |
| 39 | K | 1 | 2.111 ug/l | 21.11 | 183.0 | 225000 | 74 | P |
| 44 | Ca | 1 | 8.437 ug/l | 84.37 | 71.9 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.049 ug/l | 0.49 | 70.5 | 900 | 74 | P |
| 51 | V | 1 | 1.683 ug/l | 16.83 | 15.1 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.188 ug/l | 1.88 | 12.6 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.012 ug/l | -0.12 | 231.9 | 9000 | 74 | P |
| 56 | Fe | 1 | -5.629 ug/l | -56.29 | 7.9 | 225000 | 74 | P |
| 59 | Co | 1 | 0.007 ug/l | 0.07 | 166.7 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.075 ug/l | -0.75 | 70.1 | 9000 | 74 | P |
| 63 | Cu | 1 | -0.015 ug/l | -0.15 | 231.5 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.201 ug/l | 2.01 | 61.6 | 9000 | 74 | P |
| 75 | As | 1 | 0.604 ug/l | 6.04 | 8.0 | 9000 | 74 | P |
| 78 | Se | 1 | 0.008 ug/l | 0.08 | 1843.2 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.036 ug/l | 0.36 | 42.0 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.042 ug/l | 0.42 | 26.7 | 900 | 103 | P |
| 109 | Ag | 1 | 0.011 ug/l | 0.11 | 58.5 | 900 | 103 | P |
| 114 | Cd | 1 | -0.002 ug/l | -0.02 | 500.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.263 ug/l | 2.63 | 23.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.012 ug/l | 0.12 | 107.8 | 900 | 103 | P |
| 135 | Ba | 1 | 0.088 ug/l | 0.88 | 61.6 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.003 ug/l | -0.03 | 142.6 | 45 | 209 | P |
| 205 | Tl | 1 | 0.003 ug/l | 0.03 | 130.8 | 900 | 209 | P |
| 208 | Pb | 1 | 0.000 ug/l | 0.00 | 2260.5 | 9000 | 209 | P |
| 238 | U | 1 | 0.010 ug/l | 0.10 | 79.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7227335 | 0.90 | 6901000 | 104.7 | 30 - 150 |
| 74 | Ge | 1 | 5883572 | 0.75 | 5721000 | 102.8 | 30 - 150 |
| 103 | Rh | 1 | 2142525 | 0.69 | 2230000 | 96.1 | 30 - 150 |
| 165 | Ho | 1 | 3765271 | 1.83 | 3774000 | 99.8 | 30 - 150 |
| 209 | Bi | 1 | 3709120 | 2.04 | 4015000 | 92.4 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\056SMPL.D\056SMPL.D#
 Date Acquired: Jul 26 2019 11:41 am Acq. Method: 1002RUN.m
 Sample Name: LCS 580-306507/2-C Vial Number: 2302
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 98.420 ug/l | 984.20 | 0.7 | 9000 | 74 | P |
| 23 | Na | 1 | 147500.000 ug/l | 1,475,000.00 | 0.5 | 225000 | 74 | A |
| 24 | Mg | 1 | 1868.000 ug/l | 18,680.00 | 1.1 | 225000 | 74 | P |
| 27 | Al | 1 | 1942.000 ug/l | 19,420.00 | 0.3 | 225000 | 74 | P |
| 31 | P | 1 | 494.300 ug/l | 4,943.00 | 6.1 | 225000 | 74 | P |
| 39 | K | 1 | 1935.000 ug/l | 19,350.00 | 1.7 | 225000 | 74 | P |
| 44 | Ca | 1 | 1859.000 ug/l | 18,590.00 | 2.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 96.330 ug/l | 963.30 | 0.8 | 900 | 74 | P |
| 51 | V | 1 | 99.330 ug/l | 993.30 | 0.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 97.560 ug/l | 975.60 | 0.7 | 9000 | 74 | P |
| 55 | Mn | 1 | 95.230 ug/l | 952.30 | 0.6 | 9000 | 74 | P |
| 56 | Fe | 1 | 2079.000 ug/l | 20,790.00 | 0.8 | 225000 | 74 | A |
| 59 | Co | 1 | 95.920 ug/l | 959.20 | 0.3 | 9000 | 74 | P |
| 60 | Ni | 1 | 94.150 ug/l | 941.50 | 2.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 94.870 ug/l | 948.70 | 0.7 | 9000 | 74 | P |
| 66 | Zn | 1 | 91.840 ug/l | 918.40 | 0.4 | 9000 | 74 | P |
| 75 | As | 1 | 99.220 ug/l | 992.20 | 0.3 | 9000 | 74 | P |
| 78 | Se | 1 | 99.310 ug/l | 993.10 | 1.2 | 9000 | 74 | P |
| 88 | Sr | 1 | 95.740 ug/l | 957.40 | 0.8 | 9000 | 74 | P |
| 95 | Mo | 1 | 101.600 ug/l | 1,016.00 | 1.4 | 900 | 103 | P |
| 109 | Ag | 1 | 93.340 ug/l | 933.40 | 1.9 | 900 | 103 | P |
| 114 | Cd | 1 | 98.750 ug/l | 987.50 | 2.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 99.430 ug/l | 994.30 | 1.7 | 900 | 103 | P |
| 123 | Sb | 1 | 94.410 ug/l | 944.10 | 2.3 | 900 | 103 | P |
| 135 | Ba | 1 | 98.570 ug/l | 985.70 | 3.0 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.010 ug/l | 0.10 | 276.4 | 45 | 209 | P |
| 205 | Tl | 1 | 91.780 ug/l | 917.80 | 3.9 | 900 | 209 | P |
| 208 | Pb | 1 | 97.280 ug/l | 972.80 | 2.9 | 9000 | 209 | P |
| 238 | U | 1 | 48.080 ug/l | 480.80 | 3.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7264372 | 2.09 | 6901000 | 105.3 | 30 - 150 |
| 74 | Ge | 1 | 5978497 | 1.28 | 5721000 | 104.5 | 30 - 150 |
| 103 | Rh | 1 | 2147451 | 0.66 | 2230000 | 96.3 | 30 - 150 |
| 165 | Ho | 1 | 3728883 | 0.67 | 3774000 | 98.8 | 30 - 150 |
| 209 | Bi | 1 | 3701378 | 1.52 | 4015000 | 92.2 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\057SMPL.D\057SMPL.D#
 Date Acquired: Jul 26 2019 11:45 am Acq. Method: 1002RUN.m
 Sample Name: LCSD 580-306507/3-C Vial Number: 2303
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 103.200 ug/l | 1,032.00 | 2.5 | 9000 | 74 | P |
| 23 | Na | 1 | 156700.000 ug/l | 1,567,000.00 | 1.8 | 225000 | 74 | A |
| 24 | Mg | 1 | 1922.000 ug/l | 19,220.00 | 2.0 | 225000 | 74 | P |
| 27 | Al | 1 | 1976.000 ug/l | 19,760.00 | 2.2 | 225000 | 74 | P |
| 31 | P | 1 | 499.400 ug/l | 4,994.00 | 3.1 | 225000 | 74 | P |
| 39 | K | 1 | 1995.000 ug/l | 19,950.00 | 3.0 | 225000 | 74 | P |
| 44 | Ca | 1 | 1895.000 ug/l | 18,950.00 | 0.9 | 225000 | 74 | P |
| 47 | Ti | 1 | 99.220 ug/l | 992.20 | 2.1 | 900 | 74 | P |
| 51 | V | 1 | 102.500 ug/l | 1,025.00 | 2.4 | 9000 | 74 | P |
| 52 | Cr | 1 | 101.000 ug/l | 1,010.00 | 1.9 | 9000 | 74 | P |
| 55 | Mn | 1 | 98.660 ug/l | 986.60 | 1.5 | 9000 | 74 | P |
| 56 | Fe | 1 | 2141.000 ug/l | 21,410.00 | 2.4 | 225000 | 74 | A |
| 59 | Co | 1 | 99.000 ug/l | 990.00 | 2.3 | 9000 | 74 | P |
| 60 | Ni | 1 | 98.210 ug/l | 982.10 | 2.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 97.560 ug/l | 975.60 | 2.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 93.350 ug/l | 933.50 | 2.5 | 9000 | 74 | P |
| 75 | As | 1 | 102.800 ug/l | 1,028.00 | 3.1 | 9000 | 74 | P |
| 78 | Se | 1 | 103.200 ug/l | 1,032.00 | 2.0 | 9000 | 74 | P |
| 88 | Sr | 1 | 98.640 ug/l | 986.40 | 2.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 103.700 ug/l | 1,037.00 | 1.9 | 900 | 103 | P |
| 109 | Ag | 1 | 95.130 ug/l | 951.30 | 3.5 | 900 | 103 | P |
| 114 | Cd | 1 | 100.600 ug/l | 1,006.00 | 1.8 | 9000 | 103 | P |
| 118 | Sn | 1 | 102.800 ug/l | 1,028.00 | 2.0 | 900 | 103 | P |
| 123 | Sb | 1 | 96.460 ug/l | 964.60 | 2.9 | 900 | 103 | P |
| 135 | Ba | 1 | 101.200 ug/l | 1,012.00 | 2.9 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.004 ug/l | 0.04 | 346.8 | 45 | 209 | P |
| 205 | Tl | 1 | 93.780 ug/l | 937.80 | 4.3 | 900 | 209 | P |
| 208 | Pb | 1 | 98.540 ug/l | 985.40 | 3.8 | 9000 | 209 | P |
| 238 | U | 1 | 48.320 ug/l | 483.20 | 4.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7159290 | 3.38 | 6901000 | 103.7 | 30 - 150 |
| 74 | Ge | 1 | 5767402 | 3.81 | 5721000 | 100.8 | 30 - 150 |
| 103 | Rh | 1 | 2095112 | 3.09 | 2230000 | 94.0 | 30 - 150 |
| 165 | Ho | 1 | 3677763 | 3.61 | 3774000 | 97.4 | 30 - 150 |
| 209 | Bi | 1 | 3626415 | 5.33 | 4015000 | 90.3 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\058SMPL.D\058SMPL.D#
 Date Acquired: Jul 26 2019 11:49 am Acq. Method: 1002RUN.m
 Sample Name: 580-87662-A-3-C Vial Number: 2304
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.058 ug/l | 0.58 | 21.2 | 9000 | 74 | P |
| 23 | Na | 1 | 148800.000 ug/l | 1,488,000.00 | 0.5 | 225000 | 74 | A |
| 24 | Mg | 1 | 126.100 ug/l | 1,261.00 | 1.0 | 225000 | 74 | P |
| 27 | Al | 1 | 36.290 ug/l | 362.90 | 2.5 | 225000 | 74 | P |
| 31 | P | 1 | 13.770 ug/l | 137.70 | 73.0 | 225000 | 74 | P |
| 39 | K | 1 | 88.260 ug/l | 882.60 | 14.5 | 225000 | 74 | P |
| 44 | Ca | 1 | 631.600 ug/l | 6,316.00 | 2.3 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.341 ug/l | 3.41 | 24.9 | 900 | 74 | P |
| 51 | V | 1 | 2.089 ug/l | 20.89 | 12.5 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.629 ug/l | 6.29 | 3.3 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.489 ug/l | 4.89 | 8.7 | 9000 | 74 | P |
| 56 | Fe | 1 | 1.836 ug/l | 18.36 | 6.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.043 ug/l | 0.43 | 20.4 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.085 ug/l | 0.85 | 119.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.206 ug/l | 2.06 | 32.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 32.240 ug/l | 322.40 | 0.5 | 9000 | 74 | P |
| 75 | As | 1 | 0.730 ug/l | 7.30 | 14.3 | 9000 | 74 | P |
| 78 | Se | 1 | 0.269 ug/l | 2.69 | 81.4 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.697 ug/l | 6.97 | 3.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.228 ug/l | 2.28 | 13.8 | 900 | 103 | P |
| 109 | Ag | 1 | 0.016 ug/l | 0.16 | 46.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.017 ug/l | 0.17 | 65.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 1.048 ug/l | 10.48 | 3.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.154 ug/l | 1.54 | 27.3 | 900 | 103 | P |
| 135 | Ba | 1 | 1.036 ug/l | 10.36 | 9.0 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.002 ug/l | 0.02 | 564.1 | 45 | 209 | P |
| 205 | Tl | 1 | 0.038 ug/l | 0.38 | 15.6 | 900 | 209 | P |
| 208 | Pb | 1 | 0.268 ug/l | 2.68 | 5.0 | 9000 | 209 | P |
| 238 | U | 1 | 0.067 ug/l | 0.67 | 19.5 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7190652 | 2.13 | 6901000 | 104.2 | 30 - 150 |
| 74 | Ge | 1 | 5874912 | 2.65 | 5721000 | 102.7 | 30 - 150 |
| 103 | Rh | 1 | 2173845 | 5.22 | 2230000 | 97.5 | 30 - 150 |
| 165 | Ho | 1 | 3741894 | 3.84 | 3774000 | 99.1 | 30 - 150 |
| 209 | Bi | 1 | 3723734 | 2.78 | 4015000 | 92.7 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\059SMPL.D\059SMPL.D#
 Date Acquired: Jul 26 2019 11:54 am Acq. Method: 1002RUN.m
 Sample Name: 580-87662-A-3-D DU Vial Number: 2305
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: 10.00 Final Dil Factor: 10.00

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|--------|--------|-----|------|
| 9 | Be | 1 | 0.031 ug/l | 0.31 | 17.7 | 9000 | 74 | P |
| 23 | Na | 1 | 141400.000 ug/l | 1,414,000.00 | 2.7 | 225000 | 74 | A |
| 24 | Mg | 1 | 128.900 ug/l | 1,289.00 | 1.3 | 225000 | 74 | P |
| 27 | Al | 1 | 37.660 ug/l | 376.60 | 4.0 | 225000 | 74 | P |
| 31 | P | 1 | 0.183 ug/l | 1.83 | 6336.8 | 225000 | 74 | P |
| 39 | K | 1 | 82.220 ug/l | 822.20 | 9.0 | 225000 | 74 | P |
| 44 | Ca | 1 | 612.200 ug/l | 6,122.00 | 5.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.279 ug/l | 2.79 | 11.6 | 900 | 74 | P |
| 51 | V | 1 | 1.937 ug/l | 19.37 | 3.1 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.624 ug/l | 6.24 | 4.4 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.499 ug/l | 4.99 | 14.5 | 9000 | 74 | P |
| 56 | Fe | 1 | -0.653 ug/l | -6.53 | 56.8 | 225000 | 74 | P |
| 59 | Co | 1 | 0.020 ug/l | 0.20 | 53.0 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.014 ug/l | 0.14 | 190.9 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.212 ug/l | 2.12 | 35.8 | 9000 | 74 | P |
| 66 | Zn | 1 | 30.530 ug/l | 305.30 | 1.8 | 9000 | 74 | P |
| 75 | As | 1 | 0.673 ug/l | 6.73 | 22.9 | 9000 | 74 | P |
| 78 | Se | 1 | 0.152 ug/l | 1.52 | 183.7 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.667 ug/l | 6.67 | 7.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.111 ug/l | 1.11 | 5.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.012 ug/l | 0.12 | 81.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.022 ug/l | 0.22 | 69.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.782 ug/l | 7.82 | 9.5 | 900 | 103 | P |
| 123 | Sb | 1 | 0.070 ug/l | 0.70 | 35.3 | 900 | 103 | P |
| 135 | Ba | 1 | 0.951 ug/l | 9.51 | 11.4 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.000 ug/l | 0.00 | 4763.6 | 45 | 209 | P |
| 205 | Tl | 1 | 0.012 ug/l | 0.12 | 52.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.210 ug/l | 2.10 | 13.5 | 9000 | 209 | P |
| 238 | U | 1 | 0.032 ug/l | 0.32 | 14.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7359450 | 1.32 | 6901000 | 106.6 | 30 - 150 |
| 74 | Ge | 1 | 5977858 | 0.49 | 5721000 | 104.5 | 30 - 150 |
| 103 | Rh | 1 | 2195249 | 1.39 | 2230000 | 98.4 | 30 - 150 |
| 165 | Ho | 1 | 3823143 | 1.02 | 3774000 | 101.3 | 30 - 150 |
| 209 | Bi | 1 | 3794559 | 1.85 | 4015000 | 94.5 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\060SMPL.D\060SMPL.D#
 Date Acquired: Jul 26 2019 11:58 am Acq. Method: 1002RUN.m
 Sample Name: 580-87662-A-3-C PDS Vial Number: 2306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 91.480 ug/l | 914.80 | 1.9 | 9000 | 74 | P |
| 23 | Na | 1 | 137900.000 ug/l | 1,379,000.00 | 0.5 | 225000 | 74 | A |
| 24 | Mg | 1 | 1832.000 ug/l | 18,320.00 | 2.1 | 225000 | 74 | P |
| 27 | Al | 1 | 1805.000 ug/l | 18,050.00 | 1.7 | 225000 | 74 | P |
| 31 | P | 1 | 456.300 ug/l | 4,563.00 | 6.1 | 225000 | 74 | P |
| 39 | K | 1 | 1849.000 ug/l | 18,490.00 | 3.0 | 225000 | 74 | P |
| 44 | Ca | 1 | 2256.000 ug/l | 22,560.00 | 0.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 89.210 ug/l | 892.10 | 3.3 | 900 | 74 | P |
| 51 | V | 1 | 91.360 ug/l | 913.60 | 1.9 | 9000 | 74 | P |
| 52 | Cr | 1 | 90.510 ug/l | 905.10 | 2.3 | 9000 | 74 | P |
| 55 | Mn | 1 | 87.950 ug/l | 879.50 | 1.9 | 9000 | 74 | P |
| 56 | Fe | 1 | 1890.000 ug/l | 18,900.00 | 3.4 | 225000 | 74 | A |
| 59 | Co | 1 | 89.100 ug/l | 891.00 | 2.6 | 9000 | 74 | P |
| 60 | Ni | 1 | 89.530 ug/l | 895.30 | 2.7 | 9000 | 74 | P |
| 63 | Cu | 1 | 87.330 ug/l | 873.30 | 1.7 | 9000 | 74 | P |
| 66 | Zn | 1 | 115.000 ug/l | 1,150.00 | 0.9 | 9000 | 74 | P |
| 75 | As | 1 | 91.790 ug/l | 917.90 | 2.6 | 9000 | 74 | P |
| 78 | Se | 1 | 91.650 ug/l | 916.50 | 1.2 | 9000 | 74 | P |
| 88 | Sr | 1 | 88.860 ug/l | 888.60 | 1.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 91.550 ug/l | 915.50 | 2.6 | 900 | 103 | P |
| 109 | Ag | 1 | 84.920 ug/l | 849.20 | 2.4 | 900 | 103 | P |
| 114 | Cd | 1 | 89.550 ug/l | 895.50 | 2.7 | 9000 | 103 | P |
| 118 | Sn | 1 | 90.470 ug/l | 904.70 | 3.2 | 900 | 103 | P |
| 123 | Sb | 1 | 78.490 ug/l | 784.90 | 2.3 | 900 | 103 | P |
| 135 | Ba | 1 | 90.790 ug/l | 907.90 | 2.6 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.010 ug/l | 0.10 | 107.0 | 45 | 209 | P |
| 205 | Tl | 1 | 86.330 ug/l | 863.30 | 2.1 | 900 | 209 | P |
| 208 | Pb | 1 | 89.260 ug/l | 892.60 | 2.8 | 9000 | 209 | P |
| 238 | U | 1 | 44.520 ug/l | 445.20 | 3.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7183125 | 1.09 | 6901000 | 104.1 | 30 - 150 |
| 74 | Ge | 1 | 5864240 | 1.90 | 5721000 | 102.5 | 30 - 150 |
| 103 | Rh | 1 | 2152418 | 1.56 | 2230000 | 96.5 | 30 - 150 |
| 165 | Ho | 1 | 3742373 | 0.72 | 3774000 | 99.2 | 30 - 150 |
| 209 | Bi | 1 | 3680336 | 0.84 | 4015000 | 91.7 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\061SMPL.D\061SMPL.D#
 Date Acquired: Jul 26 2019 12:02 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87662-A-3-E MS Vial Number: 2307
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|------|--------|-----|------|
| 9 | Be | 1 | 97.890 ug/l | 978.90 | 1.0 | 9000 | 74 | P |
| 23 | Na | 1 | 142900.000 ug/l | 1,429,000.00 | 1.7 | 225000 | 74 | A |
| 24 | Mg | 1 | 1996.000 ug/l | 19,960.00 | 0.3 | 225000 | 74 | P |
| 27 | Al | 1 | 1977.000 ug/l | 19,770.00 | 1.5 | 225000 | 74 | P |
| 31 | P | 1 | 489.600 ug/l | 4,896.00 | 1.4 | 225000 | 74 | P |
| 39 | K | 1 | 2024.000 ug/l | 20,240.00 | 0.8 | 225000 | 74 | P |
| 44 | Ca | 1 | 2511.000 ug/l | 25,110.00 | 2.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 96.840 ug/l | 968.40 | 0.8 | 900 | 74 | P |
| 51 | V | 1 | 99.110 ug/l | 991.10 | 1.0 | 9000 | 74 | P |
| 52 | Cr | 1 | 97.820 ug/l | 978.20 | 0.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 96.250 ug/l | 962.50 | 1.5 | 9000 | 74 | P |
| 56 | Fe | 1 | 2044.000 ug/l | 20,440.00 | 0.2 | 225000 | 74 | A |
| 59 | Co | 1 | 95.700 ug/l | 957.00 | 0.2 | 9000 | 74 | P |
| 60 | Ni | 1 | 94.570 ug/l | 945.70 | 1.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 94.050 ug/l | 940.50 | 1.8 | 9000 | 74 | P |
| 66 | Zn | 1 | 123.300 ug/l | 1,233.00 | 0.5 | 9000 | 74 | P |
| 75 | As | 1 | 98.870 ug/l | 988.70 | 0.6 | 9000 | 74 | P |
| 78 | Se | 1 | 99.440 ug/l | 994.40 | 0.5 | 9000 | 74 | P |
| 88 | Sr | 1 | 96.170 ug/l | 961.70 | 1.1 | 9000 | 74 | P |
| 95 | Mo | 1 | 99.300 ug/l | 993.00 | 1.6 | 900 | 103 | P |
| 109 | Ag | 1 | 91.910 ug/l | 919.10 | 1.3 | 900 | 103 | P |
| 114 | Cd | 1 | 97.190 ug/l | 971.90 | 1.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 98.900 ug/l | 989.00 | 1.3 | 900 | 103 | P |
| 123 | Sb | 1 | 93.410 ug/l | 934.10 | 1.1 | 900 | 103 | P |
| 135 | Ba | 1 | 98.710 ug/l | 987.10 | 0.4 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.002 ug/l | 0.02 | 97.5 | 45 | 209 | P |
| 205 | Tl | 1 | 91.270 ug/l | 912.70 | 3.1 | 900 | 209 | P |
| 208 | Pb | 1 | 96.090 ug/l | 960.90 | 2.0 | 9000 | 209 | P |
| 238 | U | 1 | 47.650 ug/l | 476.50 | 1.5 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7159477 | 0.91 | 6901000 | 103.7 | 30 - 150 |
| 74 | Ge | 1 | 5793889 | 0.71 | 5721000 | 101.3 | 30 - 150 |
| 103 | Rh | 1 | 2121555 | 0.88 | 2230000 | 95.1 | 30 - 150 |
| 165 | Ho | 1 | 3695260 | 1.34 | 3774000 | 97.9 | 30 - 150 |
| 209 | Bi | 1 | 3634064 | 0.16 | 4015000 | 90.5 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\062SMPL.D\062SMPL.D#
 Date Acquired: Jul 26 2019 12:06 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87662-A-3-F MSD Vial Number: 2308
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|------|--------|-----|------|
| 9 | Be | 1 | 94.240 ug/l | 942.40 | 2.2 | 9000 | 74 | P |
| 23 | Na | 1 | 135600.000 ug/l | 1,356,000.00 | 2.5 | 225000 | 74 | A |
| 24 | Mg | 1 | 1932.000 ug/l | 19,320.00 | 2.1 | 225000 | 74 | P |
| 27 | Al | 1 | 1898.000 ug/l | 18,980.00 | 2.2 | 225000 | 74 | P |
| 31 | P | 1 | 453.100 ug/l | 4,531.00 | 1.0 | 225000 | 74 | P |
| 39 | K | 1 | 1954.000 ug/l | 19,540.00 | 1.2 | 225000 | 74 | P |
| 44 | Ca | 1 | 2516.000 ug/l | 25,160.00 | 1.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 92.450 ug/l | 924.50 | 2.3 | 900 | 74 | P |
| 51 | V | 1 | 94.680 ug/l | 946.80 | 1.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 93.160 ug/l | 931.60 | 2.1 | 9000 | 74 | P |
| 55 | Mn | 1 | 90.470 ug/l | 904.70 | 2.9 | 9000 | 74 | P |
| 56 | Fe | 1 | 1935.000 ug/l | 19,350.00 | 3.4 | 225000 | 74 | A |
| 59 | Co | 1 | 91.290 ug/l | 912.90 | 2.9 | 9000 | 74 | P |
| 60 | Ni | 1 | 90.840 ug/l | 908.40 | 1.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 90.750 ug/l | 907.50 | 3.2 | 9000 | 74 | P |
| 66 | Zn | 1 | 117.800 ug/l | 1,178.00 | 3.2 | 9000 | 74 | P |
| 75 | As | 1 | 94.390 ug/l | 943.90 | 2.4 | 9000 | 74 | P |
| 78 | Se | 1 | 94.660 ug/l | 946.60 | 2.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 92.250 ug/l | 922.50 | 3.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 97.010 ug/l | 970.10 | 3.2 | 900 | 103 | P |
| 109 | Ag | 1 | 90.570 ug/l | 905.70 | 1.8 | 900 | 103 | P |
| 114 | Cd | 1 | 94.680 ug/l | 946.80 | 2.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 96.530 ug/l | 965.30 | 3.6 | 900 | 103 | P |
| 123 | Sb | 1 | 90.890 ug/l | 908.90 | 3.0 | 900 | 103 | P |
| 135 | Ba | 1 | 96.810 ug/l | 968.10 | 3.0 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.005 ug/l | -0.05 | 69.3 | 45 | 209 | P |
| 205 | Tl | 1 | 88.440 ug/l | 884.40 | 3.9 | 900 | 209 | P |
| 208 | Pb | 1 | 93.310 ug/l | 933.10 | 3.4 | 9000 | 209 | P |
| 238 | U | 1 | 46.300 ug/l | 463.00 | 3.0 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7201095 | 0.90 | 6901000 | 104.3 | 30 - 150 |
| 74 | Ge | 1 | 5934041 | 0.74 | 5721000 | 103.7 | 30 - 150 |
| 103 | Rh | 1 | 2118308 | 2.17 | 2230000 | 95.0 | 30 - 150 |
| 165 | Ho | 1 | 3738794 | 1.21 | 3774000 | 99.1 | 30 - 150 |
| 209 | Bi | 1 | 3656564 | 0.62 | 4015000 | 91.1 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\063SMPL.D\063SMPL.D#
 Date Acquired: Jul 26 2019 12:11 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87662-A-3-C SD Vial Number: 2309
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **50.00** Final Dil Factor: **50.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|--------------|--------|--------|-----|------|
| 9 | Be | 1 | 0.054 ug/l | 2.71 | 39.8 | 9000 | 74 | P |
| 23 | Na | 1 | 30870.000 ug/l | 1,543,500.00 | 5.2 | 225000 | 74 | A |
| 24 | Mg | 1 | 26.460 ug/l | 1,323.00 | 5.7 | 225000 | 74 | P |
| 27 | Al | 1 | 9.300 ug/l | 465.00 | 10.5 | 225000 | 74 | P |
| 31 | P | 1 | 0.554 ug/l | 27.72 | 2155.9 | 225000 | 74 | P |
| 39 | K | 1 | 15.860 ug/l | 793.00 | 83.6 | 225000 | 74 | P |
| 44 | Ca | 1 | 130.400 ug/l | 6,520.00 | 4.0 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.389 ug/l | 19.46 | 35.1 | 900 | 74 | P |
| 51 | V | 1 | 0.648 ug/l | 32.38 | 63.6 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.166 ug/l | 8.28 | 22.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.081 ug/l | 4.03 | 20.4 | 9000 | 74 | P |
| 56 | Fe | 1 | -3.353 ug/l | -167.65 | 13.8 | 225000 | 74 | P |
| 59 | Co | 1 | 0.021 ug/l | 1.04 | 33.3 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.106 ug/l | -5.28 | 97.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.003 ug/l | 0.17 | 1107.0 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.857 ug/l | 342.85 | 4.7 | 9000 | 74 | P |
| 75 | As | 1 | 0.314 ug/l | 15.72 | 58.0 | 9000 | 74 | P |
| 78 | Se | 1 | 0.341 ug/l | 17.03 | 82.9 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.179 ug/l | 8.95 | 16.3 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.208 ug/l | 10.42 | 25.8 | 900 | 103 | P |
| 109 | Ag | 1 | 0.019 ug/l | 0.94 | 10.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.021 ug/l | 1.06 | 26.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.580 ug/l | 29.01 | 6.6 | 900 | 103 | P |
| 123 | Sb | 1 | 0.235 ug/l | 11.76 | 14.6 | 900 | 103 | P |
| 135 | Ba | 1 | 0.202 ug/l | 10.09 | 10.1 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.010 ug/l | 0.51 | 146.8 | 45 | 209 | P |
| 205 | Tl | 1 | 0.039 ug/l | 1.95 | 20.8 | 900 | 209 | P |
| 208 | Pb | 1 | 0.096 ug/l | 4.82 | 4.5 | 9000 | 209 | P |
| 238 | U | 1 | 0.076 ug/l | 3.81 | 27.0 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7344124 | 5.55 | 6901000 | 106.4 | 30 - 150 |
| 74 | Ge | 1 | 5966923 | 3.59 | 5721000 | 104.3 | 30 - 150 |
| 103 | Rh | 1 | 2209869 | 3.62 | 2230000 | 99.1 | 30 - 150 |
| 165 | Ho | 1 | 3810633 | 4.47 | 3774000 | 101.0 | 30 - 150 |
| 209 | Bi | 1 | 3783761 | 3.83 | 4015000 | 94.2 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\064SMPL.D\064SMPL.D#
 Date Acquired: Jul 26 2019 12:15 pm Acq. Method: 1002RUN.m
 Sample Name: CCV-2361404 Vial Number: 1104
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|-----|--------|-----|------|
| 9 | Be | 1 | 48.360 ug/l | 48.36 | 1.1 | 9000 | 74 | P |
| 23 | Na | 1 | 5044.000 ug/l | 5,044.00 | 2.3 | 225000 | 74 | A |
| 24 | Mg | 1 | 4966.000 ug/l | 4,966.00 | 1.6 | 225000 | 74 | A |
| 27 | Al | 1 | 480.300 ug/l | 480.30 | 2.5 | 225000 | 74 | P |
| 31 | P | 1 | 4777.000 ug/l | 4,777.00 | 0.5 | 225000 | 74 | P |
| 39 | K | 1 | 5053.000 ug/l | 5,053.00 | 3.6 | 225000 | 74 | A |
| 44 | Ca | 1 | 4825.000 ug/l | 4,825.00 | 3.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 48.120 ug/l | 48.12 | 1.2 | 900 | 74 | P |
| 51 | V | 1 | 48.570 ug/l | 48.57 | 1.1 | 9000 | 74 | P |
| 52 | Cr | 1 | 48.330 ug/l | 48.33 | 0.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 48.240 ug/l | 48.24 | 0.7 | 9000 | 74 | P |
| 56 | Fe | 1 | 4977.000 ug/l | 4,977.00 | 1.6 | 225000 | 74 | A |
| 59 | Co | 1 | 47.900 ug/l | 47.90 | 0.9 | 9000 | 74 | P |
| 60 | Ni | 1 | 48.190 ug/l | 48.19 | 0.9 | 9000 | 74 | P |
| 63 | Cu | 1 | 47.580 ug/l | 47.58 | 0.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 47.590 ug/l | 47.59 | 1.6 | 9000 | 74 | P |
| 75 | As | 1 | 48.310 ug/l | 48.31 | 2.8 | 9000 | 74 | P |
| 78 | Se | 1 | 47.870 ug/l | 47.87 | 0.7 | 9000 | 74 | P |
| 88 | Sr | 1 | 48.630 ug/l | 48.63 | 1.8 | 9000 | 74 | P |
| 95 | Mo | 1 | 49.130 ug/l | 49.13 | 2.0 | 900 | 103 | P |
| 109 | Ag | 1 | 48.480 ug/l | 48.48 | 1.4 | 900 | 103 | P |
| 114 | Cd | 1 | 48.830 ug/l | 48.83 | 2.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 49.040 ug/l | 49.04 | 2.8 | 900 | 103 | P |
| 123 | Sb | 1 | 48.760 ug/l | 48.76 | 3.2 | 900 | 103 | P |
| 135 | Ba | 1 | 48.700 ug/l | 48.70 | 2.9 | 9000 | 103 | P |
| 201 | Hg | 1 | 2.462 ug/l | 2.46 | 0.5 | 45 | 209 | P |
| 205 | Tl | 1 | 46.880 ug/l | 46.88 | 1.0 | 900 | 209 | P |
| 208 | Pb | 1 | 47.200 ug/l | 47.20 | 1.3 | 9000 | 209 | P |
| 238 | U | 1 | 45.910 ug/l | 45.91 | 1.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7312681 | 1.31 | 6901000 | 106.0 | 30 - 150 |
| 74 | Ge | 1 | 6012220 | 0.72 | 5721000 | 105.1 | 30 - 150 |
| 103 | Rh | 1 | 2211094 | 1.03 | 2230000 | 99.2 | 30 - 150 |
| 165 | Ho | 1 | 3779753 | 0.45 | 3774000 | 100.2 | 30 - 150 |
| 209 | Bi | 1 | 3903889 | 1.50 | 4015000 | 97.2 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\065SMPL.D\065SMPL.D#
 Date Acquired: Jul 26 2019 12:19 pm Acq. Method: 1002RUN.m
 Sample Name: CCB Vial Number: 1306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-------------|--------|--------|--------|-----|------|
| 9 | Be | 1 | 0.065 ug/l | 0.07 | 7.0 | 9000 | 74 | P |
| 23 | Na | 1 | 42.560 ug/l | 42.56 | 4.5 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.202 ug/l | 1.20 | 7.0 | 225000 | 74 | P |
| 27 | Al | 1 | 0.158 ug/l | 0.16 | 112.3 | 225000 | 74 | P |
| 31 | P | 1 | 2.288 ug/l | 2.29 | 328.6 | 225000 | 74 | P |
| 39 | K | 1 | -6.656 ug/l | -6.66 | 53.4 | 225000 | 74 | P |
| 44 | Ca | 1 | 0.912 ug/l | 0.91 | 492.3 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.193 ug/l | 0.19 | 58.0 | 900 | 74 | P |
| 51 | V | 1 | 0.398 ug/l | 0.40 | 8.2 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.020 ug/l | 0.02 | 84.5 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.062 ug/l | -0.06 | 33.2 | 9000 | 74 | P |
| 56 | Fe | 1 | 2.911 ug/l | 2.91 | 27.6 | 225000 | 74 | P |
| 59 | Co | 1 | 0.022 ug/l | 0.02 | 44.3 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.107 ug/l | -0.11 | 23.5 | 9000 | 74 | P |
| 63 | Cu | 1 | -0.056 ug/l | -0.06 | 20.0 | 9000 | 74 | P |
| 66 | Zn | 1 | -0.106 ug/l | -0.11 | 51.1 | 9000 | 74 | P |
| 75 | As | 1 | 0.138 ug/l | 0.14 | 40.4 | 9000 | 74 | P |
| 78 | Se | 1 | 0.126 ug/l | 0.13 | 50.6 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.001 ug/l | 0.00 | 4362.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.138 ug/l | 0.14 | 20.0 | 900 | 103 | P |
| 109 | Ag | 1 | 0.009 ug/l | 0.01 | 76.2 | 900 | 103 | P |
| 114 | Cd | 1 | 0.014 ug/l | 0.01 | 51.6 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.256 ug/l | 0.26 | 8.2 | 900 | 103 | P |
| 123 | Sb | 1 | 0.140 ug/l | 0.14 | 9.6 | 900 | 103 | P |
| 135 | Ba | 1 | 0.002 ug/l | 0.00 | 935.5 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.003 ug/l | 0.00 | 104.3 | 45 | 209 | P |
| 205 | Tl | 1 | 0.016 ug/l | 0.02 | 36.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.011 ug/l | 0.01 | 20.7 | 9000 | 209 | P |
| 238 | U | 1 | 0.067 ug/l | 0.07 | 31.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7171370 | 1.67 | 6901000 | 103.9 | 30 - 150 |
| 74 | Ge | 1 | 5962921 | 0.36 | 5721000 | 104.2 | 30 - 150 |
| 103 | Rh | 1 | 2286895 | 3.94 | 2230000 | 102.6 | 30 - 150 |
| 165 | Ho | 1 | 3816070 | 1.98 | 3774000 | 101.1 | 30 - 150 |
| 209 | Bi | 1 | 3941299 | 2.83 | 4015000 | 98.2 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\066SMPL.D\066SMPL.D#
 Date Acquired: Jul 26 2019 12:23 pm Acq. Method: 1002RUN.m
 Sample Name: CCVL-2361376 Vial Number: 1106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|------|--------|-----|------|
| 9 | Be | 1 | 0.375 ug/l | 0.37 | 16.5 | 9000 | 74 | P |
| 23 | Na | 1 | 25.960 ug/l | 25.96 | 33.4 | 225000 | 74 | P |
| 24 | Mg | 1 | 0.600 ug/l | 0.60 | 32.8 | 225000 | 74 | P |
| 27 | Al | 1 | 88.410 ug/l | 88.41 | 8.7 | 225000 | 74 | P |
| 31 | P | 1 | 438.800 ug/l | 438.80 | 6.7 | 225000 | 74 | P |
| 39 | K | 1 | -27.690 ug/l | -27.69 | 62.5 | 225000 | 74 | P |
| 44 | Ca | 1 | -3.464 ug/l | -3.46 | 36.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.045 ug/l | 1.05 | 17.0 | 900 | 74 | P |
| 51 | V | 1 | 3.256 ug/l | 3.26 | 16.1 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.325 ug/l | 0.32 | 13.9 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.741 ug/l | 1.74 | 3.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 176.600 ug/l | 176.60 | 4.2 | 225000 | 74 | P |
| 59 | Co | 1 | 0.374 ug/l | 0.37 | 10.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 2.505 ug/l | 2.51 | 10.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.762 ug/l | 1.76 | 4.3 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.910 ug/l | 6.91 | 9.5 | 9000 | 74 | P |
| 75 | As | 1 | 0.795 ug/l | 0.79 | 33.1 | 9000 | 74 | P |
| 78 | Se | 1 | 6.960 ug/l | 6.96 | 8.7 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.269 ug/l | 0.27 | 9.1 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.753 ug/l | 0.75 | 7.6 | 900 | 103 | P |
| 109 | Ag | 1 | 0.369 ug/l | 0.37 | 5.0 | 900 | 103 | P |
| 114 | Cd | 1 | 0.428 ug/l | 0.43 | 16.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 9.166 ug/l | 9.17 | 1.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.438 ug/l | 0.44 | 6.8 | 900 | 103 | P |
| 135 | Ba | 1 | 1.060 ug/l | 1.06 | 9.1 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.246 ug/l | 0.25 | 6.0 | 45 | 209 | P |
| 205 | Tl | 1 | 0.914 ug/l | 0.91 | 1.3 | 900 | 209 | P |
| 208 | Pb | 1 | 0.725 ug/l | 0.72 | 2.4 | 9000 | 209 | P |
| 238 | U | 1 | 0.564 ug/l | 0.56 | 3.5 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7562353 | 3.39 | 6901000 | 109.6 | 30 - 150 |
| 74 | Ge | 1 | 6236863 | 3.15 | 5721000 | 109.0 | 30 - 150 |
| 103 | Rh | 1 | 2278640 | 0.89 | 2230000 | 102.2 | 30 - 150 |
| 165 | Ho | 1 | 3926848 | 2.89 | 3774000 | 104.1 | 30 - 150 |
| 209 | Bi | 1 | 3944015 | 0.76 | 4015000 | 98.2 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\067SMPL.D\067SMPL.D#
 Date Acquired: Jul 26 2019 12:28 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87759-C-1-C Vial Number: 2401
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.101 ug/l | 1.01 | 31.9 | 9000 | 74 | P |
| 23 | Na | 1 | 134000.000 ug/l | 1,340,000.00 | 0.6 | 225000 | 74 | A |
| 24 | Mg | 1 | 1216.000 ug/l | 12,160.00 | 1.1 | 225000 | 74 | P |
| 27 | Al | 1 | 14.280 ug/l | 142.80 | 6.8 | 225000 | 74 | P |
| 31 | P | 1 | 4.627 ug/l | 46.27 | 140.4 | 225000 | 74 | P |
| 39 | K | 1 | 379.000 ug/l | 3,790.00 | 1.5 | 225000 | 74 | P |
| 44 | Ca | 1 | 4032.000 ug/l | 40,320.00 | 1.9 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.131 ug/l | 1.31 | 68.0 | 900 | 74 | P |
| 51 | V | 1 | 2.425 ug/l | 24.25 | 5.2 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.328 ug/l | 3.28 | 8.0 | 9000 | 74 | P |
| 55 | Mn | 1 | 440.200 ug/l | 4,402.00 | 1.5 | 9000 | 74 | P |
| 56 | Fe | 1 | 18.230 ug/l | 182.30 | 1.4 | 225000 | 74 | P |
| 59 | Co | 1 | 5.275 ug/l | 52.75 | 4.0 | 9000 | 74 | P |
| 60 | Ni | 1 | 1.899 ug/l | 18.99 | 12.0 | 9000 | 74 | P |
| 63 | Cu | 1 | 2.218 ug/l | 22.18 | 1.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 32.110 ug/l | 321.10 | 3.1 | 9000 | 74 | P |
| 75 | As | 1 | 1.413 ug/l | 14.13 | 12.1 | 9000 | 74 | P |
| 78 | Se | 1 | 0.203 ug/l | 2.03 | 94.5 | 9000 | 74 | P |
| 88 | Sr | 1 | 29.490 ug/l | 294.90 | 1.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.059 ug/l | 0.59 | 78.9 | 900 | 103 | P |
| 109 | Ag | 1 | 0.006 ug/l | 0.06 | 67.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.207 ug/l | 2.07 | 1.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.279 ug/l | 2.79 | 24.6 | 900 | 103 | P |
| 123 | Sb | 1 | 0.083 ug/l | 0.83 | 33.6 | 900 | 103 | P |
| 135 | Ba | 1 | 43.860 ug/l | 438.60 | 3.4 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.008 ug/l | 0.08 | 159.6 | 45 | 209 | P |
| 205 | Tl | 1 | 0.015 ug/l | 0.15 | 55.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.278 ug/l | 2.78 | 7.0 | 9000 | 209 | P |
| 238 | U | 1 | 0.157 ug/l | 1.57 | 4.2 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7187524 | 2.10 | 6901000 | 104.2 | 30 - 150 |
| 74 | Ge | 1 | 5921214 | 0.16 | 5721000 | 103.5 | 30 - 150 |
| 103 | Rh | 1 | 2146020 | 1.36 | 2230000 | 96.2 | 30 - 150 |
| 165 | Ho | 1 | 3750790 | 0.85 | 3774000 | 99.4 | 30 - 150 |
| 209 | Bi | 1 | 3673526 | 0.92 | 4015000 | 91.5 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\068SMPL.D\068SMPL.D#
 Date Acquired: Jul 26 2019 12:32 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87676-B-1-B Vial Number: 2402
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.037 ug/l | 0.37 | 46.2 | 9000 | 74 | P |
| 23 | Na | 1 | 153200.000 ug/l | 1,532,000.00 | 3.7 | 225000 | 74 | A |
| 24 | Mg | 1 | 392.700 ug/l | 3,927.00 | 4.6 | 225000 | 74 | P |
| 27 | Al | 1 | 170.800 ug/l | 1,708.00 | 3.5 | 225000 | 74 | P |
| 31 | P | 1 | 38.360 ug/l | 383.60 | 31.0 | 225000 | 74 | P |
| 39 | K | 1 | 228.800 ug/l | 2,288.00 | 11.0 | 225000 | 74 | P |
| 44 | Ca | 1 | 1546.000 ug/l | 15,460.00 | 1.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.844 ug/l | 8.44 | 10.3 | 900 | 74 | P |
| 51 | V | 1 | 5.881 ug/l | 58.81 | 10.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 9.700 ug/l | 97.00 | 6.0 | 9000 | 74 | P |
| 55 | Mn | 1 | 4.592 ug/l | 45.92 | 5.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 175.100 ug/l | 1,751.00 | 4.9 | 225000 | 74 | P |
| 59 | Co | 1 | 0.184 ug/l | 1.84 | 6.6 | 9000 | 74 | P |
| 60 | Ni | 1 | 7.447 ug/l | 74.47 | 6.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.043 ug/l | 10.43 | 6.8 | 9000 | 74 | P |
| 66 | Zn | 1 | 5.446 ug/l | 54.46 | 9.5 | 9000 | 74 | P |
| 75 | As | 1 | 0.982 ug/l | 9.82 | 17.5 | 9000 | 74 | P |
| 78 | Se | 1 | 1.155 ug/l | 11.55 | 33.0 | 9000 | 74 | P |
| 88 | Sr | 1 | 2.664 ug/l | 26.64 | 5.2 | 9000 | 74 | P |
| 95 | Mo | 1 | 1.281 ug/l | 12.81 | 7.9 | 900 | 103 | P |
| 109 | Ag | 1 | 0.022 ug/l | 0.22 | 11.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.045 ug/l | 0.45 | 31.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.284 ug/l | 2.84 | 23.1 | 900 | 103 | P |
| 123 | Sb | 1 | 0.073 ug/l | 0.73 | 5.5 | 900 | 103 | P |
| 135 | Ba | 1 | 2.206 ug/l | 22.06 | 6.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.004 ug/l | 0.04 | 357.6 | 45 | 209 | P |
| 205 | Tl | 1 | 0.023 ug/l | 0.23 | 67.1 | 900 | 209 | P |
| 208 | Pb | 1 | 0.417 ug/l | 4.17 | 4.7 | 9000 | 209 | P |
| 238 | U | 1 | 0.068 ug/l | 0.68 | 15.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6761226 | 2.29 | 6901000 | 98.0 | 30 - 150 |
| 74 | Ge | 1 | 5498035 | 3.33 | 5721000 | 96.1 | 30 - 150 |
| 103 | Rh | 1 | 2072939 | 4.34 | 2230000 | 93.0 | 30 - 150 |
| 165 | Ho | 1 | 3611843 | 2.64 | 3774000 | 95.7 | 30 - 150 |
| 209 | Bi | 1 | 3679228 | 3.98 | 4015000 | 91.6 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\069SMPL.D\069SMPL.D#
 Date Acquired: Jul 26 2019 12:36 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87677-B-1-B Vial Number: 2403
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.028 ug/l | 0.28 | 17.7 | 9000 | 74 | P |
| 23 | Na | 1 | 150100.000 ug/l | 1,501,000.00 | 2.2 | 225000 | 74 | A |
| 24 | Mg | 1 | 424.700 ug/l | 4,247.00 | 2.9 | 225000 | 74 | P |
| 27 | Al | 1 | 163.500 ug/l | 1,635.00 | 2.6 | 225000 | 74 | P |
| 31 | P | 1 | 35.540 ug/l | 355.40 | 34.6 | 225000 | 74 | P |
| 39 | K | 1 | 220.700 ug/l | 2,207.00 | 7.4 | 225000 | 74 | P |
| 44 | Ca | 1 | 1815.000 ug/l | 18,150.00 | 4.0 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.058 ug/l | 10.58 | 9.8 | 900 | 74 | P |
| 51 | V | 1 | 4.739 ug/l | 47.39 | 5.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 5.501 ug/l | 55.01 | 4.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 5.635 ug/l | 56.35 | 2.6 | 9000 | 74 | P |
| 56 | Fe | 1 | 100.600 ug/l | 1,006.00 | 3.5 | 225000 | 74 | P |
| 59 | Co | 1 | 0.169 ug/l | 1.69 | 11.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 6.536 ug/l | 65.36 | 2.9 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.256 ug/l | 12.56 | 10.3 | 9000 | 74 | P |
| 66 | Zn | 1 | 8.002 ug/l | 80.02 | 4.2 | 9000 | 74 | P |
| 75 | As | 1 | 0.669 ug/l | 6.69 | 11.4 | 9000 | 74 | P |
| 78 | Se | 1 | 0.761 ug/l | 7.61 | 19.7 | 9000 | 74 | P |
| 88 | Sr | 1 | 4.001 ug/l | 40.01 | 3.9 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.994 ug/l | 9.94 | 2.1 | 900 | 103 | P |
| 109 | Ag | 1 | 0.032 ug/l | 0.32 | 4.0 | 900 | 103 | P |
| 114 | Cd | 1 | 0.019 ug/l | 0.19 | 43.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.201 ug/l | 2.01 | 18.0 | 900 | 103 | P |
| 123 | Sb | 1 | 0.065 ug/l | 0.65 | 25.3 | 900 | 103 | P |
| 135 | Ba | 1 | 2.719 ug/l | 27.19 | 6.6 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.004 ug/l | -0.04 | 185.5 | 45 | 209 | P |
| 205 | Tl | 1 | 0.006 ug/l | 0.06 | 58.1 | 900 | 209 | P |
| 208 | Pb | 1 | 0.390 ug/l | 3.90 | 7.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.039 ug/l | 0.39 | 31.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6769791 | 1.54 | 6901000 | 98.1 | 30 - 150 |
| 74 | Ge | 1 | 5624056 | 1.17 | 5721000 | 98.3 | 30 - 150 |
| 103 | Rh | 1 | 2137939 | 0.44 | 2230000 | 95.9 | 30 - 150 |
| 165 | Ho | 1 | 3740649 | 2.19 | 3774000 | 99.1 | 30 - 150 |
| 209 | Bi | 1 | 3869619 | 1.59 | 4015000 | 96.4 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\070SMPL.D\070SMPL.D#
 Date Acquired: Jul 26 2019 12:41 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87678-A-1-B Vial Number: 2404
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.031 ug/l | 0.31 | 17.2 | 9000 | 74 | P |
| 23 | Na | 1 | 153800.000 ug/l | 1,538,000.00 | 3.4 | 225000 | 74 | A |
| 24 | Mg | 1 | 378.100 ug/l | 3,781.00 | 2.1 | 225000 | 74 | P |
| 27 | Al | 1 | 141.500 ug/l | 1,415.00 | 3.5 | 225000 | 74 | P |
| 31 | P | 1 | 20.220 ug/l | 202.20 | 32.8 | 225000 | 74 | P |
| 39 | K | 1 | 193.200 ug/l | 1,932.00 | 8.3 | 225000 | 74 | P |
| 44 | Ca | 1 | 1456.000 ug/l | 14,560.00 | 4.9 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.772 ug/l | 7.72 | 14.5 | 900 | 74 | P |
| 51 | V | 1 | 3.973 ug/l | 39.73 | 14.4 | 9000 | 74 | P |
| 52 | Cr | 1 | 7.330 ug/l | 73.30 | 2.8 | 9000 | 74 | P |
| 55 | Mn | 1 | 4.507 ug/l | 45.07 | 3.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 130.400 ug/l | 1,304.00 | 2.8 | 225000 | 74 | P |
| 59 | Co | 1 | 0.176 ug/l | 1.76 | 8.3 | 9000 | 74 | P |
| 60 | Ni | 1 | 7.310 ug/l | 73.10 | 6.5 | 9000 | 74 | P |
| 63 | Cu | 1 | 2.429 ug/l | 24.29 | 4.0 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.146 ug/l | 61.46 | 8.2 | 9000 | 74 | P |
| 75 | As | 1 | 0.836 ug/l | 8.36 | 5.8 | 9000 | 74 | P |
| 78 | Se | 1 | 0.591 ug/l | 5.91 | 40.5 | 9000 | 74 | P |
| 88 | Sr | 1 | 2.747 ug/l | 27.47 | 2.8 | 9000 | 74 | P |
| 95 | Mo | 1 | 1.328 ug/l | 13.28 | 2.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.035 ug/l | 0.35 | 30.1 | 900 | 103 | P |
| 114 | Cd | 1 | 0.026 ug/l | 0.26 | 13.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.119 ug/l | 1.19 | 23.1 | 900 | 103 | P |
| 123 | Sb | 1 | 0.036 ug/l | 0.36 | 41.4 | 900 | 103 | P |
| 135 | Ba | 1 | 1.762 ug/l | 17.62 | 10.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.003 ug/l | 0.03 | 422.5 | 45 | 209 | P |
| 205 | Tl | 1 | 0.006 ug/l | 0.06 | 42.1 | 900 | 209 | P |
| 208 | Pb | 1 | 0.439 ug/l | 4.39 | 2.0 | 9000 | 209 | P |
| 238 | U | 1 | 0.032 ug/l | 0.32 | 23.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6704160 | 0.78 | 6901000 | 97.1 | 30 - 150 |
| 74 | Ge | 1 | 5570570 | 2.31 | 5721000 | 97.4 | 30 - 150 |
| 103 | Rh | 1 | 2135056 | 2.07 | 2230000 | 95.7 | 30 - 150 |
| 165 | Ho | 1 | 3735103 | 1.09 | 3774000 | 99.0 | 30 - 150 |
| 209 | Bi | 1 | 3929851 | 0.55 | 4015000 | 97.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\071SMPL.D\071SMPL.D#
 Date Acquired: Jul 26 2019 12:45 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87679-B-1-B Vial Number: 2405
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|--------|--------|-----|------|
| 9 | Be | 1 | 0.033 ug/l | 0.33 | 14.0 | 9000 | 74 | P |
| 23 | Na | 1 | 149700.000 ug/l | 1,497,000.00 | 1.4 | 225000 | 74 | A |
| 24 | Mg | 1 | 389.200 ug/l | 3,892.00 | 2.1 | 225000 | 74 | P |
| 27 | Al | 1 | 135.200 ug/l | 1,352.00 | 2.1 | 225000 | 74 | P |
| 31 | P | 1 | 22.690 ug/l | 226.90 | 51.2 | 225000 | 74 | P |
| 39 | K | 1 | 172.700 ug/l | 1,727.00 | 3.6 | 225000 | 74 | P |
| 44 | Ca | 1 | 1405.000 ug/l | 14,050.00 | 3.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.681 ug/l | 6.81 | 13.9 | 900 | 74 | P |
| 51 | V | 1 | 2.838 ug/l | 28.38 | 6.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 3.384 ug/l | 33.84 | 2.6 | 9000 | 74 | P |
| 55 | Mn | 1 | 4.472 ug/l | 44.72 | 1.0 | 9000 | 74 | P |
| 56 | Fe | 1 | 61.510 ug/l | 615.10 | 1.5 | 225000 | 74 | P |
| 59 | Co | 1 | 0.149 ug/l | 1.49 | 2.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 6.421 ug/l | 64.21 | 3.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.962 ug/l | 9.62 | 4.9 | 9000 | 74 | P |
| 66 | Zn | 1 | 352.800 ug/l | 3,528.00 | 3.2 | 9000 | 74 | P |
| 75 | As | 1 | 0.549 ug/l | 5.49 | 12.0 | 9000 | 74 | P |
| 78 | Se | 1 | 0.347 ug/l | 3.47 | 57.1 | 9000 | 74 | P |
| 88 | Sr | 1 | 2.485 ug/l | 24.85 | 4.1 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.709 ug/l | 7.09 | 4.0 | 900 | 103 | P |
| 109 | Ag | 1 | 0.018 ug/l | 0.18 | 40.3 | 900 | 103 | P |
| 114 | Cd | 1 | 0.016 ug/l | 0.16 | 34.6 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.179 ug/l | 1.79 | 5.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.041 ug/l | 0.41 | 61.4 | 900 | 103 | P |
| 135 | Ba | 1 | 1.738 ug/l | 17.38 | 8.0 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.001 ug/l | -0.01 | 1142.0 | 45 | 209 | P |
| 205 | Tl | 1 | 0.006 ug/l | 0.06 | 49.0 | 900 | 209 | P |
| 208 | Pb | 1 | 0.257 ug/l | 2.57 | 6.7 | 9000 | 209 | P |
| 238 | U | 1 | 0.041 ug/l | 0.41 | 21.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6805713 | 2.74 | 6901000 | 98.6 | 30 - 150 |
| 74 | Ge | 1 | 5555222 | 1.54 | 5721000 | 97.1 | 30 - 150 |
| 103 | Rh | 1 | 2155102 | 2.43 | 2230000 | 96.6 | 30 - 150 |
| 165 | Ho | 1 | 3807548 | 1.10 | 3774000 | 100.9 | 30 - 150 |
| 209 | Bi | 1 | 3968087 | 1.47 | 4015000 | 98.8 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\072SMPL.D\072SMPL.D#
 Date Acquired: Jul 26 2019 12:49 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87680-A-1-B Vial Number: 2406
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.020 ug/l | 0.20 | 64.5 | 9000 | 74 | P |
| 23 | Na | 1 | 149100.000 ug/l | 1,491,000.00 | 1.9 | 225000 | 74 | A |
| 24 | Mg | 1 | 328.400 ug/l | 3,284.00 | 1.6 | 225000 | 74 | P |
| 27 | Al | 1 | 114.600 ug/l | 1,146.00 | 2.4 | 225000 | 74 | P |
| 31 | P | 1 | 17.470 ug/l | 174.70 | 39.1 | 225000 | 74 | P |
| 39 | K | 1 | 154.400 ug/l | 1,544.00 | 7.0 | 225000 | 74 | P |
| 44 | Ca | 1 | 1128.000 ug/l | 11,280.00 | 1.9 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.720 ug/l | 7.20 | 14.5 | 900 | 74 | P |
| 51 | V | 1 | 2.082 ug/l | 20.82 | 4.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 6.128 ug/l | 61.28 | 2.9 | 9000 | 74 | P |
| 55 | Mn | 1 | 5.868 ug/l | 58.68 | 3.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 104.500 ug/l | 1,045.00 | 3.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.146 ug/l | 1.46 | 18.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 6.584 ug/l | 65.84 | 5.0 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.053 ug/l | 10.53 | 10.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 69.910 ug/l | 699.10 | 3.0 | 9000 | 74 | P |
| 75 | As | 1 | 2.530 ug/l | 25.30 | 7.5 | 9000 | 74 | P |
| 78 | Se | 1 | 0.411 ug/l | 4.11 | 75.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 2.442 ug/l | 24.42 | 2.9 | 9000 | 74 | P |
| 95 | Mo | 1 | 1.113 ug/l | 11.13 | 15.2 | 900 | 103 | P |
| 109 | Ag | 1 | 0.023 ug/l | 0.23 | 60.1 | 900 | 103 | P |
| 114 | Cd | 1 | 0.018 ug/l | 0.18 | 17.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.215 ug/l | 2.15 | 28.3 | 900 | 103 | P |
| 123 | Sb | 1 | 0.107 ug/l | 1.07 | 29.5 | 900 | 103 | P |
| 135 | Ba | 1 | 1.492 ug/l | 14.92 | 8.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.011 ug/l | 0.11 | 159.6 | 45 | 209 | P |
| 205 | Tl | 1 | 0.007 ug/l | 0.07 | 77.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.332 ug/l | 3.32 | 0.4 | 9000 | 209 | P |
| 238 | U | 1 | 0.026 ug/l | 0.26 | 18.3 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6694261 | 1.58 | 6901000 | 97.0 | 30 - 150 |
| 74 | Ge | 1 | 5462275 | 1.21 | 5721000 | 95.5 | 30 - 150 |
| 103 | Rh | 1 | 2083338 | 1.82 | 2230000 | 93.4 | 30 - 150 |
| 165 | Ho | 1 | 3780210 | 0.97 | 3774000 | 100.2 | 30 - 150 |
| 209 | Bi | 1 | 3917572 | 0.41 | 4015000 | 97.6 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\073SMPL.D\073SMPL.D#
 Date Acquired: Jul 26 2019 12:53 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87681-A-1-B Vial Number: 2407
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.003 ug/l | 0.03 | 458.9 | 9000 | 74 | P |
| 23 | Na | 1 | 145900.000 ug/l | 1,459,000.00 | 3.1 | 225000 | 74 | A |
| 24 | Mg | 1 | 319.600 ug/l | 3,196.00 | 3.9 | 225000 | 74 | P |
| 27 | Al | 1 | 109.300 ug/l | 1,093.00 | 2.2 | 225000 | 74 | P |
| 31 | P | 1 | 10.960 ug/l | 109.60 | 132.4 | 225000 | 74 | P |
| 39 | K | 1 | 155.900 ug/l | 1,559.00 | 3.5 | 225000 | 74 | P |
| 44 | Ca | 1 | 1231.000 ug/l | 12,310.00 | 4.4 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.656 ug/l | 6.56 | 9.4 | 900 | 74 | P |
| 51 | V | 1 | 1.153 ug/l | 11.53 | 24.5 | 9000 | 74 | P |
| 52 | Cr | 1 | 6.168 ug/l | 61.68 | 3.3 | 9000 | 74 | P |
| 55 | Mn | 1 | 5.688 ug/l | 56.88 | 5.3 | 9000 | 74 | P |
| 56 | Fe | 1 | 194.900 ug/l | 1,949.00 | 3.5 | 225000 | 74 | P |
| 59 | Co | 1 | 0.160 ug/l | 1.60 | 20.0 | 9000 | 74 | P |
| 60 | Ni | 1 | 6.858 ug/l | 68.58 | 4.5 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.123 ug/l | 11.23 | 3.3 | 9000 | 74 | P |
| 66 | Zn | 1 | 56.490 ug/l | 564.90 | 2.1 | 9000 | 74 | P |
| 75 | As | 1 | 0.378 ug/l | 3.78 | 24.8 | 9000 | 74 | P |
| 78 | Se | 1 | 0.179 ug/l | 1.79 | 61.4 | 9000 | 74 | P |
| 88 | Sr | 1 | 3.126 ug/l | 31.26 | 2.0 | 9000 | 74 | P |
| 95 | Mo | 1 | 1.093 ug/l | 10.93 | 13.4 | 900 | 103 | P |
| 109 | Ag | 1 | 0.014 ug/l | 0.14 | 61.5 | 900 | 103 | P |
| 114 | Cd | 1 | 0.013 ug/l | 0.13 | 78.8 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.157 ug/l | 1.57 | 10.4 | 900 | 103 | P |
| 123 | Sb | 1 | 0.034 ug/l | 0.34 | 99.2 | 900 | 103 | P |
| 135 | Ba | 1 | 1.859 ug/l | 18.59 | 11.2 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.001 ug/l | -0.01 | 621.2 | 45 | 209 | P |
| 205 | Tl | 1 | 0.003 ug/l | 0.03 | 122.8 | 900 | 209 | P |
| 208 | Pb | 1 | 0.300 ug/l | 3.00 | 7.9 | 9000 | 209 | P |
| 238 | U | 1 | 0.030 ug/l | 0.30 | 25.8 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6673028 | 0.82 | 6901000 | 96.7 | 30 - 150 |
| 74 | Ge | 1 | 5536496 | 1.11 | 5721000 | 96.8 | 30 - 150 |
| 103 | Rh | 1 | 2088811 | 0.60 | 2230000 | 93.7 | 30 - 150 |
| 165 | Ho | 1 | 3841359 | 0.70 | 3774000 | 101.8 | 30 - 150 |
| 209 | Bi | 1 | 3891350 | 1.63 | 4015000 | 96.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\074SMPL.D\074SMPL.D#
 Date Acquired: Jul 26 2019 12:58 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87682-B-1-B Vial Number: 2408
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.029 ug/l | 0.29 | 32.5 | 9000 | 74 | P |
| 23 | Na | 1 | 146200.000 ug/l | 1,462,000.00 | 3.0 | 225000 | 74 | A |
| 24 | Mg | 1 | 288.200 ug/l | 2,882.00 | 2.4 | 225000 | 74 | P |
| 27 | Al | 1 | 105.500 ug/l | 1,055.00 | 2.4 | 225000 | 74 | P |
| 31 | P | 1 | 12.060 ug/l | 120.60 | 155.7 | 225000 | 74 | P |
| 39 | K | 1 | 151.600 ug/l | 1,516.00 | 11.4 | 225000 | 74 | P |
| 44 | Ca | 1 | 1031.000 ug/l | 10,310.00 | 2.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.647 ug/l | 6.47 | 23.2 | 900 | 74 | P |
| 51 | V | 1 | 0.402 ug/l | 4.02 | 49.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 7.335 ug/l | 73.35 | 3.7 | 9000 | 74 | P |
| 55 | Mn | 1 | 5.200 ug/l | 52.00 | 0.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 272.200 ug/l | 2,722.00 | 2.6 | 225000 | 74 | P |
| 59 | Co | 1 | 0.188 ug/l | 1.88 | 17.1 | 9000 | 74 | P |
| 60 | Ni | 1 | 6.319 ug/l | 63.19 | 2.7 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.063 ug/l | 10.63 | 3.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 913.800 ug/l | 9,138.00 | 3.2 | 9000 | 74 | P |
| 75 | As | 1 | 0.760 ug/l | 7.60 | 17.5 | 9000 | 74 | P |
| 78 | Se | 1 | 0.208 ug/l | 2.08 | 149.8 | 9000 | 74 | P |
| 88 | Sr | 1 | 2.127 ug/l | 21.27 | 6.2 | 9000 | 74 | P |
| 95 | Mo | 1 | 1.062 ug/l | 10.62 | 7.5 | 900 | 103 | P |
| 109 | Ag | 1 | 0.014 ug/l | 0.14 | 109.9 | 900 | 103 | P |
| 114 | Cd | 1 | 0.016 ug/l | 0.16 | 12.6 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.182 ug/l | 1.82 | 22.9 | 900 | 103 | P |
| 123 | Sb | 1 | 0.046 ug/l | 0.46 | 56.3 | 900 | 103 | P |
| 135 | Ba | 1 | 1.452 ug/l | 14.52 | 6.1 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.008 ug/l | 0.08 | 232.7 | 45 | 209 | P |
| 205 | Tl | 1 | -0.001 ug/l | -0.01 | 339.0 | 900 | 209 | P |
| 208 | Pb | 1 | 0.253 ug/l | 2.53 | 6.2 | 9000 | 209 | P |
| 238 | U | 1 | 0.024 ug/l | 0.24 | 26.7 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6689499 | 4.11 | 6901000 | 96.9 | 30 - 150 |
| 74 | Ge | 1 | 5498110 | 2.55 | 5721000 | 96.1 | 30 - 150 |
| 103 | Rh | 1 | 2089639 | 1.75 | 2230000 | 93.7 | 30 - 150 |
| 165 | Ho | 1 | 3805703 | 2.19 | 3774000 | 100.8 | 30 - 150 |
| 209 | Bi | 1 | 3962699 | 2.19 | 4015000 | 98.7 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\075SMPL.D\075SMPL.D#
 Date Acquired: Jul 26 2019 01:02 pm Acq. Method: 1002RUN.m
 Sample Name: CCV-2361404 Vial Number: 1104
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|-----|--------|-----|------|
| 9 | Be | 1 | 46.650 ug/l | 46.65 | 0.6 | 9000 | 74 | P |
| 23 | Na | 1 | 4977.000 ug/l | 4,977.00 | 1.5 | 225000 | 74 | A |
| 24 | Mg | 1 | 4755.000 ug/l | 4,755.00 | 2.6 | 225000 | 74 | A |
| 27 | Al | 1 | 459.000 ug/l | 459.00 | 2.4 | 225000 | 74 | P |
| 31 | P | 1 | 4598.000 ug/l | 4,598.00 | 2.0 | 225000 | 74 | P |
| 39 | K | 1 | 4753.000 ug/l | 4,753.00 | 4.0 | 225000 | 74 | A |
| 44 | Ca | 1 | 4685.000 ug/l | 4,685.00 | 2.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 46.500 ug/l | 46.50 | 2.6 | 900 | 74 | P |
| 51 | V | 1 | 46.870 ug/l | 46.87 | 1.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 47.350 ug/l | 47.35 | 1.7 | 9000 | 74 | P |
| 55 | Mn | 1 | 48.060 ug/l | 48.06 | 2.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 4810.000 ug/l | 4,810.00 | 3.2 | 225000 | 74 | A |
| 59 | Co | 1 | 47.470 ug/l | 47.47 | 1.8 | 9000 | 74 | P |
| 60 | Ni | 1 | 47.430 ug/l | 47.43 | 2.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 47.470 ug/l | 47.47 | 1.4 | 9000 | 74 | P |
| 66 | Zn | 1 | 49.450 ug/l | 49.45 | 2.3 | 9000 | 74 | P |
| 75 | As | 1 | 47.850 ug/l | 47.85 | 3.4 | 9000 | 74 | P |
| 78 | Se | 1 | 48.050 ug/l | 48.05 | 1.0 | 9000 | 74 | P |
| 88 | Sr | 1 | 48.460 ug/l | 48.46 | 2.2 | 9000 | 74 | P |
| 95 | Mo | 1 | 48.970 ug/l | 48.97 | 3.4 | 900 | 103 | P |
| 109 | Ag | 1 | 49.150 ug/l | 49.15 | 4.2 | 900 | 103 | P |
| 114 | Cd | 1 | 49.380 ug/l | 49.38 | 4.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 48.860 ug/l | 48.86 | 2.1 | 900 | 103 | P |
| 123 | Sb | 1 | 49.380 ug/l | 49.38 | 2.2 | 900 | 103 | P |
| 135 | Ba | 1 | 49.180 ug/l | 49.18 | 3.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 2.492 ug/l | 2.49 | 9.7 | 45 | 209 | P |
| 205 | Tl | 1 | 49.850 ug/l | 49.85 | 6.5 | 900 | 209 | P |
| 208 | Pb | 1 | 49.260 ug/l | 49.26 | 3.7 | 9000 | 209 | P |
| 238 | U | 1 | 49.170 ug/l | 49.17 | 4.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 6692781 | 3.31 | 6901000 | 97.0 | 30 - 150 |
| 74 | Ge | 1 | 5890755 | 0.75 | 5721000 | 103.0 | 30 - 150 |
| 103 | Rh | 1 | 2224315 | 2.63 | 2230000 | 99.7 | 30 - 150 |
| 165 | Ho | 1 | 3974518 | 1.56 | 3774000 | 105.3 | 30 - 150 |
| 209 | Bi | 1 | 4037695 | 3.96 | 4015000 | 100.6 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\076SMPL.D\076SMPL.D#
 Date Acquired: Jul 26 2019 01:06 pm Acq. Method: 1002RUN.m
 Sample Name: CCB Vial Number: 1306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|----------|--------|-----|------|
| 9 | Be | 1 | 0.041 ug/l | 0.04 | 27.1 | 9000 | 74 | P |
| 23 | Na | 1 | 134.100 ug/l | 134.10 | 6.5 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.069 ug/l | 1.07 | 20.6 | 225000 | 74 | P |
| 27 | Al | 1 | 0.101 ug/l | 0.10 | 233.4 | 225000 | 74 | P |
| 31 | P | 1 | -22.970 ug/l | -22.97 | 12.1 | 225000 | 74 | P |
| 39 | K | 1 | -23.240 ug/l | -23.24 | 39.9 | 225000 | 74 | P |
| 44 | Ca | 1 | -0.063 ug/l | -0.06 | 7663.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.114 ug/l | 0.11 | 139.2 | 900 | 74 | P |
| 51 | V | 1 | -0.263 ug/l | -0.26 | 88.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.028 ug/l | 0.03 | 52.8 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.096 ug/l | -0.10 | 23.2 | 9000 | 74 | P |
| 56 | Fe | 1 | 3.045 ug/l | 3.05 | 36.0 | 225000 | 74 | P |
| 59 | Co | 1 | 0.016 ug/l | 0.02 | 33.4 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.163 ug/l | -0.16 | 37.7 | 9000 | 74 | P |
| 63 | Cu | 1 | -0.009 ug/l | -0.01 | 362.3 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.000 ug/l | 0.00 | 148960.0 | 9000 | 74 | P |
| 75 | As | 1 | 0.042 ug/l | 0.04 | 250.2 | 9000 | 74 | P |
| 78 | Se | 1 | -0.150 ug/l | -0.15 | 175.2 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.028 ug/l | -0.03 | 47.0 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.121 ug/l | 0.12 | 52.3 | 900 | 103 | P |
| 109 | Ag | 1 | 0.023 ug/l | 0.02 | 38.6 | 900 | 103 | P |
| 114 | Cd | 1 | 0.006 ug/l | 0.01 | 190.8 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.253 ug/l | 0.25 | 13.1 | 900 | 103 | P |
| 123 | Sb | 1 | 0.082 ug/l | 0.08 | 13.2 | 900 | 103 | P |
| 135 | Ba | 1 | 0.034 ug/l | 0.03 | 158.7 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.005 ug/l | -0.01 | 222.2 | 45 | 209 | P |
| 205 | Tl | 1 | 0.021 ug/l | 0.02 | 21.7 | 900 | 209 | P |
| 208 | Pb | 1 | 0.002 ug/l | 0.00 | 218.0 | 9000 | 209 | P |
| 238 | U | 1 | 0.079 ug/l | 0.08 | 34.0 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7021597 | 0.88 | 6901000 | 101.7 | 30 - 150 |
| 74 | Ge | 1 | 5885769 | 1.59 | 5721000 | 102.9 | 30 - 150 |
| 103 | Rh | 1 | 2271075 | 0.59 | 2230000 | 101.8 | 30 - 150 |
| 165 | Ho | 1 | 4023901 | 1.48 | 3774000 | 106.6 | 30 - 150 |
| 209 | Bi | 1 | 4184657 | 1.53 | 4015000 | 104.2 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\077SMPL.D\077SMPL.D#
 Date Acquired: Jul 26 2019 01:10 pm Acq. Method: 1002RUN.m
 Sample Name: CCVL-2361376 Vial Number: 1106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|--------|--------|-----|------|
| 9 | Be | 1 | 0.406 ug/l | 0.41 | 6.3 | 9000 | 74 | P |
| 23 | Na | 1 | 111.700 ug/l | 111.70 | 2.7 | 225000 | 74 | P |
| 24 | Mg | 1 | 0.693 ug/l | 0.69 | 24.1 | 225000 | 74 | P |
| 27 | Al | 1 | 89.170 ug/l | 89.17 | 3.8 | 225000 | 74 | P |
| 31 | P | 1 | 426.400 ug/l | 426.40 | 8.0 | 225000 | 74 | P |
| 39 | K | 1 | -29.430 ug/l | -29.43 | 14.8 | 225000 | 74 | P |
| 44 | Ca | 1 | -0.407 ug/l | -0.41 | 1374.2 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.070 ug/l | 1.07 | 10.4 | 900 | 74 | P |
| 51 | V | 1 | 3.183 ug/l | 3.18 | 5.4 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.367 ug/l | 0.37 | 4.3 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.641 ug/l | 1.64 | 3.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 181.300 ug/l | 181.30 | 1.2 | 225000 | 74 | P |
| 59 | Co | 1 | 0.374 ug/l | 0.37 | 5.8 | 9000 | 74 | P |
| 60 | Ni | 1 | 2.599 ug/l | 2.60 | 3.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.835 ug/l | 1.84 | 2.6 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.216 ug/l | 6.22 | 2.7 | 9000 | 74 | P |
| 75 | As | 1 | 0.916 ug/l | 0.92 | 3.6 | 9000 | 74 | P |
| 78 | Se | 1 | 7.165 ug/l | 7.17 | 1.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.323 ug/l | 0.32 | 8.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.713 ug/l | 0.71 | 10.3 | 900 | 103 | P |
| 109 | Ag | 1 | 0.381 ug/l | 0.38 | 6.5 | 900 | 103 | P |
| 114 | Cd | 1 | 0.420 ug/l | 0.42 | 5.0 | 9000 | 103 | P |
| 118 | Sn | 1 | 9.420 ug/l | 9.42 | 1.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.426 ug/l | 0.43 | 16.4 | 900 | 103 | P |
| 135 | Ba | 1 | 1.105 ug/l | 1.11 | 9.5 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.225 ug/l | 0.23 | 11.8 | 45 | 209 | P |
| 205 | Tl | 1 | 0.862 ug/l | 0.86 | 5.6 | 900 | 209 | P |
| 208 | Pb | 1 | 0.718 ug/l | 0.72 | 8.5 | 9000 | 209 | P |
| 238 | U | 1 | 0.537 ug/l | 0.54 | 7.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7051166 | 1.62 | 6901000 | 102.2 | 30 - 150 |
| 74 | Ge | 1 | 5939368 | 0.89 | 5721000 | 103.8 | 30 - 150 |
| 103 | Rh | 1 | 2281823 | 3.37 | 2230000 | 102.3 | 30 - 150 |
| 165 | Ho | 1 | 4035514 | 2.26 | 3774000 | 106.9 | 30 - 150 |
| 209 | Bi | 1 | 4202946 | 3.01 | 4015000 | 104.7 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\078SMPL.D\078SMPL.D#
 Date Acquired: Jul 26 2019 01:15 pm Acq. Method: 1002RUN.m
 Sample Name: MB 580-306507/1-B Vial Number: 2501
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|--------|--------|-----|------|
| 9 | Be | 1 | 0.012 ug/l | 0.12 | 82.1 | 9000 | 74 | P |
| 23 | Na | 1 | 134200.000 ug/l | 1,342,000.00 | 1.7 | 225000 | 74 | A |
| 24 | Mg | 1 | 1.216 ug/l | 12.16 | 13.7 | 225000 | 74 | P |
| 27 | Al | 1 | 2.601 ug/l | 26.01 | 5.5 | 225000 | 74 | P |
| 31 | P | 1 | -22.020 ug/l | -220.20 | 6.3 | 225000 | 74 | P |
| 39 | K | 1 | -14.230 ug/l | -142.30 | 12.7 | 225000 | 74 | P |
| 44 | Ca | 1 | 8.120 ug/l | 81.20 | 24.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.057 ug/l | 0.57 | 145.9 | 900 | 74 | P |
| 51 | V | 1 | 1.692 ug/l | 16.92 | 5.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.146 ug/l | 1.46 | 21.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 0.003 ug/l | 0.03 | 441.3 | 9000 | 74 | P |
| 56 | Fe | 1 | -5.772 ug/l | -57.72 | 4.6 | 225000 | 74 | P |
| 59 | Co | 1 | 0.000 ug/l | 0.00 | 3350.4 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.132 ug/l | -1.32 | 14.3 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.021 ug/l | 0.21 | 108.2 | 9000 | 74 | P |
| 66 | Zn | 1 | 0.396 ug/l | 3.96 | 54.9 | 9000 | 74 | P |
| 75 | As | 1 | 0.412 ug/l | 4.12 | 11.0 | 9000 | 74 | P |
| 78 | Se | 1 | -0.031 ug/l | -0.31 | 715.5 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.019 ug/l | 0.19 | 199.8 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.035 ug/l | 0.35 | 11.7 | 900 | 103 | P |
| 109 | Ag | 1 | 0.014 ug/l | 0.14 | 19.8 | 900 | 103 | P |
| 114 | Cd | 1 | 0.007 ug/l | 0.07 | 149.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.456 ug/l | 4.56 | 8.7 | 900 | 103 | P |
| 123 | Sb | 1 | 0.025 ug/l | 0.25 | 72.8 | 900 | 103 | P |
| 135 | Ba | 1 | 0.063 ug/l | 0.63 | 66.4 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.002 ug/l | -0.02 | 1023.4 | 45 | 209 | P |
| 205 | Tl | 1 | 0.005 ug/l | 0.05 | 40.5 | 900 | 209 | P |
| 208 | Pb | 1 | 0.007 ug/l | 0.07 | 133.2 | 9000 | 209 | P |
| 238 | U | 1 | 0.016 ug/l | 0.16 | 53.5 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7139763 | 0.60 | 6901000 | 103.5 | 30 - 150 |
| 74 | Ge | 1 | 5915554 | 0.61 | 5721000 | 103.4 | 30 - 150 |
| 103 | Rh | 1 | 2183681 | 1.66 | 2230000 | 97.9 | 30 - 150 |
| 165 | Ho | 1 | 3930347 | 1.67 | 3774000 | 104.1 | 30 - 150 |
| 209 | Bi | 1 | 3901604 | 0.87 | 4015000 | 97.2 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\079SMPL.D\079SMPL.D#
 Date Acquired: Jul 26 2019 01:19 pm Acq. Method: 1002RUN.m
 Sample Name: LCS 580-306507/2-B Vial Number: 2502
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 96.890 ug/l | 968.90 | 1.6 | 9000 | 74 | P |
| 23 | Na | 1 | 146500.000 ug/l | 1,465,000.00 | 2.1 | 225000 | 74 | A |
| 24 | Mg | 1 | 1831.000 ug/l | 18,310.00 | 1.8 | 225000 | 74 | P |
| 27 | Al | 1 | 1891.000 ug/l | 18,910.00 | 1.8 | 225000 | 74 | P |
| 31 | P | 1 | 443.600 ug/l | 4,436.00 | 2.4 | 225000 | 74 | P |
| 39 | K | 1 | 1882.000 ug/l | 18,820.00 | 0.7 | 225000 | 74 | P |
| 44 | Ca | 1 | 1810.000 ug/l | 18,100.00 | 2.3 | 225000 | 74 | P |
| 47 | Ti | 1 | 94.570 ug/l | 945.70 | 2.8 | 900 | 74 | P |
| 51 | V | 1 | 97.900 ug/l | 979.00 | 1.9 | 9000 | 74 | P |
| 52 | Cr | 1 | 96.700 ug/l | 967.00 | 2.4 | 9000 | 74 | P |
| 55 | Mn | 1 | 93.930 ug/l | 939.30 | 2.5 | 9000 | 74 | P |
| 56 | Fe | 1 | 2040.000 ug/l | 20,400.00 | 1.3 | 225000 | 74 | A |
| 59 | Co | 1 | 95.760 ug/l | 957.60 | 1.5 | 9000 | 74 | P |
| 60 | Ni | 1 | 94.590 ug/l | 945.90 | 2.5 | 9000 | 74 | P |
| 63 | Cu | 1 | 93.710 ug/l | 937.10 | 2.1 | 9000 | 74 | P |
| 66 | Zn | 1 | 91.670 ug/l | 916.70 | 2.0 | 9000 | 74 | P |
| 75 | As | 1 | 99.950 ug/l | 999.50 | 1.4 | 9000 | 74 | P |
| 78 | Se | 1 | 98.500 ug/l | 985.00 | 1.8 | 9000 | 74 | P |
| 88 | Sr | 1 | 97.070 ug/l | 970.70 | 1.7 | 9000 | 74 | P |
| 95 | Mo | 1 | 99.190 ug/l | 991.90 | 2.6 | 900 | 103 | P |
| 109 | Ag | 1 | 92.450 ug/l | 924.50 | 2.6 | 900 | 103 | P |
| 114 | Cd | 1 | 97.860 ug/l | 978.60 | 2.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 99.470 ug/l | 994.70 | 2.4 | 900 | 103 | P |
| 123 | Sb | 1 | 93.550 ug/l | 935.50 | 3.2 | 900 | 103 | P |
| 135 | Ba | 1 | 97.650 ug/l | 976.50 | 2.4 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.007 ug/l | -0.07 | 314.0 | 45 | 209 | P |
| 205 | Tl | 1 | 92.100 ug/l | 921.00 | 4.7 | 900 | 209 | P |
| 208 | Pb | 1 | 96.710 ug/l | 967.10 | 4.0 | 9000 | 209 | P |
| 238 | U | 1 | 48.020 ug/l | 480.20 | 4.2 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7140502 | 1.66 | 6901000 | 103.5 | 30 - 150 |
| 74 | Ge | 1 | 5841027 | 0.62 | 5721000 | 102.1 | 30 - 150 |
| 103 | Rh | 1 | 2180706 | 0.99 | 2230000 | 97.8 | 30 - 150 |
| 165 | Ho | 1 | 3892763 | 1.07 | 3774000 | 103.1 | 30 - 150 |
| 209 | Bi | 1 | 3870968 | 2.01 | 4015000 | 96.4 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\080SMPL.D\080SMPL.D#
 Date Acquired: Jul 26 2019 01:23 pm Acq. Method: 1002RUN.m
 Sample Name: LCSD 580-306507/3-B Vial Number: 2503
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|---------|--------|-----|------|
| 9 | Be | 1 | 93.520 ug/l | 935.20 | 3.1 | 9000 | 74 | P |
| 23 | Na | 1 | 142300.000 ug/l | 1,423,000.00 | 3.6 | 225000 | 74 | A |
| 24 | Mg | 1 | 1773.000 ug/l | 17,730.00 | 3.5 | 225000 | 74 | P |
| 27 | Al | 1 | 1845.000 ug/l | 18,450.00 | 3.7 | 225000 | 74 | P |
| 31 | P | 1 | 459.000 ug/l | 4,590.00 | 4.5 | 225000 | 74 | P |
| 39 | K | 1 | 1835.000 ug/l | 18,350.00 | 3.7 | 225000 | 74 | P |
| 44 | Ca | 1 | 1755.000 ug/l | 17,550.00 | 4.1 | 225000 | 74 | P |
| 47 | Ti | 1 | 90.900 ug/l | 909.00 | 4.1 | 900 | 74 | P |
| 51 | V | 1 | 95.070 ug/l | 950.70 | 3.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 93.060 ug/l | 930.60 | 3.5 | 9000 | 74 | P |
| 55 | Mn | 1 | 91.420 ug/l | 914.20 | 3.4 | 9000 | 74 | P |
| 56 | Fe | 1 | 1941.000 ug/l | 19,410.00 | 4.1 | 225000 | 74 | A |
| 59 | Co | 1 | 92.740 ug/l | 927.40 | 3.6 | 9000 | 74 | P |
| 60 | Ni | 1 | 91.090 ug/l | 910.90 | 4.1 | 9000 | 74 | P |
| 63 | Cu | 1 | 92.150 ug/l | 921.50 | 3.2 | 9000 | 74 | P |
| 66 | Zn | 1 | 89.520 ug/l | 895.20 | 2.9 | 9000 | 74 | P |
| 75 | As | 1 | 96.370 ug/l | 963.70 | 3.7 | 9000 | 74 | P |
| 78 | Se | 1 | 96.990 ug/l | 969.90 | 3.2 | 9000 | 74 | P |
| 88 | Sr | 1 | 93.340 ug/l | 933.40 | 3.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 96.650 ug/l | 966.50 | 4.2 | 900 | 103 | P |
| 109 | Ag | 1 | 90.260 ug/l | 902.60 | 4.2 | 900 | 103 | P |
| 114 | Cd | 1 | 95.570 ug/l | 955.70 | 3.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 97.800 ug/l | 978.00 | 5.3 | 900 | 103 | P |
| 123 | Sb | 1 | 91.890 ug/l | 918.90 | 4.6 | 900 | 103 | P |
| 135 | Ba | 1 | 96.710 ug/l | 967.10 | 3.9 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.000 ug/l | 0.00 | 75965.0 | 45 | 209 | P |
| 205 | Tl | 1 | 91.650 ug/l | 916.50 | 4.7 | 900 | 209 | P |
| 208 | Pb | 1 | 95.720 ug/l | 957.20 | 4.0 | 9000 | 209 | P |
| 238 | U | 1 | 46.620 ug/l | 466.20 | 1.1 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7101626 | 2.31 | 6901000 | 102.9 | 30 - 150 |
| 74 | Ge | 1 | 5915493 | 1.99 | 5721000 | 103.4 | 30 - 150 |
| 103 | Rh | 1 | 2177677 | 2.64 | 2230000 | 97.7 | 30 - 150 |
| 165 | Ho | 1 | 3850816 | 2.50 | 3774000 | 102.0 | 30 - 150 |
| 209 | Bi | 1 | 3828789 | 2.27 | 4015000 | 95.4 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\081SMPL.D\081SMPL.D#
 Date Acquired: Jul 26 2019 01:28 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87757-A-1-B Vial Number: 2504
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.068 ug/l | 0.68 | 14.5 | 9000 | 74 | P |
| 23 | Na | 1 | 131500.000 ug/l | 1,315,000.00 | 1.5 | 225000 | 74 | A |
| 24 | Mg | 1 | 456.900 ug/l | 4,569.00 | 1.7 | 225000 | 74 | P |
| 27 | Al | 1 | 107.300 ug/l | 1,073.00 | 2.6 | 225000 | 74 | P |
| 31 | P | 1 | 12.810 ug/l | 128.10 | 8.2 | 225000 | 74 | P |
| 39 | K | 1 | 1023.000 ug/l | 10,230.00 | 0.2 | 225000 | 74 | P |
| 44 | Ca | 1 | 4556.000 ug/l | 45,560.00 | 0.6 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.054 ug/l | 10.54 | 11.2 | 900 | 74 | P |
| 51 | V | 1 | 2.241 ug/l | 22.41 | 3.7 | 9000 | 74 | P |
| 52 | Cr | 1 | 10.590 ug/l | 105.90 | 1.4 | 9000 | 74 | P |
| 55 | Mn | 1 | 72.720 ug/l | 727.20 | 1.0 | 9000 | 74 | P |
| 56 | Fe | 1 | 665.400 ug/l | 6,654.00 | 1.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.710 ug/l | 7.10 | 10.5 | 9000 | 74 | P |
| 60 | Ni | 1 | 1.399 ug/l | 13.99 | 6.2 | 9000 | 74 | P |
| 63 | Cu | 1 | 100.800 ug/l | 1,008.00 | 2.1 | 9000 | 74 | P |
| 66 | Zn | 1 | 154.400 ug/l | 1,544.00 | 1.5 | 9000 | 74 | P |
| 75 | As | 1 | 34.940 ug/l | 349.40 | 1.6 | 9000 | 74 | P |
| 78 | Se | 1 | 0.302 ug/l | 3.02 | 34.4 | 9000 | 74 | P |
| 88 | Sr | 1 | 10.910 ug/l | 109.10 | 1.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.380 ug/l | 3.80 | 1.9 | 900 | 103 | P |
| 109 | Ag | 1 | 0.036 ug/l | 0.36 | 15.9 | 900 | 103 | P |
| 114 | Cd | 1 | 0.365 ug/l | 3.65 | 7.5 | 9000 | 103 | P |
| 118 | Sn | 1 | 1.417 ug/l | 14.17 | 3.5 | 900 | 103 | P |
| 123 | Sb | 1 | 0.478 ug/l | 4.78 | 24.9 | 900 | 103 | P |
| 135 | Ba | 1 | 6.550 ug/l | 65.50 | 1.2 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.006 ug/l | -0.06 | 101.4 | 45 | 209 | P |
| 205 | Tl | 1 | 0.079 ug/l | 0.79 | 11.4 | 900 | 209 | P |
| 208 | Pb | 1 | 0.471 ug/l | 4.71 | 1.6 | 9000 | 209 | P |
| 238 | U | 1 | 0.087 ug/l | 0.87 | 30.1 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7271914 | 0.45 | 6901000 | 105.4 | 30 - 150 |
| 74 | Ge | 1 | 5945352 | 0.59 | 5721000 | 103.9 | 30 - 150 |
| 103 | Rh | 1 | 2213214 | 0.20 | 2230000 | 99.2 | 30 - 150 |
| 165 | Ho | 1 | 3909406 | 0.85 | 3774000 | 103.6 | 30 - 150 |
| 209 | Bi | 1 | 3937142 | 0.25 | 4015000 | 98.1 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\082SMPL.D\082SMPL.D#
 Date Acquired: Jul 26 2019 01:32 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87685-A-5-C Vial Number: 2505
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.054 ug/l | 0.54 | 26.0 | 9000 | 74 | P |
| 23 | Na | 1 | 133500.000 ug/l | 1,335,000.00 | 0.8 | 225000 | 74 | A |
| 24 | Mg | 1 | 1648.000 ug/l | 16,480.00 | 1.4 | 225000 | 74 | P |
| 27 | Al | 1 | 449.400 ug/l | 4,494.00 | 0.9 | 225000 | 74 | P |
| 31 | P | 1 | 695.700 ug/l | 6,957.00 | 4.2 | 225000 | 74 | P |
| 39 | K | 1 | 2180.000 ug/l | 21,800.00 | 1.1 | 225000 | 74 | P |
| 44 | Ca | 1 | 12980.000 ug/l | 129,800.00 | 2.0 | 225000 | 74 | P |
| 47 | Ti | 1 | 17.550 ug/l | 175.50 | 11.4 | 900 | 74 | P |
| 51 | V | 1 | 4.327 ug/l | 43.27 | 2.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.488 ug/l | 14.88 | 7.0 | 9000 | 74 | P |
| 55 | Mn | 1 | 48.640 ug/l | 486.40 | 1.2 | 9000 | 74 | P |
| 56 | Fe | 1 | 337.800 ug/l | 3,378.00 | 1.9 | 225000 | 74 | P |
| 59 | Co | 1 | 0.218 ug/l | 2.18 | 16.2 | 9000 | 74 | P |
| 60 | Ni | 1 | 1.007 ug/l | 10.07 | 18.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 2.387 ug/l | 23.87 | 4.2 | 9000 | 74 | P |
| 66 | Zn | 1 | 10.850 ug/l | 108.50 | 3.9 | 9000 | 74 | P |
| 75 | As | 1 | 1.665 ug/l | 16.65 | 7.5 | 9000 | 74 | P |
| 78 | Se | 1 | 0.354 ug/l | 3.54 | 48.0 | 9000 | 74 | P |
| 88 | Sr | 1 | 48.810 ug/l | 488.10 | 1.7 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.080 ug/l | 0.80 | 5.7 | 900 | 103 | P |
| 109 | Ag | 1 | 0.022 ug/l | 0.22 | 16.9 | 900 | 103 | P |
| 114 | Cd | 1 | 0.040 ug/l | 0.40 | 37.8 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.634 ug/l | 6.34 | 22.6 | 900 | 103 | P |
| 123 | Sb | 1 | 0.089 ug/l | 0.89 | 38.8 | 900 | 103 | P |
| 135 | Ba | 1 | 16.380 ug/l | 163.80 | 3.1 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.004 ug/l | 0.04 | 200.5 | 45 | 209 | P |
| 205 | Tl | 1 | 0.015 ug/l | 0.15 | 49.2 | 900 | 209 | P |
| 208 | Pb | 1 | 0.533 ug/l | 5.33 | 3.2 | 9000 | 209 | P |
| 238 | U | 1 | 0.042 ug/l | 0.42 | 16.1 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7157643 | 1.03 | 6901000 | 103.7 | 30 - 150 |
| 74 | Ge | 1 | 5880195 | 0.52 | 5721000 | 102.8 | 30 - 150 |
| 103 | Rh | 1 | 2168080 | 0.44 | 2230000 | 97.2 | 30 - 150 |
| 165 | Ho | 1 | 3837772 | 0.31 | 3774000 | 101.7 | 30 - 150 |
| 209 | Bi | 1 | 3851998 | 1.14 | 4015000 | 95.9 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\083SMPL.D\083SMPL.D#
 Date Acquired: Jul 26 2019 01:36 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87685-A-5-D DU Vial Number: 2506
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.036 ug/l | 0.36 | 30.5 | 9000 | 74 | P |
| 23 | Na | 1 | 133200.000 ug/l | 1,332,000.00 | 2.7 | 225000 | 74 | A |
| 24 | Mg | 1 | 1649.000 ug/l | 16,490.00 | 3.4 | 225000 | 74 | P |
| 27 | Al | 1 | 423.500 ug/l | 4,235.00 | 4.2 | 225000 | 74 | P |
| 31 | P | 1 | 722.800 ug/l | 7,228.00 | 1.7 | 225000 | 74 | P |
| 39 | K | 1 | 2196.000 ug/l | 21,960.00 | 2.6 | 225000 | 74 | P |
| 44 | Ca | 1 | 13130.000 ug/l | 131,300.00 | 2.6 | 225000 | 74 | P |
| 47 | Ti | 1 | 15.950 ug/l | 159.50 | 2.8 | 900 | 74 | P |
| 51 | V | 1 | 4.630 ug/l | 46.30 | 3.3 | 9000 | 74 | P |
| 52 | Cr | 1 | 1.430 ug/l | 14.30 | 6.5 | 9000 | 74 | P |
| 55 | Mn | 1 | 48.890 ug/l | 488.90 | 3.8 | 9000 | 74 | P |
| 56 | Fe | 1 | 337.000 ug/l | 3,370.00 | 3.7 | 225000 | 74 | P |
| 59 | Co | 1 | 0.250 ug/l | 2.50 | 2.9 | 9000 | 74 | P |
| 60 | Ni | 1 | 0.971 ug/l | 9.71 | 11.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.859 ug/l | 18.59 | 4.5 | 9000 | 74 | P |
| 66 | Zn | 1 | 10.930 ug/l | 109.30 | 3.3 | 9000 | 74 | P |
| 75 | As | 1 | 1.817 ug/l | 18.17 | 6.8 | 9000 | 74 | P |
| 78 | Se | 1 | 0.203 ug/l | 2.03 | 144.4 | 9000 | 74 | P |
| 88 | Sr | 1 | 48.980 ug/l | 489.80 | 4.7 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.047 ug/l | 0.47 | 26.0 | 900 | 103 | P |
| 109 | Ag | 1 | 0.007 ug/l | 0.07 | 84.2 | 900 | 103 | P |
| 114 | Cd | 1 | 0.055 ug/l | 0.55 | 6.2 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.477 ug/l | 4.77 | 15.0 | 900 | 103 | P |
| 123 | Sb | 1 | 0.077 ug/l | 0.77 | 33.2 | 900 | 103 | P |
| 135 | Ba | 1 | 16.210 ug/l | 162.10 | 2.0 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.005 ug/l | -0.05 | 131.0 | 45 | 209 | P |
| 205 | Tl | 1 | 0.015 ug/l | 0.15 | 15.0 | 900 | 209 | P |
| 208 | Pb | 1 | 0.529 ug/l | 5.29 | 1.3 | 9000 | 209 | P |
| 238 | U | 1 | 0.028 ug/l | 0.28 | 13.4 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7191613 | 1.29 | 6901000 | 104.2 | 30 - 150 |
| 74 | Ge | 1 | 5890434 | 0.90 | 5721000 | 103.0 | 30 - 150 |
| 103 | Rh | 1 | 2196153 | 2.19 | 2230000 | 98.5 | 30 - 150 |
| 165 | Ho | 1 | 3880924 | 1.98 | 3774000 | 102.8 | 30 - 150 |
| 209 | Bi | 1 | 3876465 | 1.89 | 4015000 | 96.5 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\084SMPL.D\084SMPL.D#
 Date Acquired: Jul 26 2019 01:40 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87685-A-5-C PDS Vial Number: 2507
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|------|--------|-----|------|
| 9 | Be | 1 | 94.840 ug/l | 948.40 | 2.1 | 9000 | 74 | P |
| 23 | Na | 1 | 137300.000 ug/l | 1,373,000.00 | 2.0 | 225000 | 74 | A |
| 24 | Mg | 1 | 3511.000 ug/l | 35,110.00 | 2.3 | 225000 | 74 | P |
| 27 | Al | 1 | 2364.000 ug/l | 23,640.00 | 2.2 | 225000 | 74 | P |
| 31 | P | 1 | 1235.000 ug/l | 12,350.00 | 3.8 | 225000 | 74 | P |
| 39 | K | 1 | 4204.000 ug/l | 42,040.00 | 1.6 | 225000 | 74 | A |
| 44 | Ca | 1 | 15010.000 ug/l | 150,100.00 | 1.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 113.800 ug/l | 1,138.00 | 4.2 | 900 | 74 | P |
| 51 | V | 1 | 99.680 ug/l | 996.80 | 2.2 | 9000 | 74 | P |
| 52 | Cr | 1 | 97.050 ug/l | 970.50 | 2.3 | 9000 | 74 | P |
| 55 | Mn | 1 | 143.100 ug/l | 1,431.00 | 2.3 | 9000 | 74 | P |
| 56 | Fe | 1 | 2320.000 ug/l | 23,200.00 | 2.1 | 225000 | 74 | A |
| 59 | Co | 1 | 95.490 ug/l | 954.90 | 2.4 | 9000 | 74 | P |
| 60 | Ni | 1 | 94.620 ug/l | 946.20 | 2.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 96.060 ug/l | 960.60 | 2.0 | 9000 | 74 | P |
| 66 | Zn | 1 | 103.100 ug/l | 1,031.00 | 1.7 | 9000 | 74 | P |
| 75 | As | 1 | 100.200 ug/l | 1,002.00 | 1.6 | 9000 | 74 | P |
| 78 | Se | 1 | 98.350 ug/l | 983.50 | 0.8 | 9000 | 74 | P |
| 88 | Sr | 1 | 146.100 ug/l | 1,461.00 | 2.5 | 9000 | 74 | P |
| 95 | Mo | 1 | 99.550 ug/l | 995.50 | 1.3 | 900 | 103 | P |
| 109 | Ag | 1 | 92.650 ug/l | 926.50 | 0.8 | 900 | 103 | P |
| 114 | Cd | 1 | 97.850 ug/l | 978.50 | 0.8 | 9000 | 103 | P |
| 118 | Sn | 1 | 99.260 ug/l | 992.60 | 1.1 | 900 | 103 | P |
| 123 | Sb | 1 | 86.610 ug/l | 866.10 | 1.6 | 900 | 103 | P |
| 135 | Ba | 1 | 114.400 ug/l | 1,144.00 | 1.3 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.017 ug/l | 0.17 | 39.1 | 45 | 209 | P |
| 205 | Tl | 1 | 94.000 ug/l | 940.00 | 2.2 | 900 | 209 | P |
| 208 | Pb | 1 | 97.090 ug/l | 970.90 | 1.0 | 9000 | 209 | P |
| 238 | U | 1 | 48.940 ug/l | 489.40 | 1.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7355996 | 1.08 | 6901000 | 106.6 | 30 - 150 |
| 74 | Ge | 1 | 5886214 | 0.89 | 5721000 | 102.9 | 30 - 150 |
| 103 | Rh | 1 | 2174097 | 0.56 | 2230000 | 97.5 | 30 - 150 |
| 165 | Ho | 1 | 3909598 | 0.89 | 3774000 | 103.6 | 30 - 150 |
| 209 | Bi | 1 | 3845297 | 1.65 | 4015000 | 95.8 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\085SMPL.D\085SMPL.D#
 Date Acquired: Jul 26 2019 01:45 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87685-A-5-E MS Vial Number: 2508
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 95.720 ug/l | 957.20 | 1.0 | 9000 | 74 | P |
| 23 | Na | 1 | 133300.000 ug/l | 1,333,000.00 | 2.5 | 225000 | 74 | A |
| 24 | Mg | 1 | 3484.000 ug/l | 34,840.00 | 2.2 | 225000 | 74 | P |
| 27 | Al | 1 | 2452.000 ug/l | 24,520.00 | 1.9 | 225000 | 74 | P |
| 31 | P | 1 | 1201.000 ug/l | 12,010.00 | 2.1 | 225000 | 74 | P |
| 39 | K | 1 | 4152.000 ug/l | 41,520.00 | 1.0 | 225000 | 74 | A |
| 44 | Ca | 1 | 14740.000 ug/l | 147,400.00 | 1.2 | 225000 | 74 | P |
| 47 | Ti | 1 | 117.300 ug/l | 1,173.00 | 4.3 | 900 | 74 | P |
| 51 | V | 1 | 101.600 ug/l | 1,016.00 | 1.4 | 9000 | 74 | P |
| 52 | Cr | 1 | 98.530 ug/l | 985.30 | 1.4 | 9000 | 74 | P |
| 55 | Mn | 1 | 142.700 ug/l | 1,427.00 | 1.7 | 9000 | 74 | P |
| 56 | Fe | 1 | 2338.000 ug/l | 23,380.00 | 1.3 | 225000 | 74 | A |
| 59 | Co | 1 | 96.960 ug/l | 969.60 | 2.5 | 9000 | 74 | P |
| 60 | Ni | 1 | 96.420 ug/l | 964.20 | 1.0 | 9000 | 74 | P |
| 63 | Cu | 1 | 96.730 ug/l | 967.30 | 2.1 | 9000 | 74 | P |
| 66 | Zn | 1 | 102.600 ug/l | 1,026.00 | 3.9 | 9000 | 74 | P |
| 75 | As | 1 | 100.600 ug/l | 1,006.00 | 2.1 | 9000 | 74 | P |
| 78 | Se | 1 | 99.840 ug/l | 998.40 | 2.1 | 9000 | 74 | P |
| 88 | Sr | 1 | 144.700 ug/l | 1,447.00 | 2.2 | 9000 | 74 | P |
| 95 | Mo | 1 | 99.350 ug/l | 993.50 | 1.2 | 900 | 103 | P |
| 109 | Ag | 1 | 91.200 ug/l | 912.00 | 1.0 | 900 | 103 | P |
| 114 | Cd | 1 | 97.310 ug/l | 973.10 | 0.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 99.490 ug/l | 994.90 | 1.4 | 900 | 103 | P |
| 123 | Sb | 1 | 93.310 ug/l | 933.10 | 0.5 | 900 | 103 | P |
| 135 | Ba | 1 | 115.600 ug/l | 1,156.00 | 0.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.011 ug/l | 0.11 | 199.8 | 45 | 209 | P |
| 205 | Tl | 1 | 90.210 ug/l | 902.10 | 2.3 | 900 | 209 | P |
| 208 | Pb | 1 | 96.670 ug/l | 966.70 | 1.2 | 9000 | 209 | P |
| 238 | U | 1 | 48.110 ug/l | 481.10 | 2.5 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7313978 | 1.37 | 6901000 | 106.0 | 30 - 150 |
| 74 | Ge | 1 | 5894590 | 2.73 | 5721000 | 103.0 | 30 - 150 |
| 103 | Rh | 1 | 2199137 | 2.61 | 2230000 | 98.6 | 30 - 150 |
| 165 | Ho | 1 | 3890125 | 2.26 | 3774000 | 103.1 | 30 - 150 |
| 209 | Bi | 1 | 3884137 | 1.33 | 4015000 | 96.7 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\086SMPL.D\086SMPL.D#
 Date Acquired: Jul 26 2019 01:49 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87685-A-5-F MSD Vial Number: 2509
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **10.00** Final Dil Factor: **10.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|-----------------|--------------|------|--------|-----|------|
| 9 | Be | 1 | 95.260 ug/l | 952.60 | 2.1 | 9000 | 74 | P |
| 23 | Na | 1 | 136000.000 ug/l | 1,360,000.00 | 2.6 | 225000 | 74 | A |
| 24 | Mg | 1 | 3472.000 ug/l | 34,720.00 | 0.5 | 225000 | 74 | P |
| 27 | Al | 1 | 2428.000 ug/l | 24,280.00 | 2.7 | 225000 | 74 | P |
| 31 | P | 1 | 1211.000 ug/l | 12,110.00 | 2.8 | 225000 | 74 | P |
| 39 | K | 1 | 4211.000 ug/l | 42,110.00 | 2.8 | 225000 | 74 | A |
| 44 | Ca | 1 | 14900.000 ug/l | 149,000.00 | 2.8 | 225000 | 74 | P |
| 47 | Ti | 1 | 113.700 ug/l | 1,137.00 | 2.3 | 900 | 74 | P |
| 51 | V | 1 | 99.570 ug/l | 995.70 | 1.6 | 9000 | 74 | P |
| 52 | Cr | 1 | 96.380 ug/l | 963.80 | 1.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 141.900 ug/l | 1,419.00 | 3.1 | 9000 | 74 | P |
| 56 | Fe | 1 | 2309.000 ug/l | 23,090.00 | 1.3 | 225000 | 74 | A |
| 59 | Co | 1 | 95.050 ug/l | 950.50 | 0.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 94.750 ug/l | 947.50 | 1.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 95.150 ug/l | 951.50 | 2.2 | 9000 | 74 | P |
| 66 | Zn | 1 | 102.400 ug/l | 1,024.00 | 0.7 | 9000 | 74 | P |
| 75 | As | 1 | 98.740 ug/l | 987.40 | 1.3 | 9000 | 74 | P |
| 78 | Se | 1 | 98.800 ug/l | 988.00 | 1.6 | 9000 | 74 | P |
| 88 | Sr | 1 | 144.900 ug/l | 1,449.00 | 1.7 | 9000 | 74 | P |
| 95 | Mo | 1 | 99.000 ug/l | 990.00 | 3.9 | 900 | 103 | P |
| 109 | Ag | 1 | 91.410 ug/l | 914.10 | 5.2 | 900 | 103 | P |
| 114 | Cd | 1 | 97.250 ug/l | 972.50 | 4.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 98.280 ug/l | 982.80 | 4.7 | 900 | 103 | P |
| 123 | Sb | 1 | 93.510 ug/l | 935.10 | 6.1 | 900 | 103 | P |
| 135 | Ba | 1 | 113.500 ug/l | 1,135.00 | 3.7 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.008 ug/l | 0.08 | 25.5 | 45 | 209 | P |
| 205 | Tl | 1 | 89.760 ug/l | 897.60 | 8.2 | 900 | 209 | P |
| 208 | Pb | 1 | 95.770 ug/l | 957.70 | 6.7 | 9000 | 209 | P |
| 238 | U | 1 | 47.500 ug/l | 475.00 | 4.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7331818 | 1.90 | 6901000 | 106.2 | 30 - 150 |
| 74 | Ge | 1 | 5925669 | 1.20 | 5721000 | 103.6 | 30 - 150 |
| 103 | Rh | 1 | 2191312 | 2.71 | 2230000 | 98.3 | 30 - 150 |
| 165 | Ho | 1 | 3870908 | 1.82 | 3774000 | 102.6 | 30 - 150 |
| 209 | Bi | 1 | 3864617 | 3.83 | 4015000 | 96.3 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\087SMPL.D\087SMPL.D#
 Date Acquired: Jul 26 2019 01:53 pm Acq. Method: 1002RUN.m
 Sample Name: 580-87685-A-5-C SD Vial Number: 2510
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **50.00** Final Dil Factor: **50.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|----------------|--------------|-------|--------|-----|------|
| 9 | Be | 1 | 0.081 ug/l | 4.05 | 45.8 | 9000 | 74 | P |
| 23 | Na | 1 | 27390.000 ug/l | 1,369,500.00 | 4.2 | 225000 | 74 | A |
| 24 | Mg | 1 | 333.900 ug/l | 16,695.00 | 4.0 | 225000 | 74 | P |
| 27 | Al | 1 | 91.030 ug/l | 4,551.50 | 9.8 | 225000 | 74 | P |
| 31 | P | 1 | 127.800 ug/l | 6,390.00 | 12.7 | 225000 | 74 | P |
| 39 | K | 1 | 434.500 ug/l | 21,725.00 | 4.8 | 225000 | 74 | P |
| 44 | Ca | 1 | 2639.000 ug/l | 131,950.00 | 4.7 | 225000 | 74 | P |
| 47 | Ti | 1 | 3.206 ug/l | 160.30 | 16.2 | 900 | 74 | P |
| 51 | V | 1 | 1.525 ug/l | 76.25 | 13.6 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.314 ug/l | 15.71 | 5.6 | 9000 | 74 | P |
| 55 | Mn | 1 | 9.774 ug/l | 488.70 | 3.4 | 9000 | 74 | P |
| 56 | Fe | 1 | 64.960 ug/l | 3,248.00 | 4.8 | 225000 | 74 | P |
| 59 | Co | 1 | 0.086 ug/l | 4.31 | 9.8 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.029 ug/l | -1.44 | 138.4 | 9000 | 74 | P |
| 63 | Cu | 1 | 0.420 ug/l | 20.98 | 6.7 | 9000 | 74 | P |
| 66 | Zn | 1 | 2.332 ug/l | 116.60 | 7.4 | 9000 | 74 | P |
| 75 | As | 1 | 0.510 ug/l | 25.49 | 18.4 | 9000 | 74 | P |
| 78 | Se | 1 | 0.268 ug/l | 13.40 | 102.2 | 9000 | 74 | P |
| 88 | Sr | 1 | 9.765 ug/l | 488.25 | 3.7 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.244 ug/l | 12.20 | 15.2 | 900 | 103 | P |
| 109 | Ag | 1 | 0.022 ug/l | 1.10 | 42.3 | 900 | 103 | P |
| 114 | Cd | 1 | 0.026 ug/l | 1.30 | 47.3 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.591 ug/l | 29.55 | 12.3 | 900 | 103 | P |
| 123 | Sb | 1 | 0.270 ug/l | 13.51 | 7.3 | 900 | 103 | P |
| 135 | Ba | 1 | 3.219 ug/l | 160.95 | 9.6 | 9000 | 103 | P |
| 201 | Hg | 1 | -0.006 ug/l | -0.29 | 288.2 | 45 | 209 | P |
| 205 | Tl | 1 | 0.050 ug/l | 2.51 | 18.7 | 900 | 209 | P |
| 208 | Pb | 1 | 0.122 ug/l | 6.11 | 5.6 | 9000 | 209 | P |
| 238 | U | 1 | 0.077 ug/l | 3.84 | 41.6 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7363764 | 2.85 | 6901000 | 106.7 | 30 - 150 |
| 74 | Ge | 1 | 6087122 | 2.16 | 5721000 | 106.4 | 30 - 150 |
| 103 | Rh | 1 | 2244384 | 1.85 | 2230000 | 100.6 | 30 - 150 |
| 165 | Ho | 1 | 3921472 | 2.63 | 3774000 | 103.9 | 30 - 150 |
| 209 | Bi | 1 | 3947990 | 2.00 | 4015000 | 98.3 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\088SMPL.D\088SMPL.D#
 Date Acquired: Jul 26 2019 01:57 pm Acq. Method: 1002RUN.m
 Sample Name: CCV-2361404 Vial Number: 1104
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|---------------|----------|-----|--------|-----|------|
| 9 | Be | 1 | 48.220 ug/l | 48.22 | 2.0 | 9000 | 74 | P |
| 23 | Na | 1 | 5098.000 ug/l | 5,098.00 | 1.2 | 225000 | 74 | A |
| 24 | Mg | 1 | 4876.000 ug/l | 4,876.00 | 1.8 | 225000 | 74 | A |
| 27 | Al | 1 | 478.900 ug/l | 478.90 | 1.8 | 225000 | 74 | P |
| 31 | P | 1 | 4860.000 ug/l | 4,860.00 | 1.4 | 225000 | 74 | P |
| 39 | K | 1 | 4918.000 ug/l | 4,918.00 | 0.5 | 225000 | 74 | A |
| 44 | Ca | 1 | 4927.000 ug/l | 4,927.00 | 1.5 | 225000 | 74 | P |
| 47 | Ti | 1 | 48.800 ug/l | 48.80 | 2.8 | 900 | 74 | P |
| 51 | V | 1 | 49.570 ug/l | 49.57 | 2.1 | 9000 | 74 | P |
| 52 | Cr | 1 | 48.730 ug/l | 48.73 | 1.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 49.240 ug/l | 49.24 | 1.9 | 9000 | 74 | P |
| 56 | Fe | 1 | 4916.000 ug/l | 4,916.00 | 1.9 | 225000 | 74 | A |
| 59 | Co | 1 | 48.600 ug/l | 48.60 | 1.2 | 9000 | 74 | P |
| 60 | Ni | 1 | 48.690 ug/l | 48.69 | 1.8 | 9000 | 74 | P |
| 63 | Cu | 1 | 48.740 ug/l | 48.74 | 0.9 | 9000 | 74 | P |
| 66 | Zn | 1 | 49.200 ug/l | 49.20 | 2.2 | 9000 | 74 | P |
| 75 | As | 1 | 49.080 ug/l | 49.08 | 1.7 | 9000 | 74 | P |
| 78 | Se | 1 | 49.220 ug/l | 49.22 | 1.8 | 9000 | 74 | P |
| 88 | Sr | 1 | 49.460 ug/l | 49.46 | 1.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 49.490 ug/l | 49.49 | 1.7 | 900 | 103 | P |
| 109 | Ag | 1 | 49.310 ug/l | 49.31 | 2.5 | 900 | 103 | P |
| 114 | Cd | 1 | 49.380 ug/l | 49.38 | 1.6 | 9000 | 103 | P |
| 118 | Sn | 1 | 49.760 ug/l | 49.76 | 1.1 | 900 | 103 | P |
| 123 | Sb | 1 | 49.690 ug/l | 49.69 | 0.8 | 900 | 103 | P |
| 135 | Ba | 1 | 48.690 ug/l | 48.69 | 1.3 | 9000 | 103 | P |
| 201 | Hg | 1 | 2.457 ug/l | 2.46 | 3.1 | 45 | 209 | P |
| 205 | Tl | 1 | 48.530 ug/l | 48.53 | 0.4 | 900 | 209 | P |
| 208 | Pb | 1 | 48.940 ug/l | 48.94 | 0.2 | 9000 | 209 | P |
| 238 | U | 1 | 47.800 ug/l | 47.80 | 1.3 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7320968 | 1.07 | 6901000 | 106.1 | 30 - 150 |
| 74 | Ge | 1 | 6077301 | 1.19 | 5721000 | 106.2 | 30 - 150 |
| 103 | Rh | 1 | 2286372 | 0.36 | 2230000 | 102.5 | 30 - 150 |
| 165 | Ho | 1 | 3961285 | 0.38 | 3774000 | 105.0 | 30 - 150 |
| 209 | Bi | 1 | 4026157 | 1.09 | 4015000 | 100.3 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\089SMPL.D\089SMPL.D#
 Date Acquired: Jul 26 2019 02:02 pm Acq. Method: 1002RUN.m
 Sample Name: CCB Vial Number: 1306
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.070 ug/l | 0.07 | 24.0 | 9000 | 74 | P |
| 23 | Na | 1 | 147.600 ug/l | 147.60 | 8.0 | 225000 | 74 | P |
| 24 | Mg | 1 | 1.552 ug/l | 1.55 | 17.2 | 225000 | 74 | P |
| 27 | Al | 1 | 0.266 ug/l | 0.27 | 97.3 | 225000 | 74 | P |
| 31 | P | 1 | -2.038 ug/l | -2.04 | 910.7 | 225000 | 74 | P |
| 39 | K | 1 | -1.768 ug/l | -1.77 | 553.5 | 225000 | 74 | P |
| 44 | Ca | 1 | -1.455 ug/l | -1.46 | 172.4 | 225000 | 74 | P |
| 47 | Ti | 1 | 0.119 ug/l | 0.12 | 87.2 | 900 | 74 | P |
| 51 | V | 1 | 0.658 ug/l | 0.66 | 35.9 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.061 ug/l | 0.06 | 23.2 | 9000 | 74 | P |
| 55 | Mn | 1 | -0.086 ug/l | -0.09 | 7.4 | 9000 | 74 | P |
| 56 | Fe | 1 | 3.472 ug/l | 3.47 | 25.8 | 225000 | 74 | P |
| 59 | Co | 1 | 0.028 ug/l | 0.03 | 67.2 | 9000 | 74 | P |
| 60 | Ni | 1 | -0.177 ug/l | -0.18 | 24.1 | 9000 | 74 | P |
| 63 | Cu | 1 | -0.046 ug/l | -0.05 | 143.0 | 9000 | 74 | P |
| 66 | Zn | 1 | -0.054 ug/l | -0.05 | 91.0 | 9000 | 74 | P |
| 75 | As | 1 | 0.220 ug/l | 0.22 | 94.2 | 9000 | 74 | P |
| 78 | Se | 1 | 0.043 ug/l | 0.04 | 205.6 | 9000 | 74 | P |
| 88 | Sr | 1 | -0.031 ug/l | -0.03 | 131.4 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.121 ug/l | 0.12 | 4.1 | 900 | 103 | P |
| 109 | Ag | 1 | 0.019 ug/l | 0.02 | 43.3 | 900 | 103 | P |
| 114 | Cd | 1 | 0.021 ug/l | 0.02 | 34.1 | 9000 | 103 | P |
| 118 | Sn | 1 | 0.297 ug/l | 0.30 | 19.2 | 900 | 103 | P |
| 123 | Sb | 1 | 0.147 ug/l | 0.15 | 10.9 | 900 | 103 | P |
| 135 | Ba | 1 | 0.031 ug/l | 0.03 | 88.2 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.002 ug/l | 0.00 | 146.1 | 45 | 209 | P |
| 205 | Tl | 1 | 0.031 ug/l | 0.03 | 39.0 | 900 | 209 | P |
| 208 | Pb | 1 | 0.012 ug/l | 0.01 | 41.8 | 9000 | 209 | P |
| 238 | U | 1 | 0.071 ug/l | 0.07 | 23.9 | 9000 | 209 | P |

ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7238196 | 3.56 | 6901000 | 104.9 | 30 - 150 |
| 74 | Ge | 1 | 5996886 | 2.13 | 5721000 | 104.8 | 30 - 150 |
| 103 | Rh | 1 | 2316930 | 0.87 | 2230000 | 103.9 | 30 - 150 |
| 165 | Ho | 1 | 3930156 | 1.93 | 3774000 | 104.1 | 30 - 150 |
| 209 | Bi | 1 | 4113068 | 1.74 | 4015000 | 102.4 | 30 - 150 |

Analytes:

Pass

ISTD:

Pass

0 :Element Failures

0 :Max. Number of Failures Allowed

0 :ISTD Failures

0 :Max. Number of ISTD Failures Allowed

TA Seattle Sample Report 200.8/6020/6020A ICP-MS 7500ce

Data File: C:\ICPCHEM\1\DATA\072619.B\090SMPL.D\090SMPL.D#
 Date Acquired: Jul 26 2019 02:06 pm Acq. Method: 1002RUN.m
 Sample Name: CCVL-2361376 Vial Number: 1106
 Misc Info: STDS&CCV-26, ICV-35,RL-2,ICSA&ICSAB 072219

Current Method: C:\ICPCHEM\1\METHODS\00He_REP.M Operator: FCW ICP-MS ID#SEA44 Tune # Name
 Calibration File: C:\ICPCHEM\1\CALIB\00He_REP.C 1 \\1\7500\he.u
 Last Cal. Update: Jul 26 2019 04:49 pm 2 \CHEM\1\7500\
 ISTD Ref File : C:\ICPCHEM\1\DATA\072619.B\013CALB.D\013CALB.D# 3 \CHEM\1\7500\
 Dilution Factor: **1.00** Final Dil Factor: **1.00**

QC Elements

| Element | T# | Conc. Units | Corr. Conc | RSD(%) | LDR | IS | P/A | Flag |
|---------|----|-------------|--------------|--------|-------|--------|-----|------|
| 9 | Be | 1 | 0.372 ug/l | 0.37 | 19.7 | 9000 | 74 | P |
| 23 | Na | 1 | 119.700 ug/l | 119.70 | 2.8 | 225000 | 74 | P |
| 24 | Mg | 1 | 0.668 ug/l | 0.67 | 28.6 | 225000 | 74 | P |
| 27 | Al | 1 | 92.470 ug/l | 92.47 | 4.4 | 225000 | 74 | P |
| 31 | P | 1 | 444.000 ug/l | 444.00 | 1.7 | 225000 | 74 | P |
| 39 | K | 1 | -18.020 ug/l | -18.02 | 40.6 | 225000 | 74 | P |
| 44 | Ca | 1 | 0.285 ug/l | 0.28 | 927.0 | 225000 | 74 | P |
| 47 | Ti | 1 | 1.196 ug/l | 1.20 | 20.1 | 900 | 74 | P |
| 51 | V | 1 | 3.863 ug/l | 3.86 | 3.8 | 9000 | 74 | P |
| 52 | Cr | 1 | 0.375 ug/l | 0.37 | 7.2 | 9000 | 74 | P |
| 55 | Mn | 1 | 1.825 ug/l | 1.83 | 4.9 | 9000 | 74 | P |
| 56 | Fe | 1 | 189.000 ug/l | 189.00 | 1.3 | 225000 | 74 | P |
| 59 | Co | 1 | 0.342 ug/l | 0.34 | 3.7 | 9000 | 74 | P |
| 60 | Ni | 1 | 2.578 ug/l | 2.58 | 8.0 | 9000 | 74 | P |
| 63 | Cu | 1 | 1.863 ug/l | 1.86 | 5.7 | 9000 | 74 | P |
| 66 | Zn | 1 | 6.828 ug/l | 6.83 | 8.4 | 9000 | 74 | P |
| 75 | As | 1 | 1.155 ug/l | 1.16 | 15.7 | 9000 | 74 | P |
| 78 | Se | 1 | 7.577 ug/l | 7.58 | 6.3 | 9000 | 74 | P |
| 88 | Sr | 1 | 0.327 ug/l | 0.33 | 8.0 | 9000 | 74 | P |
| 95 | Mo | 1 | 0.853 ug/l | 0.85 | 2.6 | 900 | 103 | P |
| 109 | Ag | 1 | 0.413 ug/l | 0.41 | 9.3 | 900 | 103 | P |
| 114 | Cd | 1 | 0.439 ug/l | 0.44 | 8.4 | 9000 | 103 | P |
| 118 | Sn | 1 | 9.816 ug/l | 9.82 | 1.4 | 900 | 103 | P |
| 123 | Sb | 1 | 0.462 ug/l | 0.46 | 13.1 | 900 | 103 | P |
| 135 | Ba | 1 | 1.110 ug/l | 1.11 | 2.9 | 9000 | 103 | P |
| 201 | Hg | 1 | 0.236 ug/l | 0.24 | 27.1 | 45 | 209 | P |
| 205 | Tl | 1 | 1.006 ug/l | 1.01 | 4.7 | 900 | 209 | P |
| 208 | Pb | 1 | 0.784 ug/l | 0.78 | 0.8 | 9000 | 209 | P |
| 238 | U | 1 | 0.634 ug/l | 0.63 | 3.6 | 9000 | 209 | P |

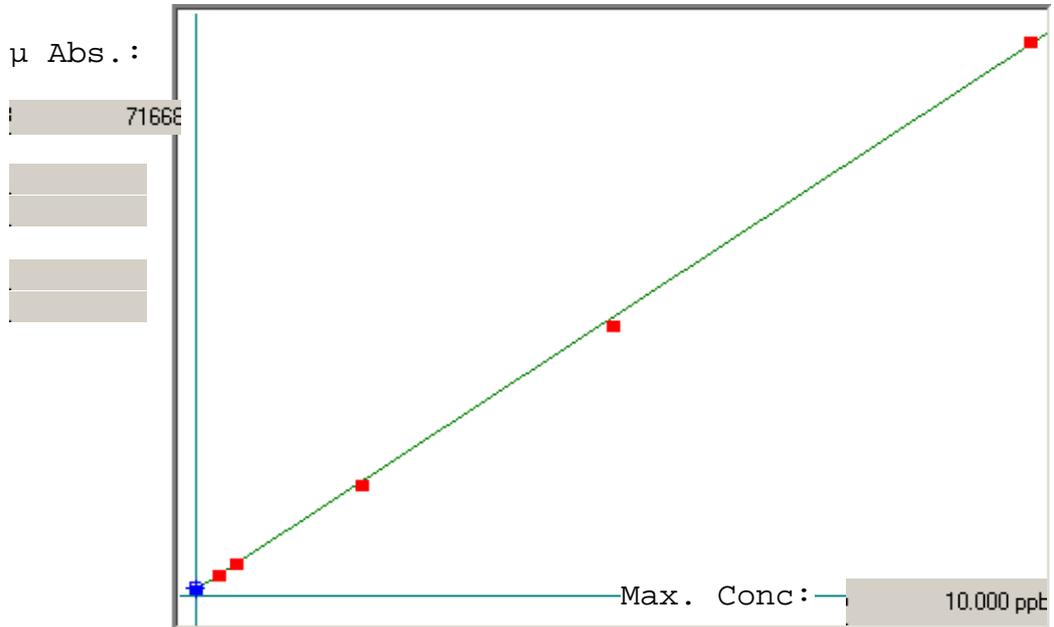
ISTD Elements

| IS Mass | Tune | CPS Mean | RSD(%) | Ref Value | Rec(%) | QC Range(%) | Flag |
|---------|------|----------|---------|-----------|---------|-------------|----------|
| 45 | Sc | 1 | 7324533 | 0.12 | 6901000 | 106.1 | 30 - 150 |
| 74 | Ge | 1 | 6163856 | 1.30 | 5721000 | 107.7 | 30 - 150 |
| 103 | Rh | 1 | 2276435 | 0.84 | 2230000 | 102.1 | 30 - 150 |
| 165 | Ho | 1 | 3943222 | 0.91 | 3774000 | 104.5 | 30 - 150 |
| 209 | Bi | 1 | 4006982 | 0.67 | 4015000 | 99.8 | 30 - 150 |

Analytes: Pass ISTD: Pass
 0 :Element Failures 0 :Max. Number of Failures Allowed
 0 :ISTD Failures 0 :Max. Number of ISTD Failures Allowed

Hg

Linear



A= 0.0000e+000
 B= 1.4175e-004
 C= -9.5574e-002
 Rho= 0.9998408
 Accept=Accepted
 Accepted Date= 07/24/19 10:39

| Std ID | Conc. | Calc. | Dev. | Mean | SD or %RSD | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 |
|--------|--------|--------|--------|-------|------------|-------|-------|-------|-------|-------|
| STD 0 | 0.000 | 0.068 | 0.068 | 1151 | 46.828 | 1091 | 1159 | 1205 | | |
| STD 1 | 0.300 | 0.314 | 0.014 | 2892 | 1.5 % | 2834 | 2909 | 2933 | | |
| STD 2 | 0.500 | 0.512 | 0.012 | 4286 | 2.1 % | 4177 | 4286 | 4395 | | |
| STD 3 | 2.000 | 1.960 | -0.040 | 14504 | 1.3 % | 14275 | 14508 | 14730 | | |
| STD 4 | 5.000 | 4.882 | -0.118 | 35117 | 1.4 % | 34526 | 35106 | 35720 | | |
| STD 5 | 10.000 | 10.063 | 0.063 | 71668 | 1.5 % | 70295 | 71740 | 72969 | | |

306428-TAC104-TH

Method: Hg Operator: Admin

Date of Analysis: 24 Jul 2019 10:24:28

| Sample ID | Mean | Units | RSD | Date | Extended ID | Seq ID | Curve Type | Type | Method | Strd Conc |
|----------------|------|-------|-----|------|-------------|--------|------------|------|--------|-----------|
| 0 µ Abs | | | | | | | | | | |
| A: 0.0000e+000 | | | | | | | | | | |
| B: 0.0000e+000 | | | | | | | | | | |
| C: 0.0000e+000 | | | | | | | | | | |
| R: 0.0000000 | | | | | | | | | | |

Conc 0.0000

| | | | | | | | | | | |
|----------------------|---------------|-----|----------|-------------|----------|------|--------|---------|----|---------|
| STD 0 | 1152 | ppb | 4.0661 | 24 Jul 2019 | 10:25:39 | 6543 | Linear | Std | Hg | 0.0000 |
| STD 1 | 2892 | ppb | 1.4580 | 24 Jul 2019 | 10:27:54 | 6544 | Linear | Std | Hg | 0.3000 |
| STD 2 | 4286 | ppb | 2.0765 | 24 Jul 2019 | 10:30:07 | 6545 | Linear | Std | Hg | 0.5000 |
| STD 3 | 14504 | ppb | 1.2808 | 24 Jul 2019 | 10:32:24 | 6546 | Linear | Std | Hg | 2.0000 |
| STD 4 | 35117 | ppb | 1.3882 | 24 Jul 2019 | 10:34:39 | 6547 | Linear | Std | Hg | 5.0000 |
| STD 5 | 71668 | ppb | 1.5249 | 24 Jul 2019 | 10:36:55 | 6548 | Linear | Std | Hg | 10.0000 |
| ICV | 99.5% 3.9801 | ppb | 1.1548 | 24 Jul 2019 | 10:50:50 | 6549 | Linear | CK STND | Hg | - |
| ICB | 0.0836 | ppb | 2.5938 | 24 Jul 2019 | 10:57:25 | 6550 | Linear | CK STND | Hg | - |
| RL | 118.1% 0.3542 | ppb | 1.0013 | 24 Jul 2019 | 10:59:39 | 6551 | Linear | CK STND | Hg | - |
| CCV | 103.5% 5.1773 | ppb | 1.0750 | 24 Jul 2019 | 12:57:32 | 6552 | Linear | CK STND | Hg | - |
| CCB | 0.0252 | ppb | 23.3891 | 24 Jul 2019 | 12:59:44 | 6553 | Linear | CK STND | Hg | - |
| MB 580-306285/1-B | 0.0011 | ppb | 107.0581 | 24 Jul 2019 | 13:02:11 | 6554 | Linear | SMPL | Hg | - |
| LCS 580-306285/2-B | 2.0152 | ppb | 1.1111 | 24 Jul 2019 | 13:04:24 | 6555 | Linear | SMPL | Hg | - |
| LCS 580-306285/3-B | 2.0549 | ppb | 1.0779 | 24 Jul 2019 | 13:06:37 | 6556 | Linear | SMPL | Hg | - |
| 580-87771-A-1-C | 0.0100 | ppb | 38.5532 | 24 Jul 2019 | 13:08:52 | 6557 | Linear | SMPL | Hg | - |
| 580-87771-A-1-D DU | 0.0358 | ppb | 13.1647 | 24 Jul 2019 | 13:11:08 | 6558 | Linear | SMPL | Hg | - |
| 580-87771-A-1-E MS | 2.0834 | ppb | 1.1915 | 24 Jul 2019 | 13:13:23 | 6559 | Linear | SMPL | Hg | - |
| 580-87771-A-1-F MSD | 2.1360 | ppb | 0.5805 | 24 Jul 2019 | 13:15:36 | 6560 | Linear | SMPL | Hg | - |
| MB 580-306279/1-B | -0.0216 | ppb | -1.6348 | 24 Jul 2019 | 13:17:54 | 6564 | Linear | SMPL | Hg | - |
| LCS 580-306279/2-B | 2.0984 | ppb | 1.3096 | 24 Jul 2019 | 13:20:14 | 6565 | Linear | SMPL | Hg | - |
| LCS 580-306279/3-B | 2.0558 | ppb | 1.3659 | 24 Jul 2019 | 13:22:28 | 6566 | Linear | SMPL | Hg | - |
| CCV | 101.9% 5.0942 | ppb | 1.1148 | 24 Jul 2019 | 13:24:44 | 6567 | Linear | CK STND | Hg | - |
| CCB | 0.0286 | ppb | 9.7824 | 24 Jul 2019 | 13:27:00 | 6568 | Linear | CK STND | Hg | - |
| 580-87784-A-1-D | 1.4726 | ppb | 0.6560 | 24 Jul 2019 | 13:29:29 | 6569 | Linear | SMPL | Hg | - |
| 580-87784-A-1-E DU | 1.5199 | ppb | 1.4745 | 24 Jul 2019 | 13:31:44 | 6570 | Linear | SMPL | Hg | - |
| 580-87784-A-1-F MS | 3.5044 | ppb | 0.8827 | 24 Jul 2019 | 13:34:04 | 6571 | Linear | SMPL | Hg | - |
| 580-87784-A-1-G MSD | 3.4303 | ppb | 0.6364 | 24 Jul 2019 | 13:36:21 | 6572 | Linear | SMPL | Hg | - |
| 580-87568-A-3-B | -0.0275 | ppb | -14.3982 | 24 Jul 2019 | 13:38:39 | 6598 | Linear | SMPL | Hg | - |
| 580-87568-A-7-B | 0.0695 | ppb | 0.9170 | 24 Jul 2019 | 13:41:01 | 6599 | Linear | SMPL | Hg | - |
| 580-87568-A-8-B | 0.0784 | ppb | 4.5481 | 24 Jul 2019 | 13:43:17 | 6600 | Linear | SMPL | Hg | - |
| 580-87568-A-9-B | 0.4768 | ppb | 1.2872 | 24 Jul 2019 | 13:45:31 | 6601 | Linear | SMPL | Hg | - |
| 580-87568-A-10-B | 0.1700 | ppb | 3.9543 | 24 Jul 2019 | 13:47:45 | 6602 | Linear | SMPL | Hg | - |
| CCV | 98.9% 4.9463 | ppb | 1.0944 | 24 Jul 2019 | 13:50:05 | 6603 | Linear | CK STND | Hg | - |
| CCB | -0.0145 | ppb | -14.5280 | 24 Jul 2019 | 13:52:20 | 6604 | Linear | CK STND | Hg | - |
| MB 580-306478/11-A | 0.0195 | ppb | 19.3254 | 24 Jul 2019 | 13:54:45 | 6605 | Linear | SMPL | Hg | - |
| LCS 580-306478/12-A | 2.0661 | ppb | 1.4376 | 24 Jul 2019 | 13:57:04 | 6606 | Linear | SMPL | Hg | - |
| LCS 580-306478/13-A | 2.0332 | ppb | 1.2120 | 24 Jul 2019 | 13:59:18 | 6607 | Linear | SMPL | Hg | - |
| 580-87761-L-29-A | -0.0964 | ppb | -3.1208 | 24 Jul 2019 | 14:06:15 | 6608 | Linear | SMPL | Hg | - |
| 580-87761-L-29-B DU | -0.0266 | ppb | -5.2654 | 24 Jul 2019 | 14:08:35 | 6609 | Linear | SMPL | Hg | - |
| 580-87761-L-29-C MS | 1.9277 | ppb | 0.8733 | 24 Jul 2019 | 14:10:50 | 6610 | Linear | SMPL | Hg | - |
| 580-87761-L-29-D MSD | 1.8387 | ppb | 1.1029 | 24 Jul 2019 | 14:13:07 | 6611 | Linear | SMPL | Hg | - |
| CCV | 103.2% 5.1579 | ppb | 1.0441 | 24 Jul 2019 | 14:15:23 | 6612 | Linear | CK STND | Hg | - |
| CCB | 0.0201 | ppb | 21.7335 | 24 Jul 2019 | 14:17:38 | 6613 | Linear | CK STND | Hg | - |
| 580-87761-L-28-A | -0.0471 | ppb | -1.2357 | 24 Jul 2019 | 14:20:00 | 6614 | Linear | SMPL | Hg | - |
| 580-87810-B-2-A | -0.1045 | ppb | -0.4430 | 24 Jul 2019 | 14:22:14 | 6615 | Linear | SMPL | Hg | - |
| 590-11416-C-5-B | 0.1846 | ppb | 4.2318 | 24 Jul 2019 | 14:24:31 | 6616 | Linear | SMPL | Hg | - |
| 580-87750-A-1-A | -0.1060 | ppb | -3.9566 | 24 Jul 2019 | 14:26:46 | 6617 | Linear | SMPL | Hg | - |
| MB 580-306498/14-A | -0.0686 | ppb | -2.0719 | 24 Jul 2019 | 14:29:03 | 6618 | Linear | SMPL | Hg | - |
| LCS 580-306498/15-A | 2.0269 | ppb | 1.0125 | 24 Jul 2019 | 14:31:19 | 6619 | Linear | SMPL | Hg | - |
| LCS 580-306498/16-A | 1.9657 | ppb | 1.3963 | 24 Jul 2019 | 14:33:35 | 6620 | Linear | SMPL | Hg | - |
| 580-87642-A-1-B | -0.1054 | ppb | -2.1611 | 24 Jul 2019 | 14:35:53 | 6621 | Linear | SMPL | Hg | - |
| 580-87642-A-1-C DU | -0.0896 | ppb | -4.4418 | 24 Jul 2019 | 14:38:12 | 6622 | Linear | SMPL | Hg | - |
| 580-87642-A-1-D MS | 2.0842 | ppb | 1.1049 | 24 Jul 2019 | 14:40:27 | 6623 | Linear | SMPL | Hg | - |
| CCV | 101.1% 5.0551 | ppb | 1.1335 | 24 Jul 2019 | 14:42:40 | 6624 | Linear | CK STND | Hg | - |
| CCB | 0.0283 | ppb | 12.6913 | 24 Jul 2019 | 14:44:54 | 6625 | Linear | CK STND | Hg | - |
| 580-87642-A-1-E MSD | 2.1005 | ppb | 1.5777 | 24 Jul 2019 | 14:47:22 | 6626 | Linear | SMPL | Hg | - |
| 580-87558-C-1-E | -0.1095 | ppb | -4.9173 | 24 Jul 2019 | 14:49:35 | 6627 | Linear | SMPL | Hg | - |
| 580-87558-C-2-C | -0.0769 | ppb | -1.8141 | 24 Jul 2019 | 14:51:53 | 6628 | Linear | SMPL | Hg | - |
| 580-87558-C-3-B | 0.0310 | ppb | 40.1864 | 24 Jul 2019 | 14:54:16 | 6629 | Linear | SMPL | Hg | - |
| 580-87558-C-4-B | -0.1138 | ppb | -0.2936 | 24 Jul 2019 | 14:56:30 | 6630 | Linear | SMPL | Hg | - |
| 580-87558-C-5-B | -0.0783 | ppb | -3.1356 | 24 Jul 2019 | 14:58:45 | 6631 | Linear | SMPL | Hg | - |
| 580-87558-C-6-B | -0.0751 | ppb | -0.8761 | 24 Jul 2019 | 15:01:01 | 6632 | Linear | SMPL | Hg | - |
| 580-87558-C-7-B | -0.0611 | ppb | -5.0485 | 24 Jul 2019 | 15:03:15 | 6633 | Linear | SMPL | Hg | - |
| 580-87558-C-8-C | -0.0674 | ppb | -3.4777 | 24 Jul 2019 | 15:05:29 | 6634 | Linear | SMPL | Hg | - |
| 580-87558-C-9-C | -0.0661 | ppb | -5.4372 | 24 Jul 2019 | 15:07:46 | 6635 | Linear | SMPL | Hg | - |
| CCV | 101.8% 5.0924 | ppb | 0.8800 | 24 Jul 2019 | 15:10:00 | 6636 | Linear | CK STND | Hg | - |
| CCB | 0.0062 | ppb | 40.2175 | 24 Jul 2019 | 15:12:13 | 6637 | Linear | CK STND | Hg | - |
| 580-87790-A-5-A @2 | 3.8268 | ppb | 0.9502 | 24 Jul 2019 | 15:14:39 | 6638 | Linear | SMPL | Hg | - |
| 580-87524-A-2-A @2 | 9.4262 | ppb | 1.3164 | 24 Jul 2019 | 15:16:54 | 6639 | Linear | SMPL | Hg | - |
| CCV | 101.2% 5.0581 | ppb | 1.1272 | 24 Jul 2019 | 15:26:13 | 6640 | Linear | CK STND | Hg | - |
| CCB | 0.0261 | ppb | 4.4569 | 24 Jul 2019 | 15:28:30 | 6641 | Linear | CK STND | Hg | - |

Subcontract Data

Shipping and Receiving Documents



580-87761 Chain of Custody



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

Page 1 of 5

Rush TAT Yes 5 days No

Req Due Date (mm/dd/yyyy): EDD by 7/26/2019
Lab Work Order Number: 58013435 - 6

Lab Name: Eurofins TestAmerica, Seattle
 Lab Address: 5755 8th Street East, Tacoma, WA 98424
 Lab PM: Nathan Lewis
 Lab Phone: (253) 248-4975
 Lab Shipping Acct:
 Lab Bottle Order No:
 Other Info:
 BP/IRM PM: Kyle Christie
 PM Phone: (714) 815-8971
 PM Email: kyle.christie@bp.com

BP/ARC Facility Address: Former Terminal 22T
 City, State, ZIP Code: Portland OR 97241
 Lead Regulatory Agency: none
 California Global ID No.: not applicable
 Erifos Proposal No: 00BX4-0008
 Accounting Mode: Provision OOC-BU OOC-RM
 Stage:
 Activity: Sediment Sampling

Consultant/Contractor: Haley & Aldrich
 Consultant/Contractor Project No: 129768-004
 Address: 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108
 Consultant/Contractor PM: Laura McWilliams
 Phone: (619) 990-6421 Email: lmcwilliams@haleyaldrich.com
 Send/Submit EDD to: vgodard@haleyaldrich.com and lmwilliams@haleyaldrich.com
 Invoice To: WVR329993 BP-RM X BP-Other

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Depth Unit | Time | Requested Analyses | | | | | | | | | | Comments | | |
|---------|---|------------|-------|--------------------|-------------------------|-------------------|--|--|-------------------------------------|---------------------------------------|------------------------------------|-------------------------------------|------------------------|----------|--------------------------|--|
| | | | | Matrix | Percent Solids (D 2216) | TOC - PSEP (9060) | SEF pest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as arclors - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | | Freeze 1 jar for archive | |
| | | | 14:00 | | X | X | X | X | X | X | X | X | X | X | X | |
| | | | 14:05 | | X | X | X | X | X | X | X | X | X | X | X | |
| | | | 14:10 | | X | X | X | X | X | X | X | X | X | X | X | |
| | | | 14:15 | | X | X | X | X | X | X | X | X | X | X | X | |
| | | | 14:20 | | X | X | X | X | X | X | X | X | X | X | X | |
| | | | 14:25 | | X | X | X | X | X | X | X | X | X | X | X | |
| | | | 15:20 | | X | X | X | X | X | X | X | X | X | X | X | |

RUSH!

Relinquished By / Affiliation: *Laura McWilliams*
 Date: 7/26/19
 Time: 13:00
 Accepted By / Affiliation: *TA POA*
 Date: 7/18/19
 Time: 1:30

Sampler's Name: Laura McWilliams
 Sampler's Company: Haley & Aldrich
 Ship Method: Deliver to Portland Service Center
 Shipment Tracking No:
 Ship Date:
 Special Instructions:
 THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 1.2 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

2.1 U.I.
 4.6 U.I.
 5.3 U.I.

Proprietary and Confidential
 Property of BP and its Affiliates



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

Page 2 of 5
Rush TAT Yes 5 days No

BP Site Node Path: _____ Req Due Date (mm/dd/yyyy): EDD by 7/26/2019
BP/IRM Facility No: _____ Lab Work Order Number: 58013435 - 6

Lab Name: Eurofins TestAmerica, Seattle
 Lab Address: 5755 8th Street East, Tacoma, WA 98424
 Lab PM: Nathan Lewis
 Lab Phone: (253) 248-4975
 Lab Shipping Acct: _____
 Lab Bottle Order No: _____
 Other Info: _____

BP/ARC Facility Address: Former Terminal 22T
 City, State, ZIP Code: Portland OR 97241
 Lead Regulatory Agency: none
 California Global ID No.: not applicable
 Enfos Proposal No: 00BX4-0008
 Accounting Mode: Provision OOC-BU OOC-RM
 Stage: _____
 Activity: Sediment Sampling

Consultant/Contractor: Haley & Aldrich
 Consultant/Contractor Project No: 129788-004
 Address: 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108
 Consultant/Contractor PM: Laura McWilliams
 Phone: (619) 990-6421 Email: lmcwilliams@haleyaldrich.com
 Send/Submit EDD to: vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com
 Invoice To: WVR329983 BP-RM BP-Other: _____

BP/IRM PM: Kyle Christie
 PM Phone: (714) 815-8871
 PM Email: kyle.christie@bp.com

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Requested Analyses | | | | Report Type & QC Level | Comments | | | | | | | | |
|---------|---|------|--------------------|---------|----------------------------|-------------------------|------------------------|--|--|------------------------------------|--------------------------------------|------------------------------------|-------------------------------------|------------------------|--------------------------|--|
| | | | Laboratory | Seattle | Knox | Seattle | | | | | | | | | | |
| | | | Depth Unit | Matrix | Total Number of Containers | Percent Solids (D 2216) | TOC - PSEP (9060) | SEF pest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as arders - low level (8082A) | Dioxins & Furans - 17 isomers (613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVA4 (7471A) | Freeze 1 jar for archive | |
| | 22T-VB-01-2.5-4.0-20190717 | 1525 | 4 | | 4 | X | X | X | X | X | X | X | X | X | X | |
| | 22T-VB-01-4.0-5.8-20190717 | 1530 | 4 | | 4 | X | X | X | X | X | X | X | X | X | X | |
| | 22T-VB-01-5.8-8.0-20190719 | 1535 | 4 | | 4 | X | X | X | X | X | X | X | X | X | X | |
| | 22T-VB-03-0.0-2.0-20190719 | 1630 | 4 | | 4 | X | X | X | X | X | X | X | X | X | X | |
| | 22T-VB-03-0.0-4.0-20190719 | 1635 | 4 | | 4 | X | X | X | X | X | X | X | X | X | X | |
| | 22T-VB-03-4.0-6.0-20190719 | 1640 | 4 | | 4 | X | X | X | X | X | X | X | X | X | X | |
| | 22T-VB-03-6.0-8.0-20190719 | 1645 | 4 | | 4 | X | X | X | X | X | X | X | X | X | X | |

Relinquished By / Affiliation: *Kyle Christie*
 Date: 7/16/19 1300
 Requisitioned By / Affiliation: *Laura McWilliams*
 Date: 7/16/19 1300
 Accepted By / Affiliation: *Laura McWilliams*
 Date: 7/16/19 1300

Sampler's Name: Laura McWilliams
 Sampler's Company: Haley & Aldrich
 Ship Method: Deliver to Portland Service Center
 Shipment Tracking No: _____

Special Instructions:
 THIS LINE - LAB USE ONLY: Custody Seals in Place: Yes / No | Temp Blank: Yes / No | Cooler: Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Laboratory Management Program (LaMP) Chain of Custody Record
 Soil, Sediment and Groundwater Samples



Req Due Date (mm/dd/yyyy): EDD by 7/26/2019
 Lab Work Order Number: 58013435 - 6

| | | | | | |
|-----------------------|--|---------------------------|-------------------------|------------------------------------|---|
| Lab Name: | Eurofins TestAmerica, Seattle | BP/ARC Facility Address: | Former Terminal 22T | Consultant/Contractor: | Haley & Aldrich |
| Lab Address: | 5755 8th Street East, Tacoma, WA 98424 | City, State, ZIP Code: | Portland OR 97241 | Consultant/Contractor Project No.: | 129768-004 |
| Lab PM: | Nathan Lewis | Lead Regulatory Agency: | none | Address: | 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108 |
| Lab Phone: | (253) 248-4975 | California Global ID No.: | not applicable | Consultant/Contractor PM: | Laura McWilliams |
| Lab Shipping Acct: | | Enric Proposal No.: | 00BX4-0008 | Phone: | (619) 990-6421 |
| Lab Bottle Order No.: | | Accounting Mode: | Provision OOC-BU OOC-RM | Send/Submit EDD to: | vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com |
| Other Info: | | Activity: | Sediment Sampling | Invoice To: | WR329993 |
| BP/RC PM: | Kyle Christie | Stage: | | BP-RM: | X BP-Other: |
| PM Phone: | (714) 815-8971 | | | | |
| PM Email: | kyle.christie@bp.com | | | | |

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Depth Unit | Time | Requested Analyses | | | Report Type & QC Level | Comments | | | | | |
|------------------------------|---|------------|------|--|--|-------------------------------------|---------------------------------------|------------------------------------|-------------------------------------|------------------------|--------------------------|----------------------------|---|
| | | | | Laboratory | Seattle | Sec. Knox | | | | | | | |
| 22T-VB-08-8-0-9-0-20190717 | 1650 | | | SEF pest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as aridors - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Limited (Standard) Package | |
| 22T-VB-03-9-0-11-2-20190717 | 1655 | | | TOC - PSEP (9060) | PAHs - standard list of 17 (8270D SIM) | PCBs as aridors - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Limited Plus Package | X |
| 22T-VB-03-11-2-12-20190717 | 1700 | | | Percent Solids (D 2216) | PAHs - standard list of 17 (8270D SIM) | PCBs as aridors - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Full Package | X |
| 22T-VB-03-4-0-6-0-D-20190717 | 1705 | | | | | | | | | | | | |
| 22T-SG-02-20190718 | 744 | | | | | | | | | | | | |
| 22T-SG-03-20190718 | 802 | | | | | | | | | | | | |
| 22T-SG-04-20190718 | 836 | | | | | | | | | | | | |

| | | | | | |
|-------------------------------|---------|------|---------------------------|---------|------|
| Relinquished By / Affiliation | Date | Time | Accepted By / Affiliation | Date | Time |
| Laura McWilliams | 7/18/17 | 1300 | [Signature] | 7/18/17 | 1300 |

| | | | |
|--------------------|------------------------------------|------------------------|--|
| Sampler's Name: | Laura McWilliams | Ship Date: | |
| Sampler's Company: | Haley & Aldrich | Shipment Tracking No.: | |
| Ship Method: | Deliver to Portland Service Center | Special Instructions: | |

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples



Req Due Date (mm/dd/yyyy): EDD by 7/26/2019 Rush TAT Yes 5 days No
 Lab Work Order Number: 56013435 - 6

BP/ARC Facility No: BP/ARC Facility Address: Former Terminal 22T Consultant/Contractor: Haley & Aldrich
 City, State, ZIP Code: Portland OR 97241 Consultant/Contractor Project No: 129768-004
 Lead Regulatory Agency: none Address: 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108
 California Global ID No.: not applicable Consultant/Contractor PM: Laura McWilliams
 Erfos Proposal No: 00BX4-0008 Phone: (619) 990-6421 Email: lmcwilliams@haleyaldrich.com
 Accounting Mode: Provision OOC-BU OOC-RM Send/Submit EDD to: vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com
 Stage: Sediment Sampling Invoice To: WR326993 BP-RM X BP-Other

Other Info: Requested Analyses: Report Type & QC Level:
 BP/ARM PM: Kyle Christie Laboratory: Preservation: Limited (Standard) Package
 PM Phone: (714) 815-8871 Depth Unit: Matrix: Limited Plus Package X
 PM Email: kyle.christie@bp.com Total Number of Containers: Percent Solids (D 2216) TOC - PSEP (906) SEF pest. (DDX only) - low level (8081B) PAHs - standard list of 17 (8270D SIM) PCBs as arclors - low level (8082A) Dioxins & Furans - 17 isomers (1613B) PAH + PAH custom list (8270D SIM) Metals - As, Cd, Cu, Pb, Zn (6020A) Mercury - CVA4 (7471A) Freeze 1 jar for archive Full Package X

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Relinquished By / Affiliation | | Date | | Accepted By / Affiliation | | Date | | Comments |
|---------|---|------|-------------------------------|------------------|---------|------|---------------------------|-----------------|---------|------|-------------------------|
| | | | Signature | Company | Time | Date | Signature | Company | Time | Date | |
| | 22T-SG-04-HSD-20190718 | 836 | <i>[Signature]</i> | Laura McWilliams | 7/18/19 | 1300 | <i>[Signature]</i> | Haley & Aldrich | 7/18/19 | 1300 | Extra Volung for MSKMSD |
| | 22T-SG-05-20190718 | 855 | <i>[Signature]</i> | Laura McWilliams | 7/18/19 | 1300 | <i>[Signature]</i> | Haley & Aldrich | 7/18/19 | 1300 | |
| | 22T-SG-06-20190718 | 911 | <i>[Signature]</i> | Laura McWilliams | 7/18/19 | 1300 | <i>[Signature]</i> | Haley & Aldrich | 7/18/19 | 1300 | |
| | 22T-SG-07-20190718 | 943 | <i>[Signature]</i> | Laura McWilliams | 7/18/19 | 1300 | <i>[Signature]</i> | Haley & Aldrich | 7/18/19 | 1300 | |
| | 22T-SG-08-20190718 | 1008 | <i>[Signature]</i> | Laura McWilliams | 7/18/19 | 1300 | <i>[Signature]</i> | Haley & Aldrich | 7/18/19 | 1300 | |
| | 22T-SG-09-20190718 | 1029 | <i>[Signature]</i> | Laura McWilliams | 7/18/19 | 1300 | <i>[Signature]</i> | Haley & Aldrich | 7/18/19 | 1300 | |
| | 22T-SG-01-20190718 | 1052 | <i>[Signature]</i> | Laura McWilliams | 7/18/19 | 1300 | <i>[Signature]</i> | Haley & Aldrich | 7/18/19 | 1300 | |

Sampler's Name: Laura McWilliams Ship Date:
 Sampler's Company: Haley & Aldrich Ship Method: Deliver to Portland Service Center
 Shipment Tracking No: Special Instructions:
 THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

Req Due Date (mm/dd/yyyy): EDD by 7/26/2019
Lab Work Order Number: 58013435 - 6

BP Site Node Path: _____
BP/IRM Facility No: _____

| | | | |
|----------------------|--|-----------------------------------|--|
| Lab Name: | Eurofins TestAmerica, Seattle | Consultant/Contractor: | Haley & Aldrich |
| Lab Address: | 5755 8th Street East, Tacoma, WA 98424 | Consultant/Contractor Project No: | 129768-004 |
| Lab PM: | Nathan Lewis | Address: | 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108 |
| Lab Phone: | (253) 248-4975 | Consultant/Contractor PM: | Laura McWilliams |
| Lab Shipping Acct: | | Phone: | (619) 990-6421 Email: lmcwilliams@haleyaldrich.com |
| Lab Bottle Order No: | | Send/Submit EDD to: | vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com |
| Other Info: | | Invoice To: | WR329893 BP-RM ___X___ BP-Other ___ |

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Requested Analyses | | | | | | | | | | Report Type & QC Level | Comments | | |
|---------|---|------|--------------------|---------|-------------------------|-------------------|---|--|-------------------------------------|---------------------------------------|-----------------------------------|-------------------------------------|------------------------|--------------------------|--------------------------------|--|
| | | | Laboratory | Seattle | Sac | Knox | Seattle | Seattle | Seattle | Seattle | Seattle | Seattle | | | Seattle | |
| | | | Depth Unit | Matrix | Percent Solids (D 2216) | TOC - PSEP (9060) | SEF pest. (DX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as arclors - low level (8082A) | Dioxins & Furans - 17 Isomers (1613B) | PAH + PAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Limited (Standard) Package ___ | |
| | | 730 | 12 | | | X | X | X | X | X | X | X | X | Limited Plus Package ___ | | |
| | | 1200 | 12 | | | X | X | X | X | X | X | X | X | Full Package ___ | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

standard TAT for these 3 analyses
5-day TAT for others

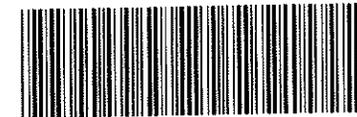
Relinquished By / Affiliation: *Laura McWilliams*
Date: 7/18/19
Time: 1300

Accepted By / Affiliation: *TARIK*
Date: 7/18/19
Time: 1300

Shipper's Name: Laura McWilliams
Shipper's Company: Haley & Aldrich
Ship Method: Deliver to Portland Service Center
Ship Date: _____
Shipment Tracking No: _____

Special Instructions:
THIS LINE - LAB USE ONLY: Custody Seals in Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____°F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

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Property of BP and its Affiliates



580-87761 Chain of Custody



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

Page 1 of 5

BP Site Node Path: _____ Req Due Date (mm/dd/yy): EDD by 7/26/2019
BP/RM Facility No: _____ Lab Work Order Number: 58013435 - 6

Rush TAT Yes 5 days No _____

| | | |
|---|--|---|
| Lab Name: Eurofins TestAmerica, Seattle | BP/ARC Facility Address: Former Terminal 22T | Consultant/Contractor: Haley & Aldrich |
| Lab Address: 5755 8th Street East, Tacoma, WA 98424 | City, State, ZIP Code: Portland OR 97241 | Consultant/Contractor Project No: 129768-004 |
| Lab PM: Nathan Lewis | Lead Regulatory Agency: none | Address: 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108 |
| Lab Phone: (253) 248-4975 | California Global ID No.: not applicable | Consultant/Contractor PM: Laura McWilliams |
| Lab Shipping Acct: | Enfos Proposal No: 00BX4-0008 | Phone: (619) 990-6421 Email: lmcwilliams@haleyaldrich.com |
| Lab Bottle Order No: | Accounting Mode: Provision <u> </u> OOC-BU <u> </u> OOC-RM <u> </u> | Send/Submit EDD to: vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com |
| Other Info: | Stage Activity: Sediment Sampling | Invoice To: WR329993 BP-RM <u> </u> X <u> </u> BP-Other <u> </u> |

| | | | | | | | | | | | | |
|--|--------------------|---------|--|--|--|--|-----|------|---------|--|------------------------|--|
| BP/RM PM: Kyle Christie | Requested Analyses | | | | | | | | | | Report Type & QC Level | |
| PM Phone: (714) 815-8971 | Laboratory | Seattle | | | | | Sac | Knox | Seattle | | | Limited (Standard) Package <u> </u> |
| PM Email: kyle.christie@bp.com | Preservation | | | | | | | | | | | Limited Plus Package <u> </u> |

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Depth Unit | Total Number of Containers | Matrix | Percent Solids (D 22.16) | TOC - PSEP (9060) | SEF pest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as arctols - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn, (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Report Type & QC Level | | | Comments | |
|---------|---|-------|------------|----------------------------|--------|--------------------------|-------------------|--|--|-------------------------------------|---------------------------------------|------------------------------------|--------------------------------------|------------------------|--------------------------|------------------------|-----------|-----------|----------|--|
| | | | | | | | | | | | | | | | | <u> </u> | <u> </u> | <u> </u> | | |
| | 22T-VB-02-00-0.5-20190717 | 14:00 | | 4 | | | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-02-15-3.0-20190717 | 14:05 | | 4 | | | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-02-30-5.0-20190717 | 14:10 | | 4 | | | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-02-50-7.0-20190717 | 14:15 | | 4 | | | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-02-70-8.8-20190717 | 14:20 | | 4 | | | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-02-8.8-10.5-20190717 | 14:25 | | 4 | | | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-01-00-2.5-20190717 | 15:20 | | 4 | | | X | X | X | X | X | | | | | | | | | |

RUSH!

| | | | | | | |
|--|-------------------------------|---------|------|---------------------------|---------|------|
| Sampler's Name: Laura McWilliams | Relinquished By / Affiliation | Date | Time | Accepted By / Affiliation | Date | Time |
| Sampler's Company: Haley & Aldrich | <i>[Signature]</i> | 7/16/19 | 1300 | <i>[Signature]</i> TAPOL | 7/18/19 | 1300 |
| Ship Method: Deliver to Portland Service Center Ship Date: | <i>[Signature]</i> ARSL | 7/19/19 | 1700 | <i>[Signature]</i> TASE2 | 7/19/19 | |
| Shipment Tracking No: | | | | | | |

Special Instructions: THIS LINE - LAB USE ONLY: Custody Seals in Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 1.2 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

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Page 388 of 395

2.1
4.6
5.3
4.1
1.2
4.9
5=4.5/5.3, 7.9/7.9
4=5.0/5.3, 8.6/3.9



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: _____ Req Due Date (mm/dd/yy): EDD by 7/26/2019
BP/RM Facility No: _____ Lab Work Order Number: 58013435 - 6

Rush TAT Yes 5 days No _____

| | | |
|---|--|---|
| Lab Name: Eurofins TestAmerica, Seattle | BP/ARC Facility Address: Former Terminal 22T | Consultant/Contractor: Haley & Aldrich |
| Lab Address: 5755 8th Street East, Tacoma, WA 98424 | City, State, ZIP Code: Portland OR 97241 | Consultant/Contractor Project No: 129768-004 |
| Lab PM: Nathan Lewis | Lead Regulatory Agency: none | Address: 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108 |
| Lab Phone: (253) 248-4975 | California Global ID No.: not applicable | Consultant/Contractor PM: Laura McWilliams |
| Lab Shipping Acct: | Enfos Proposal No: 00BX4-0008 | Phone: (619) 990-6421 Email: lmwilliams@haleyaldrich.com |
| Lab Bottle Order No: | Accounting Mode: Provision _____ OOC-BU _____ OOC-RM _____ | Send/Submit EDD to: vgodard@haleyaldrich.com and lmwilliams@haleyaldrich.com |
| Other Info: | Stage _____ Activity: Sediment Sampling | Invoice To: WR329993 BP-RM <input checked="" type="checkbox"/> BP-Other _____ |

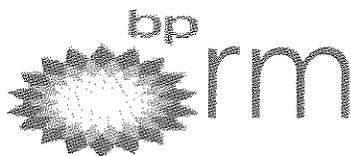
| | | | | | | | |
|--|--------------------|---------|-----|------|---------|----------------------------------|------------------------|
| BP/RM PM: Kyle Christie | Requested Analyses | | | | | | Report Type & QC Level |
| PM Phone: (714) 815-8971 | Laboratory | Seattle | Sac | Knox | Seattle | Limited (Standard) Package _____ | |
| PM Email: kyle.christie@bp.com | Preservation | | | | | Limited Plus Package _____ | |

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Depth Unit | Total Number of Containers | Matrix | Percent Solids (D 2216) | TOC - PSEP (9060) | SEF pest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as aryls - low level (8082A) | Dioxins & Furans - 17 Isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Report Type & QC Level | | | Comments | |
|---------|---|------|------------|----------------------------|--------|-------------------------|-------------------|--|--|-----------------------------------|---------------------------------------|------------------------------------|-------------------------------------|------------------------|--------------------------|------------------------|--|--|----------|--|
| | | | | | | | | | | | | | | | | | | | | |
| | 22T-VB-01-2.5-4.0-20190717 | 1525 | | 4 | | X | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-01-4.0-5.8-20190717 | 1530 | | 4 | | X | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-01-5.8-8.0-20190719 | 1535 | | 4 | | X | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-03-0.0-2.0-20190719 | 1630 | | 4 | | X | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-03-0.0-4.0-20190719 | 1635 | | 4 | | X | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-03-4.0-6.0-20190719 | 1640 | | 4 | | X | X | X | X | X | X | | | | | | | | | |
| | 22T-VB-03-6.0-8.0-20190719 | 1645 | | 4 | | X | X | X | X | X | X | | | | | | | | | |

| Sampler's Name: | Relinquished By / Affiliation | Date | Time | Accepted By / Affiliation | Date | Time |
|---|-------------------------------|---------|------|---------------------------|---------|------|
| Laura McWilliams | <i>[Signature]</i> | 7/18/19 | 1300 | <i>[Signature]</i> | 7/16/19 | 1300 |
| Ship Method: Deliver to Portland Service Center | <i>[Signature]</i> | 7/18/19 | 1700 | <i>[Signature]</i> | 7-19-19 | 0930 |

Special Instructions: _____
THIS LINE - LAB USE ONLY: Custody Seals in Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

5-4.5



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: _____ Req Due Date (mm/dd/yy): EDD by 7/26/2019
BP/RM Facility No: _____ Lab Work Order Number: 58013435 - 6

Rush TAT Yes 5 days No

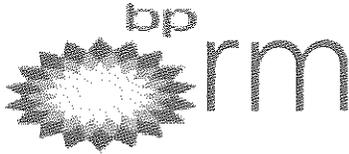
| | | |
|---|--|---|
| Lab Name: Eurofins TestAmerica, Seattle | BP/ARC Facility Address: Former Terminal 22T | Consultant/Contractor: Haley & Aldrich |
| Lab Address: 5755 8th Street East, Tacoma, WA 98424 | City, State, ZIP Code: Portland OR 97241 | Consultant/Contractor Project No: 129768-004 |
| Lab PM: Nathan Lewis | Lead Regulatory Agency: none | Address: 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108 |
| Lab Phone: (253) 248-4975 | California Global ID No.: not applicable | Consultant/Contractor PM: Laura McWilliams |
| Lab Shipping Acct: | Enfos Proposal No: 00BX4-0008 | Phone: (619) 990-6421 Email: lmcwilliams@haleyaldrich.com |
| Lab Bottle Order No: | Accounting Mode: Provision ___ OOC-BU ___ OOC-RM ___ | Send/Submit EDD to: vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com |
| Other Info: | Stage: _____ Activity: Sediment Sampling | Invoice To: WR329993 BP-RM ___X___ BP-Other ___ |

| | | | | | | |
|--|---------------------------|---------|-----|------|-----------------------------------|--------------------------------|
| BP/RM PM: Kyle Christie | Requested Analyses | | | | Report Type & QC Level | |
| PM Phone: (714) 815-8971 | Laboratory | Seattle | Sac | Knox | Seattle | Limited (Standard) Package ___ |
| PM Email: kyle.christie@bp.com | Preservation | | | | | Limited Plus Package ___ |
| | | | | | | Full Package ___ X ___ |

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Depth Unit | Total Number of Containers | Matrix | Percent Solids (D 2216) | TOC - PSEP (8060) | SEF prest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as ancors - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Comments | |
|---------|---|------|------------|----------------------------|--------|-------------------------|-------------------|---|--|------------------------------------|---------------------------------------|------------------------------------|-------------------------------------|------------------------|--------------------------|----------|--|
| | | | | | | | | | | | | | | | | | |
| | 22T-VB-03-8.0-9.0-20190717 | 1650 | | 4 | | X | X | X | X | X | X | | | | | X | |
| | 22T-VB-03-9.0-11.2-20190717 | 1655 | | 4 | | X | X | X | X | X | X | | | | | X | |
| | 22T-VB-03-11.2-12-20190717 | 1700 | | 4 | | X | X | X | X | X | X | | | | | X | |
| | 22T-VB-03-4.0-6.0-D-20190717 | 1705 | | 4 | | X | X | X | X | X | X | | | | | X | |
| | 22T-SG-02-20190718 | 744 | | 4 | | X | X | X | X | X | X | | | | | X | |
| | 22T-SG-03-20190718 | 802 | | 4 | | X | X | X | X | X | X | | | | | X | |
| | 22T-SG-04-20190718 | 836 | | 4 | | X | X | X | X | X | X | | | | | X | |

| | | | | | | |
|---|-------------------------------|---------|------|---------------------------|---------|------|
| Sampler's Name: Laura McWilliams | Relinquished By / Affiliation | Date | Time | Accepted By / Affiliation | Date | Time |
| Sampler's Company: Haley & Aldrich | <i>Laura McWilliams</i> | 7/18/19 | 1300 | <i>Laura McWilliams</i> | 7/18/19 | 1300 |
| Ship Method: Deliver to Portland Service Center | Ship Date: <i>7/18/19</i> | | | <i>Laura McWilliams</i> | 7-19-19 | 0930 |
| Shipment Tracking No: | | | | | | |

Special Instructions:
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: _____ Req Due Date (mm/dd/yy): EDD by 7/26/2019 Rush TAT Yes 5 days No _____
BP/RM Facility No: _____ Lab Work Order Number: 58013435 - 6

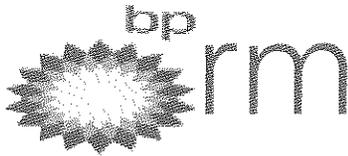
| | | |
|---|--|---|
| Lab Name: Eurofins TestAmerica, Seattle | BP/ARC Facility Address: Former Terminal 22T | Consultant/Contractor: Haley & Aldrich |
| Lab Address: 5755 8th Street East, Tacoma, WA 98424 | City, State, ZIP Code: Portland OR 97241 | Consultant/Contractor Project No: 129768-004 |
| Lab PM: Nathan Lewis | Lead Regulatory Agency: none | Address: 5333 Mission Center Rd., Suite 200, San Diego, CA, 92108 |
| Lab Phone: (253) 248-4975 | California Global ID No.: not applicable | Consultant/Contractor PM: Laura McWilliams |
| Lab Shipping Acct: | Enfos Proposal No: 00BX4-0008 | Phone: (619) 990-6421 Email: lmcwilliams@haleyaldrich.com |
| Lab Bottle Order No: | Accounting Mode: Provision _____ OOC-BU _____ OOC-RM _____ | Send/Submit EDD to: vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com |
| Other Info: | Stage _____ Activity: Sediment Sampling | Invoice To: WR329993 BP-RM <input checked="" type="checkbox"/> BP-Other _____ |

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Requested Analyses | | | | | | | | | | | | Report Type & QC Level | | | Comments | |
|---------|---|-------|--------------------|----------------------------|--------|-------------------------|-------------------|--|--|------------------------------------|---------------------------------------|------------------------------------|-------------------------------------|------------------------|--------------------------|------------------------|---------|-------------------------|-----|
| | | | Depth Unit | Total Number of Containers | Matrix | Percent Solids (D 2216) | TOC - PSEP (9060) | SEF pest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (8270D SIM) | PCBs as anions - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (8270D SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Report Type & QC Level | | | |
| | | | | | | | | | | | | | | | | Laboratory | Seattle | | Sac |
| | 22T-SG-04-MSD-20190718 | 836 | 4 | X | X | X | X | X | X | X | X | X | X | X | | | | Extra Volume for MS/MSD | |
| | 22T-SG-05-20190718 | 855 | 4 | X | X | X | X | X | X | X | X | X | X | X | | | | | |
| | 22T-SG-06-20190718 | 911 | 4 | X | X | X | X | X | X | X | X | X | X | X | | | | | |
| | 22T-SG-07-20190718 | 943 | 4 | X | X | X | X | X | X | X | X | X | X | X | | | | | |
| | 22T-SG-08-20190718 | 1008 | 4 | X | X | X | X | X | X | X | X | X | X | X | | | | | |
| | 22T-SG-09-20190718 | 10:29 | 4 | X | X | X | X | X | X | X | X | X | X | X | | | | | |
| | 22T-SG-01-20190718 | 10:52 | 4 | X | X | X | X | X | X | X | X | X | X | X | | | | | |

| | | | | | | |
|--|-------------------------------|---------|------|---------------------------|---------|------|
| Sampler's Name: Laura McWilliams | Relinquished By / Affiliation | Date | Time | Accepted By / Affiliation | Date | Time |
| Sampler's Company: Haley & Aldrich | <i>Laura McWilliams</i> | 7/18/19 | 1300 | <i>Laura McWilliams</i> | 7/18/19 | 1300 |
| Ship Method: Deliver to Portland Service Center Ship Date: | <i>[Signature]</i> | 7/18/19 | 1705 | <i>[Signature]</i> | 7-19-19 | 0930 |
| Shipment Tracking No: | | | | | | |

Special Instructions: _____

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



Laboratory Management Program (LaMP) Chain of Custody Record
Soil, Sediment and Groundwater Samples

BP Site Node Path: _____ Req Due Date (mm/dd/yy): EDD by 7/26/2019
BP/RM Facility No: _____ Lab Work Order Number: 58013435 - 6

Rush TAT Yes 5 days No _____

| | | |
|---|--|---|
| Lab Name: Eurofins TestAmerica, Seattle | BP/ARC Facility Address: Former Terminal 22T | Consultant/Contractor: Haley & Aldrich |
| Lab Address: 5755 8th Street East, Tacoma, WA 98424 | City, State, ZIP Code: Portland OR 97241 | Consultant/Contractor Project No: 129768-004 |
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| Lab Phone: (253) 248-4975 | California Global ID No.: not applicable | Consultant/Contractor PM: Laura McWilliams |
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| Lab Bottle Order No: | Accounting Mode: Provision _____ OOC-BU _____ OOC-RM _____ | Send/Submit EDD to: vgodard@haleyaldrich.com and lmcwilliams@haleyaldrich.com |
| Other Info: | Stage: _____ Activity: Sediment Sampling | Invoice To: WR329993 BP-RM <input checked="" type="checkbox"/> BP-Other _____ |

| Lab No. | Unique Sample ID, must follow format of SAMPLENAMEYYYYMMDD Examples: MW01_20190101; BH01_3-5_20190101 | Time | Depth Unit | Total Number of Containers | Matrix | Percent Solids (D 2216) | TOC - PSEP (9060) | SEF pest. (DDX only) - low level (8081B) | PAHs - standard list of 17 (82700 SIM) | PCBs as aryls - low level (8082A) | Dioxins & Furans - 17 isomers (1613B) | PAH + aPAH custom list (82700 SIM) | Metals - As, Cd, Cu, Pb, Zn (6020A) | Mercury - CVAA (7471A) | Freeze 1 jar for archive | Requested Analyses | | | | | Report Type & QC Level | | |
|---------|---|------|------------|----------------------------|--------|-------------------------|-------------------|--|--|-----------------------------------|---------------------------------------|------------------------------------|-------------------------------------|------------------------|--------------------------|--------------------|--|------|------|---------|----------------------------------|--|--|
| | | | | | | | | | | | | | | | | Laboratory | Seattle | Sac. | Knox | Seattle | Limited (Standard) Package _____ | | |
| | | | | | | | | | | | | | | | | Preservation | | | | | Limited Plus Package _____ | | |
| | | | | | | | | | | | | | | | | | Full Package <input checked="" type="checkbox"/> | | | | | | |
| | | | | | | | | | | | | | | | | | Comments | | | | | | |
| | 22T-VB-01-RB-BRL-20190717 | 730 | | 12 | | | | X | X | X | X | X | X | X | X | X | → standard TAT for these 3 analyses | | | | | | |
| | 22T-S6-01-RB-CR-20190718 | 1200 | | 12 | | | | X | X | X | X | X | X | X | X | X | 5-day TAT for others | | | | | | |

| | | | | | | |
|---|--|---------------|------------|---|---------------|------------|
| Sampler's Name: Laura McWilliams | Relinquished By / Affiliation: <i>Laura McWilliams</i> | Date: 7/16/19 | Time: 1300 | Accepted By / Affiliation: <i>[Signature]</i> | Date: 7/16/19 | Time: 1300 |
| Sampler's Company: Haley & Aldrich | | | | | | |
| Ship Method: Deliver to Portland Service Center | Ship Date: 7/16/19 | | | | | |
| Shipment Tracking No: | | | | | | |

Special Instructions: _____

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Chain of Custody Record

580-87761 Chain of Custody

ofins

Environment Testing
TestAmerica

| Client Information (Sub Contract Lab) | | Sampler: Lewis, Nathan A | | | | | | | |
|--|-------------|--|------------------------------|--|-----------------------------------|-----------------------------|--|----------------------------|----------------------------|
| Client Contact: Shipping/Receiving | | Phone: nathan.lewis@testamericainc.com | | | | | | | |
| Company: TestAmerica Laboratories, Inc. | | Accreditations Required (See note): NELAP - Oregon | | | | | | | |
| Address: 5815 Middlebrook Pike, Knoxville TN, 37921 | | Due Date Requested: 7/24/2019 | | | | | | | |
| Phone: 865-291-3000(Tel) 865-584-4315(Fax) | | TAT Requested (days): | | | | | | | |
| Email: | | PO #: | | | | | | | |
| Project Name: Portland Harbor | | WO #: | | | | | | | |
| Site: 58013650 | | Project #: 58013650 | | | | | | | |
| SSOW#: | | SSOW#: | | | | | | | |
| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (W=water, S=solid, O=soil, F=filter, A=air) | Field Filtered Sample (Yes or No) | Performance/MSD (Yes or No) | 8270D SIM/3520C (MOD) PAH + aPAH 36 List | Total Number of Containers | Special Instructions/Note: |
| 22T_VB_01-RB-BRL_20190717 (580-87761-28) | 7/18/19 | 07:30 Pacific | | Water | X | X | | 2 | |
| 22T_SG_01-RB-CR_20190718 (580-87761-29) | 7/18/19 | 12:00 Pacific | | Water | X | X | | 2 | |
| <p>Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.</p> | | | | | | | | | |
| Possible Hazard Identification | | | | | | | | | |
| <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months Special Instructions/QC Requirements: | | | | | | | | | |
| Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4 Empty Kit Relinquished by: _____ Date: _____ Relinquished by: _____ Date/Time: 7/19/19 1330 Company: IACOR Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: _____ Custody Seal No.: _____ Cooler Temperature(s) °C and Other Remarks: | | | | | | | | | |

EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

| Review Items | Yes | No | NA | If No, what was the problem? | Comments/Actions Taken |
|---|-----|----|----|---|--|
| 1. Are the shipping containers intact? | / | | | <input type="checkbox"/> Containers, Broken | |
| 2. Were ambient air containers received intact? | / | | | <input type="checkbox"/> Checked in lab | 8. # Sealed samples are as held |
| 3. The coolers/containers custody seal if present, is it intact? | / | | | <input type="checkbox"/> Yes <input type="checkbox"/> NA | |
| 4. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID: <u>SC68</u> Correction factor: <u>1.0</u> | / | | | <input type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt | |
| 5. Were all of the sample containers received intact? | / | | | <input type="checkbox"/> Containers, Broken | |
| 6. Were samples received in appropriate containers? | / | | | <input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel | BT: 1.5°C C7: 1.5°C / Cooler Fedex Po Custody seal intact |
| 7. Do sample container labels match COC? (IDs, Dates, Times) | / | | | <input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received | File # 1028 391 7170 KW 7/20/19 |
| 8. Were all of the samples listed on the COC received? | / | | | <input checked="" type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC; Not Received | |
| 9. Is the date/time of sample collection noted? | / | | | <input type="checkbox"/> COC; No Date/Time; Client Contacted | Labeling Verified by: _____ Date: _____ |
| 10. Was the sampler identified on the COC? | / | | | <input type="checkbox"/> Sampler Not Listed on COC | pH test strip lot number: _____ |
| 11. Is the client and project name/# identified? | / | | | <input type="checkbox"/> COC Incorrect/Incomplete | |
| 12. Are tests/parameters listed for each sample? | / | | | <input type="checkbox"/> COC No tests on COC | |
| 13. Is the matrix of the samples noted? | / | | | <input type="checkbox"/> COC Incorrect/Incomplete | |
| 14. Was COC relinquished? (Signed/Dated/Timed) | / | | | <input type="checkbox"/> COC Incorrect/Incomplete | Box 16A: pH Preservation Box 18A: Residual Chlorine |
| 15. Were samples received within holding time? | / | | | <input type="checkbox"/> Holding Time - Receipt | Preservative: _____ |
| 16. Were samples received with correct chemical preservative (excluding Encore)? | / | | | <input type="checkbox"/> pH Adjusted, pH Included (See box 16A) <input type="checkbox"/> Incorrect Preservative | Lot Number: _____ Exp Date: _____ Analyst: _____ |
| 17. Were VOA samples received without headspace? | / | | | <input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine | Date: _____ Time: _____ |
| 18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____ | / | | | | |
| 19. For 1613B water samples is pH<9? | / | | | <input type="checkbox"/> If no, notify lab to adjust | |
| 20. For rad samples was sample activity info. Provided? | / | | | <input type="checkbox"/> Project missing info | |

Project #: _____ PM Instructions: _____

Sample Receiving Associate: [Signature] Date: 7/20/19

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 580-87761-2

Login Number: 87761

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: O'Connell, Jason I

| Question | Answer | Comment |
|--|---------------|----------------|
| Radioactivity wasn't checked or is \leq background as measured by a survey meter. | True | |
| The cooler's custody seal, if present, is intact. | True | |
| Sample custody seals, if present, are intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified. | True | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4"). | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Residual Chlorine Checked. | N/A | |