National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
**White Sands Test Facility**
P.O. Box 20
Las Cruces, NM 88004-0020

September 3, 2014

Reply to Attn of: RE-14-102

Mr. John E. Kieling, Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

Subject: Request for a "Contained-In" Determination for the 200 Area Phase II Investigation Investigation-Derived Waste (IDW) Part II

In accordance with the New Mexico Environment Department (NMED)-approved 200 Area Phase II Investigation Work Plan, Appendix C-IDW Management Plan, NASA is requesting a " No Longer Contained-In" Determination (NLCID) for the IDW generated in association with the 200 Area Phase II Investigation. The IDW consists of soils (cuttings and returns) and contact debris such as PPE, plastic sheeting, etc. This "Contained-In" Determination is applicable to drill cutting from boreholes 200-SB-09, 200-SB-10, 200-SB-11, 200-SB-12, 200-SB-14, 200-SB-15, 200-SB-16, 200-SB-17, 200-SB-18 and 200-SB-19. This NLCID is also applicable to drill mud from 200-SB-6 and 200-SB-7.

In accordance with the NMED-approved 200 Area Phase II Investigation Work Plan, the IDW generated for this project are currently being managed in accordance with 40 CFR §262.34, as listed hazardous wastes carrying EPA Waste Codes F001 and F002. For information purposes, the 90-day time limit for the IDW will expire on September 16, 2014. NASA has received, reviewed, and compared the analytical data generated from the borehole sampling to the applicable 40 CFR Part 268 Subpart D Treatment Standards and the NMED Soil Screening Levels. Based on this review, F001 and F002 contaminants of concern were not detected above regulatory limits. NASA is requesting this NLCID for the F001 and F002 hazardous waste listing and concurrence from NMED that the soil (environmental media) can be reapplied to the land surface.

Upon receipt of an approved NLCID for listed waste codes F001 and F001 and concurrence from the NMED, NASA will thin-spread the soil (environmental media) on the ground in the vicinity of the borings, but in an area that will not be readily accessible to routine traffic or easily subject to runoff. NASA will document where the material is placed and will record this documentation in the official record. In addition, IDW debris that is determined to be non-hazardous waste will be disposed of as solid waste.

Enclosure 1 provides an Executive Summary for the NLCID. Enclosure 2 provides a hard copy of the analytical results table including a comparison to applicable regulatory limits. Enclosure 3 provides a CD-ROM containing a copy of the table of analytical results and

comparisons, a map of soil boring and well locations, analytical summaries, laboratory analytical reports, field notes, and chain of custody documentation.

I certify under penalty of law that this document and attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or comments, please contact Tim Davis of my staff at 575-524-5024.

Radel Bunker-Farrah
Chief, Environmental Office

Enclosures (3)

cc: (w/enclosures):
Mr. Dan Comeau
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

**Enclosure 1**
**Executive Summary**

## Background

Based on historical information provided in the 200 Area Phase II Investigation Work Plan (NASA, 2013), soil removed during drilling or other investigation activities has the potential to be contaminated with volatile organic constituents (VOCs) including trichloroethene (TCE), tetrachloroethene (PCE), trichlorofluoromethane (Freon 11), dichlorofluoromethane (Freon 21), and 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113). Based on historical knowledge, these constituents were spent solvents meeting the F001 and F002 listed waste definitions when they were discharged to the 200 Area. Therefore, investigation or remediation waste has the potential to contain F001 and F002 contaminants of concern (COCs). In addition to the F001 and F002 COCs, the 200 Area Phase II Investigation Work Plan (Section 2.2) includes a summary of other COCs, which could potentially be present in the soil. For review purposes, Table 2.1 from the 200 Area Phase II Investigation Work Plan (Section 2.2) is included in this submittal (Enclosure 3).

## Basis for Contained-In Determination

Analytical sampling data from the 200 Area Phase II Investigation has been received and reviewed. Waste characterization for the investigation-derived waste (IDW) was completed in accordance with New Mexico Environment Department (NMED) approved Attachment 12: Waste Analysis Plan of the NASA WSTF Hazardous Waste Permit (2009) incorporating the 200 Area Phase II Investigation Work Plan. In accordance with the 200 Area Phase II Investigation Work Plan, analytical data may be compared to the applicable 40 CFR §268 Subpart D Treatment Standards and the NMED soil screening levels (SSLs; February 2012; Residential Soil). If the IDW does not pose an unacceptable risk with respect to these standards and screening levels, NMED can determine that the wastes can be managed as no longer containing listed waste; specifically the F001 and F002 waste codes. There are no other listed waste codes of concern described in this NLCID request. Additional analytical data for other constituents of concern will be reviewed as part of standard waste characterization procedures, but does not require an NLCID request.

## F001 and F002 COCs

EPA Method 8260C detections are summarized in the Analytical Detections Summary Table (Enclosure 2). The F001 and F002 COCs were not detected above the laboratories reporting limits, which in all cases were below the regulatory limits included in the 40 CFR §268 Subpart D Treatment Standards and the NMED SSLs.

## Analytical Report and Chain of Custody Interpretation

Analytical reports are included in Enclosure 3. Analytical data sheets specific to EPA Method 8260C analyses as identified by sample number are included in the Borehole Analytical Summary Section. Appendix A to the Borehole Analytical Summary Data includes the complete analytical report, which comprises the laboratory case narrative and supporting documentation specific to the laboratory report. The complete report also included results for other samples related to the project i.e., decontamination/rinsate sample. These results are not part of the NASA request for NLCID. However, to avoid any confusion and maintain the integrity of the report, NASA has opted not to remove this data from the

complete report. The chain of custody documentation also includes samples that are not specific to the NLCID (i.e., not related to the F001 and F002 listed waste code issue).

**Other Considerations**

The 200 Area Phase II Investigation Work Plan, Section 4.2.2 Soil Sampling Plan, includes the requirement that soil samples will be collected at: the shallow surface (upper 10 ft. bgs); an intermediate depth within the soil boring; and at a depth in the soil boring near the total depth (TD). Due to contacting bedrock at 22 ft. in 200-SB-9, soil samples were only collected from 8 to 10 ft. below ground surface. Due to poor borehole conditions soil samples were only collected from two zones in 200-SB-11, two zones in 200-SB-15, one zone in 200-SB-18 and one zone in 200-SB-19. Refusal was observed throughout 200-SB-12 and 200-SB-14 so no samples were taken at time of drilling. However, representative grab samples were collected from the cutting from 200-SB-12 and 200-SB-14. Data for drill cuttings from 200-SB-6 and 200-SB-7 were provided in the NMED Approval for a No Longer Contained in Determination (NMED, 2014). The abbreviated investigation work plan (AIWP) describes a supplemental 200 Area bedrock matrix diffusion evaluation that will be performed at two of the soil boring locations (200-SB-06 and 200-SB-07) in conjunction with the NMED-approved Phase II investigation. Grab samples were collected from the drilling mud (homogenous mixtures) generated from 200-SB-6 and 200-SB-7.

# Enclosure 2

## TABLE 1 200 AREA INVESTIGATION ANALYTICAL DETECTIONS SUMMARY

| Sample Location | Sample ID/Borehole Depth (BGS) in feet | Analytical Method (Totals) | Analytes Detected | Results mg/kg unless noted | Toxicity Results 40 CFR 261.24 mg/L unless noted[1] | 40 CFR Part 268 Subpart D Treatment Standard mg/kg unless noted | NMED Industrial Soil Screening Levels mg/kg[2] | NMED Residental Soil Screening Levels mg/kg[2] |
|---|---|---|---|---|---|---|---|---|
| 200-SB-6 | 1407311640 200-SB-6 | 8260C | 2-Butanone (MEK) | 0.023 | 0.001115 | 36 | 3.75E+05 | 3.71E+04 |
| | | | Acetone | 0.140 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Benzene | 0.0037J | 0.000185 | 10 | 8.47E+01 | 1.54E+01 |
| | | | Toluene | 0.005J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | | | m,p-Xylenes | 0.0026J | NA | 30 | 3.78E+03 | 7.74E+02 |
| | | | o-Xylene | 0.0032J | NA | 30 | 4.41E+03 | 8.98E+02 |
| | 1407311648 200-SB-6 Duplicate | | 2-Butanone (MEK) | 0.024 | 0.0012 | 36 | 3.75E+05 | 3.71E+04 |
| | | | Acetone | 0.096 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Benzene | 0.0037J | 0.000185 | 10 | 8.47E+01 | 1.54E+01 |
| | | | Toluene | 0.0045J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | | | m,p-Xylenes | 0.0020J | NA | 30 | 3.78E+03 | 7.74E+02 |
| 200-SB-7 | 1408040805 200-SB-7 | 8260c | 2-Butanone (MEK) | 0.0026 | 0.00013 | 36 | 3.75E+05 | 3.71E+04 |
| | | | Acetone | 0.001 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Benzene | 0.0026J | 0.00013 | 10 | 8.47E+01 | 1.54E+01 |
| | | | Toluene | 0.0050J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1408040806 200-SB-7 Duplicate | 8260C | 2-Butanone (MEK) | 0.0047 | 0.000235 | 36 | 3.75E+05 | 3.71E+04 |
| | | | Acetone | 0.01 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Benzene | 0.0026J | 0.00013 | 10 | 8.47E+01 | 1.54E+01 |
| | | | Toluene | 0.0050J | NA | 10 | 5.77E+04 | 5.27E+03 |
| 200-SB-10 | 1406281018 200-SB-10 16-18 | 8260C | Toluene | 0.0021J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1406281200 200-SB-10 26-28 | | Acetone | 0.0057B | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0021J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1406281505 200-SB-10 36-38 | 8260C | Acetone | 0.0082B | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0025J | NA | 10 | 5.77E+04 | 5.27E+03 |
| 200-SB-11 | 1407011600 200-SB-11 8-10 | 8260C | Acetone | 0.0039BJ | NA | 160 | 8.68E+05 | 6.66E+04 |
| 200-SB-12 | 1408121350 IDW 200-SB-12 | 8260C | Toluene | 0.0016J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1408121351 IDW 200-SB-12 | 8260C | Toluene | 0.0016J | NA | 10 | 5.77E+04 | 5.27E+03 |
| 200-SB-14 | 1408121310 IDW 200-SB-14 | 8260C | Acetone | 0.0062 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0013J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1408121311 IDW 200-SB-14 Duplicate | 8260C | Toluene | 0.0013J | NA | 10 | 5.77E+04 | 5.27E+03 |
| 200-SB-15 | 1407111410 200-SB-15 8-10 | 8260C | Acetone | 0.0053J | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0034J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1407161200 200-SB- 15 98-100 | | Acetone | 0.0040J | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0014J | NA | 10 | 5.77E+04 | 5.27E+03 |

## TABLE 1 200 AREA INVESTIGATION ANALYTICAL DETECTIONS SUMMARY

| Sample Location | Sample ID/Borehole Depth (BGS) in feet | Analytical Method (Totals) | Analytes Detected | Results mg/kg unless noted | Toxicity Results 40 CFR 261.24 mg/L unless noted[1] | 40 CFR Part 268 Subpart D Treatment Standard mg/kg unless noted | NMED Industrial Soil Screening Levels mg/kg[2] | NMED Residental Soil Screening Levels mg/kg[2] |
|---|---|---|---|---|---|---|---|---|
| 200-SB-16 | 1407220800 200-SB-16 18-20 | 8260C | Acetone | 0.0091 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0021J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1407220940 200-SB-16 28-30 | 8260C | Acetone | 0.0027J | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0021J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1407221135 200-SB-16 48-50 | 8260C | Acetone | 0.002 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0011J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1407230750 200-SB-16 58-60 | 8260C | Acetone | 0.021 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0018J | NA | 10 | 5.77E+04 | 5.27E+03 |
| 200-SB-17 | 1408020915 200-SB-17 8-12 | 8260C | Acetone | 0.0039J | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0014J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1408020916 200-SB-17 8-12 Duplicate | 8260C | Acetone | 0.0027J | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Chloromethane | 0.00054 | NA | 30 | 1.29E+03 | 2.75E+02 |
| | | | Toluene | 0.0019J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1408030843 200-SB-17 48-50 | 8260C | Toluene | 0.0010J | NA | 10 | 5.77E+04 | 5.27E+03 |
| | 1408031315 200-SB-17 88-90 | 8260C | Acetone | 0.0041 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0011J | NA | 10 | 5.77E+04 | 5.27E+03 |
| 200-SB-18 | 1407091135 200-SB-18 88-90 | 8260C | Acetone | 0.015 | NA | 160 | 8.68E+05 | 6.66E+04 |
| | | | Toluene | 0.0019J | NA | 10 | 5.77E+04 | 5.27E+03 |
| 200-SB-19 | 1407200845 200-SB-19 8-10 | 8260C | Acetone | 0.0045J | NA | 160 | 8.68E+05 | 6.66E+04 |
| | 1407200846 200-SB-19 8-10 Duplicate | 8260C | Acetone | 0.0044J | NA | 160 | 8.68E+05 | 6.66E+04 |

Notes:
BGS Indicates below ground surface.
*- Indicates duplicate samples were collected.
N/A - Indicates not applicable.
J - Indicates that the analyte was detected above the laboratory method detection limit but below the method reporting limit.
B - Indicates that the analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

[1] - For waste characterization purposes with respect to 40 CFR Part 261.24 - Toxicity Characteristic, incorporating the NMED approved 200 Area Phase II Investigation Work Plan, the 20 to 1 rule (theoretical maximum leachate concentration) will be applied to total metals analyses that include a treatment standard as mg/L TCLP.

[2] - NMED Risk Assessment Guidance for Site Investigations and Remediation, February 2012.

**Enclosure 3**

Soil Gas Phase II

Wells (2012 Data)

0 125 250 500 750 1,000 Feet

N W E S

# 200 Area Phase II Soil Boring and Well Locations

**Table 2.1 Preliminary List of COCs for the 200 Area Vadose Zone Investigation**

| Constituent | Sample Type |
|---|---|
| Chloride | ANION |
| Cyanide | CYANIDE |
| 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD) | DIOXINS/FURANS |
| Heptachlorodibenzo-p-dioxins (HpCDD), Total | DIOXINS/FURANS |
| Octachlorodibenzofuran (OCDF) | DIOXINS/FURANS |
| Octachlorodibenzo-p-dioxin (OCDD) | DIOXINS/FURANS |
| Hydrazine | HYDRAZINE |
| Monomethylhydrazine (MMH) | HYDRAZINE |
| Unsymmetrical Dimethylhydrazine (UDMH) | HYDRAZINE |
| Aluminum | METALS |
| Antimony | METALS |
| Arsenic | METALS |
| Barium | METALS |
| Beryllium | METALS |
| Boron | METALS |
| Cadmium | METALS |
| Calcium | METALS |
| Chromium (Total) | METALS |
| Chromium (VI) | METALS |
| Cobalt | METALS |
| Copper | METALS |
| Lead | METALS |
| Mercury | METALS |
| Molybdenum | METALS |
| Nickel | METALS |
| Selenium | METALS |
| Silver | METALS |
| Strontium | METALS |
| Thallium | METALS |
| Tin | METALS |
| Vanadium | METALS |
| Zinc | METALS |
| Bromacil | BROMACIL |
| N-Nitrosodimethylamine | NITROSAMINES |
| Nitrate | NITROGEN |
| Nitrite | NITROGEN |
| Perchlorate | PERCHLORATE |
| Bis(2-ethylhexyl) Phthalate | SVOA |
| Di-n-butyl Phthalate | SVOA |
| 1,1,1-Trichloroethane | VOA |
| 1,1,2-Trichloroethane | VOA |
| 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113) | VOA |
| 1,1-Dichloroethene | VOA |
| 1,2-Dichloro-1,1,2-trifluoroethane (Freon 123a) | VOA |
| 1,2-Dichloroethane | VOA |
| 2,2-Dichloro-1,1,1-trifluoroethane (Freon 123) | VOA |
| 2-Butanone (Methyl Ethyl Ketone) | VOA |
| 2-Propanol | VOA |
| Acetone | VOA |
| Benzene | VOA |

**Table 2.1 Preliminary List of COCs for the 200 Area Vadose Zone Investigation**

| Constituent | Sample Type |
|---|---|
| Bromodichloromethane | VOA |
| Bromoform | VOA |
| Chlorobenzene | VOA |
| Chloroform | VOA |
| Chloromethane | VOA |
| Dibromochloromethane | VOA |
| Dichlorofluoromethane (Freon 21) | VOA |
| Methyl tert-Butyl Ether | VOA |
| Methylene Chloride | VOA |
| m-Xylene & p-Xylene | VOA |
| Tetrachloroethene (PCE) | VOA |
| Toluene | VOA |
| Trichloroethene (TCE) | VOA |
| Trichlorofluoromethane (Freon 11) | VOA |

August 21, 2014

Service Request No: R1405951

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on August 5, 2014. For your reference, these analyses have been assigned our service request number **R1405951**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



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Environmental | www.alsglobal.com
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## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Water/Soil | **Date Received:** | 08/05/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 07/31/14-08/04/14 and received on 08/05/14 at cooler temperatures of 2.0-2.5°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

**Inorganics**

Soil samples were analyzed for pH by method 9045D from SW-846.

Site specific QC was requested on 1408040826 200-SB-7 but due to a laboratory error, was not performed.

No other analytical or QC issues were encountered.

**Volatile Organics**

Soil and water samples were analyzed for a site list of Volatile Organics by Method 5030/5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated. The 5035 vials were not frozen within 48 hours of collection. The client was notified and the samples analyzed.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits except 1407311648 200-SB-6. No low level 5035 vials remained to analyze, so soils was aliquoted from a soil jar and analyzed. All internal standards were within limits on the reanalysis and both sets of data have been reported.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable.

Site specific QC was performed on 1408040805 200-SB-7 as requested. All MS/MSD recoveries and RPD's were acceptable.

The Method Blanks associated with these samples were free of contamination except for low level detection of Dichloromethane on the 08/11/14 blank. All affected data has been flagged with a "B".

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil and water samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits except 1408030849 200-SB-17 48'/50' and 1408040817 200-B-7. Both samples were re-extracted and reanalyzed and the surrogates were within limits for one sample and out of the other. Both sets of data have been reported and all outlying surrogates have been called with an "*".

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable except bis(2-ehtylhexyl)phthalate was outside limits high on the 07/25/14 LCS and has been flagged with an "*". No data was affected.

Site specific QC was performed on 1408040817 200-SB-7 as requested. All MS/MSD recoveries and RPD's were acceptable except the MS for Bis(2-ethylhexyl)phthalate and has been flagged with an "*".

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405951

| Lab ID | Client ID |
|---|---|
| R1405951-001 | 1408020903 200-SB-17 |
| R1405951-002 | 1408020700 200-SB-17 |
| R1405951-003 | 1408020900 200-SB-17 |
| R1405951-004 | 1408030843 200-SB-17 48'/50' |
| R1405951-005 | 1408031315 200-SB-17 88'/90' |
| R1405951-006 | 1408020915 200-SB-17 8'/12' |
| R1405951-007 | 1408020916 200-SB-17 8'/12' |
| R1405951-008 | 1408020929 200-SB-17 8'/12' |
| R1405951-009 | 1408020930 200-SB-17 8'/12' |
| R1405951-010 | 1408020923 200-SB-17 8'/12' |
| R1405951-011 | 1408020924 200-SB-17 8'/12' |
| R1405951-012 | 1408030852 200-SB-17 48'/50' |
| R1405951-013 | 1408031322 200-SB-17 88'/90' |
| R1405951-014 | 1408030849 200-SB-17 48'/50' |
| R1405951-015 | 1408031319 200-SB-17 88'/90' |
| R1405951-016 | 1407311640 200-SB-6 |
| R1405951-017 | 1407311648 200-SB-6 |
| R1405951-018 | 1407311649 200-SB-6 |
| R1405951-019 | 1408040805 200-SB-7 |
| R1405951-020 | 1408040806 200-SB-7 |
| R1405951-022 | 1407311647 200-SB-6 |
| R1405951-023 | 1407311702 200-SB-6 |
| R1405951-024 | 1407311703 200-SB-6 |
| R1405951-025 | 1407311644 200-SB-6 |
| R1405951-026 | 1407311656 200-SB-6 |
| R1405951-027 | 1407311657 200-SB-6 |
| R1405951-028 | 1408040817 200-SB-7 |
| R1405951-029 | 1408040818 200-SB-7 |
| R1405951-031 | 1408040826 200-SB-7 |
| R1405951-032 | 1408040827 200-SB-7 |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Water | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/7/14 |
| | | **Date Analyzed:** | 8/8/14 22:53 |
| **Sample Name:** | 1408020903 200-SB-17 | **Units:** | µg/L |
| **Lab Code:** | R1405951-001 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 406068 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 215014 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\080814\CZ568.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | 6.7 | J | 9.4 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 9.4 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 90 | 39-119 | 8/8/14 22:53 | |
| Nitrobenzene-d5 | 78 | 37-117 | 8/8/14 22:53 | |
| p-Terphenyl-d14 | 98 | 40-133 | 8/8/14 22:53 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951

**Sample Name:** 1408020903 200-SB-17
**Lab Code:** R1405951-001
**Matrix:** Water

**Date Collected:** 8/2/14
**Date Received:** 8/5/14

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8270D | DMURPHY | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Water | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/12/14 16:26 |
| **Sample Name:** | 1408020700 200-SB-17 | **Units:** | µg/L |
| **Lab Code:** | R1405951-002 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 406145 |
| **Data File Name:** | I:\ACQUDATA\msvoa10\data\081214\A1024.D\ | **Instrument Name:** | R-MS-10 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 96 | 85-122 | 8/12/14 16:26 | |
| Dibromofluoromethane | 99 | 89-119 | 8/12/14 16:26 | |
| Toluene-d8 | 100 | 87-121 | 8/12/14 16:26 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020700 200-SB-17 | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-002 | **Date Received:** | 8/5/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | FNAEGLER |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Water | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/12/14 16:56 |
| **Sample Name:** | 1408020900 200-SB-17 | **Units:** | µg/L |
| **Lab Code:** | R1405951-003 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 406145 |
| **Data File Name:** | I:\ACQUDATA\msvoa10\data\081214\A1025.D\ | **Instrument Name:** | R-MS-10 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 85-122 | 8/12/14 16:56 | |
| Dibromofluoromethane | 99 | 89-119 | 8/12/14 16:56 | |
| Toluene-d8 | 100 | 87-121 | 8/12/14 16:56 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020900 200-SB-17 | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-003 | **Date Received:** | 8/5/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | FNAEGLER |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408030843 200-SB-17 48'/50' | | |
| **Lab Code:** | R1405951-004 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.7** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/8/14 13:46 |
| **Sample Name:** | 1408030843 200-SB-17 48'/50' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-004 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.7 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405720 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\080814\W0221.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .85 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.4 | 0.64 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.4 | 0.64 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.4 | 1.1 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.4 | 1.2 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.4 | 0.54 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.4 | 1.3 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.4 | 2.0 | |
| 67-63-0 | Isopropanol | ND | U | 87 | 25 | |
| 67-64-1 | Acetone | ND | U | 4.4 | 2.5 | |
| 71-43-2 | Benzene | ND | U | 4.4 | 0.26 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.4 | 0.54 | |
| 75-25-2 | Bromoform | ND | U | 4.4 | 0.81 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.4 | 0.26 | |
| 67-66-3 | Chloroform | ND | U | 4.4 | 1.1 | |
| 74-87-3 | Chloromethane | ND | U | 4.4 | 0.35 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.4 | 0.64 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.4 | 1.4 | |
| 75-09-2 | Dichloromethane | ND | U | 4.4 | 0.50 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.4 | 0.21 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.4 | 0.82 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.4 | 0.77 | |
| 108-88-3 | Toluene | 1.0 | J | 4.4 | 0.88 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.4 | 0.88 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 8.7 | 0.95 | |
| 95-47-6 | o-Xylene | ND | U | 4.4 | 0.42 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.4 | 1.2 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 51-136 | 8/8/14 13:46 | |
| Dibromofluoromethane | 100 | 63-138 | 8/8/14 13:46 | |
| Toluene-d8 | 97 | 66-138 | 8/8/14 13:46 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408030843 200-SB-17 48'/50' | **Date Collected:** | 8/3/14 |
| **Lab Code:** | R1405951-004 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408031315 200-SB-17 88'/90' | | |
| **Lab Code:** | R1405951-005 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.7** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/8/14 14:23 |
| **Sample Name:** | 1408031315 200-SB-17 88'/90' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-005 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.7 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405720 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\080814\W0222.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 0.79 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.0 | 0.60 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.0 | 0.60 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.0 | 1.1 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.0 | 1.1 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.0 | 0.50 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.0 | 1.2 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.0 | 1.9 | |
| 67-63-0 | Isopropanol | ND | U | 81 | 23 | |
| 67-64-1 | Acetone | **4.1** | | 4.0 | 2.3 | |
| 71-43-2 | Benzene | ND | U | 4.0 | 0.24 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.0 | 0.50 | |
| 75-25-2 | Bromoform | ND | U | 4.0 | 0.76 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.0 | 0.24 | |
| 67-66-3 | Chloroform | ND | U | 4.0 | 1.1 | |
| 74-87-3 | Chloromethane | ND | U | 4.0 | 0.33 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.0 | 0.60 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.0 | 1.3 | |
| 75-09-2 | Dichloromethane | ND | U | 4.0 | 0.47 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.0 | 0.19 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.0 | 0.77 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.0 | 0.72 | |
| 108-88-3 | Toluene | **1.1** | J | 4.0 | 0.81 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.0 | 0.82 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 8.1 | 0.89 | |
| 95-47-6 | o-Xylene | ND | U | 4.0 | 0.39 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.0 | 1.1 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 51-136 | 8/8/14 14:23 | |
| Dibromofluoromethane | 100 | 63-138 | 8/8/14 14:23 | |
| Toluene-d8 | 98 | 66-138 | 8/8/14 14:23 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408031315 200-SB-17 88'/90' | **Date Collected:** | 8/3/14 |
| **Lab Code:** | R1405951-005 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408020915 200-SB-17 8'/12' | | |
| **Lab Code:** | R1405951-006 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.0** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/8/14 15:01 |
| **Sample Name:** | 1408020915 200-SB-17 8'/12' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-006 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.0 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405720 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\080814\W0223.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .9 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.6 | 0.68 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.6 | 0.68 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.6 | 1.2 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.6 | 1.2 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.6 | 0.57 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.6 | 1.3 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.6 | 2.2 | |
| 67-63-0 | Isopropanol | ND | U | 92 | 26 | |
| 67-64-1 | Acetone | **3.9** | J | 4.6 | 2.6 | |
| 71-43-2 | Benzene | ND | U | 4.6 | 0.27 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.6 | 0.57 | |
| 75-25-2 | Bromoform | ND | U | 4.6 | 0.86 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.6 | 0.27 | |
| 67-66-3 | Chloroform | ND | U | 4.6 | 1.2 | |
| 74-87-3 | Chloromethane | ND | U | 4.6 | 0.37 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.6 | 0.68 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.6 | 1.4 | |
| 75-09-2 | Dichloromethane | ND | U | 4.6 | 0.53 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.6 | 0.22 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.6 | 0.87 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.6 | 0.81 | |
| 108-88-3 | Toluene | **1.4** | J | 4.6 | 0.92 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.6 | 0.93 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 9.2 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 4.6 | 0.45 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.6 | 1.3 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 8/8/14 15:01 | |
| Dibromofluoromethane | 100 | 63-138 | 8/8/14 15:01 | |
| Toluene-d8 | 97 | 66-138 | 8/8/14 15:01 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020915 200-SB-17 8'/12' | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-006 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408020916 200-SB-17 8'/12' | | |
| **Lab Code:** | R1405951-007 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.0** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/8/14 15:39 |
| **Sample Name:** | 1408020916 200-SB-17 8'/12' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-007 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.0 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405720 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\080814\W0224.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .86 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.4 | 0.65 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.4 | 0.65 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.4 | 1.1 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.4 | 1.2 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.4 | 0.54 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.4 | 1.3 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.4 | 2.1 | |
| 67-63-0 | Isopropanol | ND | U | 88 | 25 | |
| 67-64-1 | Acetone | **2.7** | J | 4.4 | 2.5 | |
| 71-43-2 | Benzene | ND | U | 4.4 | 0.26 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.4 | 0.54 | |
| 75-25-2 | Bromoform | ND | U | 4.4 | 0.82 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.4 | 0.26 | |
| 67-66-3 | Chloroform | ND | U | 4.4 | 1.2 | |
| 74-87-3 | Chloromethane | **0.54** | J | 4.4 | 0.36 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.4 | 0.65 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.4 | 1.4 | |
| 75-09-2 | Dichloromethane | ND | U | 4.4 | 0.51 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.4 | 0.21 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.4 | 0.83 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.4 | 0.78 | |
| 108-88-3 | Toluene | **1.9** | J | 4.4 | 0.88 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.4 | 0.89 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 8.8 | 0.96 | |
| 95-47-6 | o-Xylene | ND | U | 4.4 | 0.43 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.4 | 1.2 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 8/8/14 15:39 | |
| Dibromofluoromethane | 98 | 63-138 | 8/8/14 15:39 | |
| Toluene-d8 | 98 | 66-138 | 8/8/14 15:39 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020916 200-SB-17 8'/12' | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-007 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408020929 200-SB-17 8'/12' | | |
| **Lab Code:** | R1405951-008 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.82 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020929 200-SB-17 8'/12' | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-008 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408020930 200-SB-17 8'/12' | | |
| **Lab Code:** | R1405951-009 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.92 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

**ALS ENVIRONMENTAL**

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020930 200-SB-17 8'/12' | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-009 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408020923 200-SB-17 8'/12' | | |
| **Lab Code:** | R1405951-010 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.3** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/8/14 18:05 |
| **Sample Name:** | 1408020923 200-SB-17 8'/12' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-010 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.3 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405899 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080814\AV433.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 54 | 47-126 | 8/8/14 18:05 | |
| Nitrobenzene-d5 | 45 | 39-136 | 8/8/14 18:05 | |
| p-Terphenyl-d14 | 91 | 35-152 | 8/8/14 18:05 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020923 200-SB-17 8'/12' | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-010 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408020924 200-SB-17 8'/12' | | |
| **Lab Code:** | R1405951-011 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.3** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 2/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/8/14 18:31 |
| **Sample Name:** | 1408020924 200-SB-17 8'/12' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-011 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.3 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405899 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080814\AV434.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 57 | 47-126 | 8/8/14 18:31 | |
| Nitrobenzene-d5 | 53 | 39-136 | 8/8/14 18:31 | |
| p-Terphenyl-d14 | 101 | 35-152 | 8/8/14 18:31 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408020924 200-SB-17 8'/12' | **Date Collected:** | 8/2/14 |
| **Lab Code:** | R1405951-011 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408030852 200-SB-17 48'/50' | | |
| **Lab Code:** | R1405951-012 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.74 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408030852 200-SB-17 48'/50' | **Date Collected:** | 8/3/14 |
| **Lab Code:** | R1405951-012 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408031322 200-SB-17 88'/90' | | |
| **Lab Code:** | R1405951-013 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.86 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408031322 200-SB-17 88'/90' | **Date Collected:** | 8/3/14 |
| **Lab Code:** | R1405951-013 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408030849 200-SB-17 48'/50' | | |
| **Lab Code:** | R1405951-014 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **96.6** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/12/14 00:32 |
| **Sample Name:** | 1408030849 200-SB-17 48'/50' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-014 | **Basis:** | Dry |
| | | **Percent Solids:** | 96.6 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 406133 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\081114\AV477.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 45 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 53 | |

| Surrogate Name | %Rec | | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|---|
| 2-Fluorobiphenyl | 46 | * | 47-126 | 8/12/14 00:32 | |
| Nitrobenzene-d5 | 42 | | 39-136 | 8/12/14 00:32 | |
| p-Terphenyl-d14 | 84 | | 35-152 | 8/12/14 00:32 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/13/14 |
| | | **Date Analyzed:** | 8/14/14 12:04 |
| **Sample Name:** | 1408030849 200-SB-17 48'/50' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-014 | **Basis:** | Dry |
| **Run Type:** | Reanalysis | **Percent Solids:** | 96.6 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 406645 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215433 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\081414\AV523.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 45 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 53 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 68 | 47-126 | 8/14/14 12:04 | |
| Nitrobenzene-d5 | 60 | 39-136 | 8/14/14 12:04 | |
| p-Terphenyl-d14 | 85 | 35-152 | 8/14/14 12:04 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408030849 200-SB-17 48'/50' | **Date Collected:** | 8/3/14 |
| **Lab Code:** | R1405951-014 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408031319 200-SB-17 88'/90' | | |
| **Lab Code:** | R1405951-015 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.0** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 3/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/8/14 19:23 |
| **Sample Name:** | 1408031319 200-SB-17 88'/90' | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-015 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.0 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405899 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080814\AV436.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 60 | 47-126 | 8/8/14 19:23 | |
| Nitrobenzene-d5 | 52 | 39-136 | 8/8/14 19:23 | |
| p-Terphenyl-d14 | 98 | 35-152 | 8/8/14 19:23 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408031319 200-SB-17 88'/90' | **Date Collected:** | 8/3/14 |
| **Lab Code:** | R1405951-015 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311640 200-SB-6 | | |
| **Lab Code:** | R1405951-016 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **55.3** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/11/14 14:35 |
| **Sample Name:** | 1407311640 200-SB-6 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-016 | **Basis:** | Dry |
| | | **Percent Solids:** | 55.3 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405989 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081114\W0260.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.30 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 12 | 1.8 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 12 | 1.8 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 12 | 3.0 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 12 | 3.1 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 12 | 1.5 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 12 | 3.3 | |
| 78-93-3 | 2-Butanone (MEK) | **23** | | 12 | 5.4 | |
| 67-63-0 | Isopropanol | ND | U | 240 | 66 | |
| 67-64-1 | Acetone | **140** | | 12 | 6.7 | |
| 71-43-2 | Benzene | **3.7** | J | 12 | 0.69 | |
| 75-27-4 | Bromodichloromethane | ND | U | 12 | 1.5 | |
| 75-25-2 | Bromoform | ND | U | 12 | 2.2 | |
| 108-90-7 | Chlorobenzene | ND | U | 12 | 0.69 | |
| 67-66-3 | Chloroform | ND | U | 12 | 3.0 | |
| 74-87-3 | Chloromethane | ND | U | 12 | 0.95 | |
| 124-48-1 | Dibromochloromethane | ND | U | 12 | 1.8 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 12 | 3.6 | |
| 75-09-2 | Dichloromethane | ND | U | 12 | 1.4 | |
| 100-41-4 | Ethylbenzene | ND | U | 12 | 0.55 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 12 | 2.3 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 12 | 2.1 | |
| 108-88-3 | Toluene | **5.0** | J | 12 | 2.4 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 12 | 2.4 | |
| 179601-23-1 | m,p-Xylenes | **2.6** | J | 24 | 2.6 | |
| 95-47-6 | o-Xylene | **3.2** | J | 12 | 1.2 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 12 | 3.2 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 96 | 51-136 | 8/11/14 14:35 | |
| Dibromofluoromethane | 98 | 63-138 | 8/11/14 14:35 | |
| Toluene-d8 | 103 | 66-138 | 8/11/14 14:35 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311640 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-016 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311648 200-SB-6 | | |
| **Lab Code:** | R1405951-017 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **55.3** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/11/14 15:12 |
| **Sample Name:** | 1407311648 200-SB-6 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-017 | **Basis:** | Dry |
| | | **Percent Solids:** | 55.3 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405989 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081114\W0261.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .98 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 8.9 | 1.3 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 8.9 | 1.3 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 8.9 | 2.2 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 8.9 | 2.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 8.9 | 1.1 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 8.9 | 2.5 | |
| 78-93-3 | 2-Butanone (MEK) | **24** | | 8.9 | 4.1 | |
| 67-63-0 | Isopropanol | ND | U | 180 | 50 | |
| 67-64-1 | Acetone | **96** | | 8.9 | 5.0 | |
| 71-43-2 | Benzene | **3.7** | J | 8.9 | 0.52 | |
| 75-27-4 | Bromodichloromethane | ND | U | 8.9 | 1.1 | |
| 75-25-2 | Bromoform | ND | U | 8.9 | 1.7 | |
| 108-90-7 | Chlorobenzene | ND | U | 8.9 | 0.52 | |
| 67-66-3 | Chloroform | ND | U | 8.9 | 2.3 | |
| 74-87-3 | Chloromethane | ND | U | 8.9 | 0.71 | |
| 124-48-1 | Dibromochloromethane | ND | U | 8.9 | 1.3 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 8.9 | 2.7 | |
| 75-09-2 | Dichloromethane | ND | U | 8.9 | 1.1 | |
| 100-41-4 | Ethylbenzene | ND | U | 8.9 | 0.41 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 8.9 | 1.7 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 8.9 | 1.6 | |
| 108-88-3 | Toluene | **4.5** | J | 8.9 | 1.8 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 8.9 | 1.8 | |
| 179601-23-1 | m,p-Xylenes | **2.0** | J | 18 | 2.0 | |
| 95-47-6 | o-Xylene | ND | U | 8.9 | 0.86 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 8.9 | 2.5 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 93 | 51-136 | 8/11/14 15:12 | |
| Dibromofluoromethane | 99 | 63-138 | 8/11/14 15:12 | |
| Toluene-d8 | 104 | 66-138 | 8/11/14 15:12 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/12/14 16:43 |
| **Sample Name:** | 1407311648 200-SB-6 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-017 | **Basis:** | Dry |
| **Run Type:** | Reanalysis | **Percent Solids:** | 55.3 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 406174 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081214\W0300.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 9.0 | 1.4 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 9.0 | 1.4 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 9.0 | 2.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 9.0 | 2.4 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 9.0 | 1.2 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 9.0 | 2.6 | |
| 78-93-3 | 2-Butanone (MEK) | **17** | | 9.0 | 4.2 | |
| 67-63-0 | Isopropanol | **62** | J | 180 | 51 | |
| 67-64-1 | Acetone | **81** | | 9.0 | 5.1 | |
| 71-43-2 | Benzene | **5.4** | J | 9.0 | 0.53 | |
| 75-27-4 | Bromodichloromethane | ND | U | 9.0 | 1.2 | |
| 75-25-2 | Bromoform | ND | U | 9.0 | 1.7 | |
| 108-90-7 | Chlorobenzene | ND | U | 9.0 | 0.53 | |
| 67-66-3 | Chloroform | ND | U | 9.0 | 2.3 | |
| 74-87-3 | Chloromethane | ND | U | 9.0 | 0.73 | |
| 124-48-1 | Dibromochloromethane | ND | U | 9.0 | 1.4 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 9.0 | 2.8 | |
| 75-09-2 | Dichloromethane | **14** | | 9.0 | 1.1 | |
| 100-41-4 | Ethylbenzene | **0.67** | J | 9.0 | 0.42 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 9.0 | 1.7 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 9.0 | 1.6 | |
| 108-88-3 | Toluene | **4.2** | J | 9.0 | 1.9 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 9.0 | 1.9 | |
| 179601-23-1 | m,p-Xylenes | **2.4** | J | 18 | 2.0 | |
| 95-47-6 | o-Xylene | **3.1** | J | 9.0 | 0.87 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 9.0 | 2.5 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 8/12/14 16:43 | |
| Dibromofluoromethane | 98 | 63-138 | 8/12/14 16:43 | |
| Toluene-d8 | 103 | 66-138 | 8/12/14 16:43 | |

**ALS ENVIRONMENTAL**

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311648 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-017 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311649 200-SB-6 | | |
| **Lab Code:** | R1405951-018 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **55.3** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/11/14 15:49 |
| **Sample Name:** | 1407311649 200-SB-6 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-018 | **Basis:** | Dry |
| | | **Percent Solids:** | 55.3 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405989 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081114\W0262.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.28 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 12 | 1.7 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 12 | 1.7 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 12 | 2.9 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 12 | 3.0 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 12 | 1.5 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 12 | 3.3 | |
| 78-93-3 | 2-Butanone (MEK) | **23** | | 12 | 5.4 | |
| 67-63-0 | Isopropanol | ND | U | 230 | 65 | |
| 67-64-1 | Acetone | **89** | | 12 | 6.6 | |
| 71-43-2 | Benzene | **4.4** | J | 12 | 0.68 | |
| 75-27-4 | Bromodichloromethane | ND | U | 12 | 1.5 | |
| 75-25-2 | Bromoform | ND | U | 12 | 2.2 | |
| 108-90-7 | Chlorobenzene | ND | U | 12 | 0.68 | |
| 67-66-3 | Chloroform | ND | U | 12 | 3.0 | |
| 74-87-3 | Chloromethane | ND | U | 12 | 0.93 | |
| 124-48-1 | Dibromochloromethane | ND | U | 12 | 1.7 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 12 | 3.5 | |
| 75-09-2 | Dichloromethane | ND | U | 12 | 1.4 | |
| 100-41-4 | Ethylbenzene | ND | U | 12 | 0.54 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 12 | 2.2 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 12 | 2.1 | |
| 108-88-3 | Toluene | **4.2** | J | 12 | 2.4 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 12 | 2.4 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 23 | 2.6 | |
| 95-47-6 | o-Xylene | **2.7** | J | 12 | 1.2 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 12 | 3.2 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 96 | 51-136 | 8/11/14 15:49 | |
| Dibromofluoromethane | 94 | 63-138 | 8/11/14 15:49 | |
| Toluene-d8 | 101 | 66-138 | 8/11/14 15:49 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311649 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-018 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408040805 200-SB-7 | | |
| **Lab Code:** | R1405951-019 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **58.6** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/11/14 16:27 |
| **Sample Name:** | 1408040805 200-SB-7 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-019 | **Basis:** | Dry |
| | | **Percent Solids:** | 58.6 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405989 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081114\W0263.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .36 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 3.1 | 0.45 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 3.1 | 0.45 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 3.1 | 0.77 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 3.1 | 0.79 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 3.1 | 0.38 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 3.1 | 0.86 | |
| 78-93-3 | 2-Butanone (MEK) | **2.6** | J | 3.1 | 1.5 | |
| 67-63-0 | Isopropanol | ND | U | 61 | 18 | |
| 67-64-1 | Acetone | **10** | | 3.1 | 1.8 | |
| 71-43-2 | Benzene | **0.26** | J | 3.1 | 0.18 | |
| 75-27-4 | Bromodichloromethane | ND | U | 3.1 | 0.38 | |
| 75-25-2 | Bromoform | ND | U | 3.1 | 0.58 | |
| 108-90-7 | Chlorobenzene | ND | U | 3.1 | 0.18 | |
| 67-66-3 | Chloroform | ND | U | 3.1 | 0.78 | |
| 74-87-3 | Chloromethane | ND | U | 3.1 | 0.25 | |
| 124-48-1 | Dibromochloromethane | ND | U | 3.1 | 0.45 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 3.1 | 0.93 | |
| 75-09-2 | Dichloromethane | ND | U | 3.1 | 0.36 | |
| 100-41-4 | Ethylbenzene | ND | U | 3.1 | 0.15 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 3.1 | 0.58 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 3.1 | 0.55 | |
| 108-88-3 | Toluene | **0.85** | J | 3.1 | 0.62 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 3.1 | 0.63 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 6.1 | 0.67 | |
| 95-47-6 | o-Xylene | ND | U | 3.1 | 0.30 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 3.1 | 0.84 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 51-136 | 8/11/14 16:27 | |
| Dibromofluoromethane | 93 | 63-138 | 8/11/14 16:27 | |
| Toluene-d8 | 97 | 66-138 | 8/11/14 16:27 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408040805 200-SB-7 | **Date Collected:** | 8/4/14 |
| **Lab Code:** | R1405951-019 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408040806 200-SB-7 | | |
| **Lab Code:** | R1405951-020 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **58.6** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Analyzed:** | 8/11/14 17:04 |
| **Sample Name:** | 1408040806 200-SB-7 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-020 | **Basis:** | Dry |
| | | **Percent Solids:** | 58.6 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405989 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081114\W0264.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .48 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.1 | 0.60 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.1 | 0.60 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.1 | 1.1 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.1 | 1.1 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.1 | 0.50 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.1 | 1.2 | |
| 78-93-3 | 2-Butanone (MEK) | **4.7** | | 4.1 | 1.9 | |
| 67-63-0 | Isopropanol | ND | U | 82 | 23 | |
| 67-64-1 | Acetone | **17** | | 4.1 | 2.4 | |
| 71-43-2 | Benzene | **0.28** | J | 4.1 | 0.24 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.1 | 0.50 | |
| 75-25-2 | Bromoform | ND | U | 4.1 | 0.77 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.1 | 0.24 | |
| 67-66-3 | Chloroform | ND | U | 4.1 | 1.1 | |
| 74-87-3 | Chloromethane | ND | U | 4.1 | 0.33 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.1 | 0.60 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.1 | 1.3 | |
| 75-09-2 | Dichloromethane | ND | U | 4.1 | 0.47 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.1 | 0.19 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.1 | 0.77 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.1 | 0.73 | |
| 108-88-3 | Toluene | **0.91** | J | 4.1 | 0.82 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.1 | 0.83 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 8.2 | 0.90 | |
| 95-47-6 | o-Xylene | ND | U | 4.1 | 0.40 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.1 | 1.2 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 103 | 51-136 | 8/11/14 17:04 | |
| Dibromofluoromethane | 94 | 63-138 | 8/11/14 17:04 | |
| Toluene-d8 | 97 | 66-138 | 8/11/14 17:04 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408040806 200-SB-7 | **Date Collected:** | 8/4/14 |
| **Lab Code:** | R1405951-020 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311647 200-SB-6 | | |
| **Lab Code:** | R1405951-022 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 7.95 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311647 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-022 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311702 200-SB-6 | | |
| **Lab Code:** | R1405951-023 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 7.99 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311702 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-023 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311703 200-SB-6 | | |
| **Lab Code:** | R1405951-024 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 7.92 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311703 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-024 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311644 200-SB-6 | | |
| **Lab Code:** | R1405951-025 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **54.2** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/8/14 19:49 |
| **Sample Name:** | 1407311644 200-SB-6 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-025 | **Basis:** | Dry |
| | | **Percent Solids:** | 54.2 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405899 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080814\AV437.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 3000 | 400 | |
| 84-74-2 | Di-n-butyl Phthalate | **1200** | J | 3000 | 470 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 57 | 47-126 | 8/8/14 19:49 | |
| Nitrobenzene-d5 | 54 | 39-136 | 8/8/14 19:49 | |
| p-Terphenyl-d14 | 117 | 35-152 | 8/8/14 19:49 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311644 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-025 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311656 200-SB-6 | | |
| **Lab Code:** | R1405951-026 | **Basis:** | As Received |

**General Chemistry Parameters**

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **51.6** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/8/14 20:16 |
| **Sample Name:** | 1407311656 200-SB-6 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-026 | **Basis:** | Dry |
| | | **Percent Solids:** | 51.6 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405899 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080814\AV438.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 3200 | 420 | |
| 84-74-2 | Di-n-butyl Phthalate | **520** | J | 3200 | 500 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 66 | 47-126 | 8/8/14 20:16 | |
| Nitrobenzene-d5 | 57 | 39-136 | 8/8/14 20:16 | |
| p-Terphenyl-d14 | 122 | 35-152 | 8/8/14 20:16 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311656 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-026 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1407311657 200-SB-6 | | |
| **Lab Code:** | R1405951-027 | **Basis:** | As Received |

**General Chemistry Parameters**

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **52.1** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/31/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/8/14 20:43 |
| **Sample Name:** | 1407311657 200-SB-6 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-027 | **Basis:** | Dry |
| | | **Percent Solids:** | 52.1 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405899 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080814\AV439.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 3200 | 410 | |
| 84-74-2 | Di-n-butyl Phthalate | **680** | J | 3200 | 490 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 69 | 47-126 | 8/8/14 20:43 | |
| Nitrobenzene-d5 | 60 | 39-136 | 8/8/14 20:43 | |
| p-Terphenyl-d14 | 118 | 35-152 | 8/8/14 20:43 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407311657 200-SB-6 | **Date Collected:** | 7/31/14 |
| **Lab Code:** | R1405951-027 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408040817 200-SB-7 | | |
| **Lab Code:** | R1405951-028 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **56.4** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/8/14 21:09 |
| **Sample Name:** | 1408040817 200-SB-7 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-028 | **Basis:** | Dry |
| **Run Type:** | Reanalysis | **Percent Solids:** | 56.4 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405899 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080814\AV440.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 2900 | 380 | |
| 84-74-2 | Di-n-butyl Phthalate | **620** | J | 2900 | 450 | |

| Surrogate Name | %Rec | | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|---|
| 2-Fluorobiphenyl | 24 | * | 47-126 | 8/8/14 21:09 | |
| Nitrobenzene-d5 | 17 | * | 39-136 | 8/8/14 21:09 | |
| p-Terphenyl-d14 | 118 | | 35-152 | 8/8/14 21:09 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/13/14 |
| | | **Date Analyzed:** | 8/14/14 12:30 |
| **Sample Name:** | 1408040817 200-SB-7 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-028 | **Basis:** | Dry |
| | | **Percent Solids:** | 56.4 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 406645 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215433 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\081414\AV524.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 590 | 76 | |
| 84-74-2 | Di-n-butyl Phthalate | **250** | J | 590 | 90 | |

| Surrogate Name | %Rec | | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|---|
| 2-Fluorobiphenyl | 26 | * | 47-126 | 8/14/14 12:30 | |
| Nitrobenzene-d5 | 30 | * | 39-136 | 8/14/14 12:30 | |
| p-Terphenyl-d14 | 69 | | 35-152 | 8/14/14 12:30 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951

**Sample Name:** 1408040817 200-SB-7
**Lab Code:** R1405951-028
**Matrix:** Soil

**Date Collected:** 8/4/14
**Date Received:** 8/5/14

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408040818 200-SB-7 | | |
| **Lab Code:** | R1405951-029 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **59.9** | | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/12/14 01:24 |
| **Sample Name:** | 1408040818 200-SB-7 | **Units:** | µg/Kg |
| **Lab Code:** | R1405951-029 | **Basis:** | Dry |
| | | **Percent Solids:** | 59.9 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 406133 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\081114\AV479.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 2800 | 360 | |
| 84-74-2 | Di-n-butyl Phthalate | **680** | J | 2800 | 430 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 54 | 47-126 | 8/12/14 01:24 | |
| Nitrobenzene-d5 | 47 | 39-136 | 8/12/14 01:24 | |
| p-Terphenyl-d14 | 106 | 35-152 | 8/12/14 01:24 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408040818 200-SB-7 | **Date Collected:** | 8/4/14 |
| **Lab Code:** | R1405951-029 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | LPRUNOSKE | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408040826 200-SB-7 | | |
| **Lab Code:** | R1405951-031 | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 7.98 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408040826 200-SB-7 | **Date Collected:** | 8/4/14 |
| **Lab Code:** | R1405951-031 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/ 4/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/ 5/14 |
| **Sample Name:** | 1408040827 200-SB-7 | | |
| **Lab Code:** | R1405951-032 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 7.85 | | pH Units | | 1 | NA | 8/11/14 16:21 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1408040827 200-SB-7 | **Date Collected:** | 8/4/14 |
| **Lab Code:** | R1405951-032 | **Date Received:** | 8/5/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405951-MB1 | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | ND | U | Percent | 1.0 | 1 | NA | 8/13/14 10:11 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405951-MB2 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **1.0** | | Percent | 1.0 | 1 | NA | 8/18/14 11:50 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 8/8/14 09:53 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1409478-04 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405720 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\080814\W0215.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 8/8/14 09:53 | |
| Dibromofluoromethane | 100 | 63-138 | 8/8/14 09:53 | |
| Toluene-d8 | 98 | 66-138 | 8/8/14 09:53 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 8/11/14 12:35 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1409343-04 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 405989 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081114\W0257.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | **0.60** | J | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 8/11/14 12:35 | |
| Dibromofluoromethane | 96 | 63-138 | 8/11/14 12:35 | |
| Toluene-d8 | 98 | 66-138 | 8/11/14 12:35 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 8/12/14 13:24 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1409410-05 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 406174 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\081214\W0295.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 8/12/14 13:24 | |
| Dibromofluoromethane | 99 | 63-138 | 8/12/14 13:24 | |
| Toluene-d8 | 97 | 66-138 | 8/12/14 13:24 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Analyzed:** | 8/12/14 14:25 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1409570-01 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 406145 |
| **Data File Name:** | I:\ACQUDATA\msvoa10\data\081214\A1020.D\ | **Instrument Name:** | R-MS-10 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 85-122 | 8/12/14 14:25 | |
| Dibromofluoromethane | 97 | 89-119 | 8/12/14 14:25 | |
| Toluene-d8 | 101 | 87-121 | 8/12/14 14:25 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 8/6/14 |
| | | **Date Analyzed:** | 8/6/14 15:49 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1409122-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 405490 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 214878 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\080614\AV371.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 67 | 47-126 | 8/6/14 15:49 | |
| Nitrobenzene-d5 | 55 | 39-136 | 8/6/14 15:49 | |
| p-Terphenyl-d14 | 96 | 35-152 | 8/6/14 15:49 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Extracted:** | 8/7/14 |
| | | **Date Analyzed:** | 8/8/14 19:19 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1409198-01 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 406068 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 215014 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\080814\CZ560.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 10 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 10 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 84 | 39-119 | 8/8/14 19:19 | |
| Nitrobenzene-d5 | 74 | 37-117 | 8/8/14 19:19 | |
| p-Terphenyl-d14 | 102 | 40-133 | 8/8/14 19:19 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405951 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 8/13/14 |
| | | **Date Analyzed:** | 8/14/14 07:06 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1409459-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 406645 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215433 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\081414\AV512.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 58 | 47-126 | 8/14/14 07:06 | |
| Nitrobenzene-d5 | 51 | 39-136 | 8/14/14 07:06 | |
| p-Terphenyl-d14 | 90 | 35-152 | 8/14/14 07:06 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Collected:** 8/4/14
**Date Received:** 8/5/14
**Date Analyzed:** 8/18/14

**Replicate Sample Summary**
**General Chemistry Parameters**

**Sample Name:** 1408040805 200-SB-7
**Lab Code:** R1405951-019

**Units:** Percent
**Basis:** As Received

| Analyte Name | Method | MRL | Sample Result | 1408040805 200-SB-7DUP Duplicate Sample R1405951-019DUP Result | Average | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | 1.0 | 58.6 | 58.1 | 58.3 | <1 | 20 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Collected:** 8/4/14
**Date Received:** 8/5/14
**Date Analyzed:** 8/13/14

### Replicate Sample Summary
### General Chemistry Parameters

**Sample Name:** 1408040817 200-SB-7
**Lab Code:** R1405951-028

**Units:** Percent
**Basis:** As Received

| Analyte Name | Method | MRL | Sample Result | 1408040817 200-SB-7DUP Duplicate Sample R1405951-028DUP Result | Average | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | 1.0 | 56.4 | 54.1 | 55.2 | 4 | 20 |

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**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Collected:** 8/4/14
**Date Received:** 8/5/14
**Date Analyzed:** 8/11/14

**Matrix Spike Summary**
**Volatile Organic Compounds by GC/MS**

**Sample Name:** 1408040805 200-SB-7
**Lab Code:** R1405951-019

**Units:** µg/Kg
**Basis:** Dry

**Analytical Method:** 8260C

| | | 1408040805 200-SB-7MS Matrix Spike RQ1409343-05 | | | 1408040805 200-SB-7DMS Duplicate Matrix Spike RQ1409343-06 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| 1,1,1-Trichloroethane (TCA) | ND | 34.4 | 39.2 | 88 | 45.0 | 50.3 | 89 | 37 - 142 | 1 | 30 |
| 1,1,2-Trichloroethane | ND | 34.3 | 39.2 | 87 | 45.6 | 50.3 | 91 | 35 - 144 | 4 | 30 |
| 1,1,2-Trichlorotrifluoroethane | ND | 33.3 | 39.2 | 85 | 41.8 | 50.3 | 83 | 31 - 139 | 2 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | ND | 43.9 | 39.2 | 112 | 57.6 | 50.3 | 114 | 47 - 155 | 2 | 30 |
| 1,2-Dichloroethane | ND | 30.1 | 39.2 | 77 | 41.1 | 50.3 | 82 | 37 - 142 | 6 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC | ND | 39.1 | 39.2 | 100 | 52.9 | 50.3 | 105 | 46 - 159 | 5 | 30 |
| 2-Butanone (MEK) | 2.6 | 33.7 | 39.2 | 79 | 48.3 | 50.3 | 91 | 29 - 166 | 14 | 30 |
| Isopropanol | ND | 555 | 785 | 71 | 802 | 1010 | 80 | 10 - 158 | 12 | 30 |
| Acetone | 10 | 52.1 | 39.2 | 107 | 73.8 | 50.3 | 126 | 21 - 197 | 16 | 30 |
| Benzene | 0.26 | 36.7 | 39.2 | 93 | 48.7 | 50.3 | 96 | 33 - 144 | 3 | 30 |
| Bromodichloromethane | ND | 30.0 | 39.2 | 76 | 37.6 | 50.3 | 75 | 35 - 144 | 1 | 30 |
| Bromoform | ND | 25.5 | 39.2 | 65 | 32.2 | 50.3 | 64 | 16 - 157 | 2 | 30 |
| Chlorobenzene | ND | 33.6 | 39.2 | 86 | 41.7 | 50.3 | 83 | 17 - 151 | 4 | 30 |
| Chloroform | ND | 34.6 | 39.2 | 88 | 45.5 | 50.3 | 90 | 43 - 145 | 2 | 30 |
| Chloromethane | ND | 32.4 | 39.2 | 83 | 43.9 | 50.3 | 87 | 11 - 162 | 5 | 30 |
| Dibromochloromethane | ND | 27.7 | 39.2 | 71 | 34.8 | 50.3 | 69 | 23 - 154 | 3 | 30 |
| Dichlorofluoromethane (CFC 21) | ND | 32.3 | 39.2 | 82 | 43.8 | 50.3 | 87 | 45 - 158 | 6 | 30 |
| Dichloromethane | ND | 35.5 | 39.2 | 91 | 47.4 | 50.3 | 94 | 42 - 135 | 3 | 30 |
| Ethylbenzene | ND | 29.0 | 39.2 | 74 | 35.3 | 50.3 | 70 | 13 - 159 | 6 | 30 |
| Methyl tert-Butyl Ether | ND | 31.9 | 39.2 | 81 | 44.5 | 50.3 | 88 | 48 - 131 | 8 | 30 |
| Tetrachloroethene (PCE) | ND | 33.1 | 39.2 | 84 | 39.1 | 50.3 | 78 | 19 - 159 | 7 | 30 |
| Toluene | 0.85 | 37.2 | 39.2 | 93 | 49.4 | 50.3 | 96 | 22 - 148 | 3 | 30 |
| Trichloroethene (TCE) | ND | 36.4 | 39.2 | 93 | 45.7 | 50.3 | 91 | 11 - 167 | 2 | 30 |
| m,p-Xylenes | ND | 60.8 | 78.5 | 77 | 72.1 | 101 | 72 | 10 - 160 | 7 | 30 |
| o-Xylene | ND | 29.9 | 39.2 | 76 | 36.3 | 50.3 | 72 | 10 - 160 | 5 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | ND | 44.0 | 39.2 | 112 | 58.8 | 50.3 | 117 | 45 - 151 | 4 | 30 |

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Collected:** 8/4/14
**Date Received:** 8/5/14
**Date Analyzed:** 8/ 8/14 - 8/12/14

**Matrix Spike Summary**
**Semivolatile Organic Compounds by GC/MS**

**Sample Name:** 1408040817 200-SB-7
**Lab Code:** R1405951-028

**Units:** µg/Kg
**Basis:** Dry

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

| | | 1408040817 200-SB-7MS Matrix Spike RQ1409122-04 | | | | 1408040817 200-SB-7DMS Duplicate Matrix Spike RQ1409122-05 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Spike Amount** | **% Rec** | | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | ND | 10800 | 5910 | 183 | * | 9070 | 5910 | 153 | 13 - 164 | 18 | 30 |
| Di-n-butyl Phthalate | 620 | 9460 | 5910 | 149 | | 8780 | 5910 | 138 | 14 - 174 | 7 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Collected:** 8/4/14
**Date Received:** 8/5/14
**Date Analyzed:** 8/14/14

### Matrix Spike Summary
### Semivolatile Organic Compounds by GC/MS

**Sample Name:** 1408040817 200-SB-7
**Lab Code:** R1405951-028

**Units:** µg/Kg
**Basis:** Dry

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

| | | 1408040817 200-SB-7MS Matrix Spike RQ1409459-06 | | | 1408040817 200-SB-7DMS Duplicate Matrix Spike RQ1409459-07 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | ND | 6430 | 5910 | 109 | 5520 | 5910 | 93 | 13 - 164 | 15 | 30 |
| Di-n-butyl Phthalate | 620 | 5610 | 5910 | 84 | 5310 | 5910 | 79 | 14 - 174 | 6 | 30 |

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**Results flagged with a pound (#) indicate the control criteria is not applicable.**

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**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/ 8/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 405720

| Analyte Name | Lab Control Sample RQ1409478-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 20.3 | 20.0 | 101 | 64 - 127 |
| 1,1,2-Trichloroethane | 19.3 | 20.0 | 96 | 76 - 123 |
| 1,1,2-Trichlorotrifluoroethane | 22.0 | 20.0 | 110 | 59 - 146 |
| 1,1-Dichloroethene (1,1-DCE) | 23.9 | 20.0 | 119 | 75 - 151 |
| 1,2-Dichloroethane | 19.1 | 20.0 | 95 | 66 - 123 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 20.7 | 20.0 | 104 | 61 - 138 |
| 2-Butanone (MEK) | 17.3 | 20.0 | 87 | 62 - 128 |
| Isopropanol | 342 | 400 | 85 | 62 - 142 |
| Acetone | 20.0 | 20.0 | 100 | 53 - 143 |
| Benzene | 20.9 | 20.0 | 105 | 74 - 123 |
| Bromodichloromethane | 19.6 | 20.0 | 98 | 77 - 127 |
| Bromoform | 19.2 | 20.0 | 96 | 65 - 133 |
| Chlorobenzene | 20.8 | 20.0 | 104 | 77 - 124 |
| Chloroform | 19.7 | 20.0 | 99 | 73 - 125 |
| Chloromethane | 20.1 | 20.0 | 100 | 56 - 154 |
| Dibromochloromethane | 20.0 | 20.0 | 100 | 77 - 124 |
| Dichlorofluoromethane (CFC 21) | 16.7 | 20.0 | 83 | 79 - 142 |
| Dichloromethane | 21.1 | 20.0 | 105 | 77 - 126 |
| Ethylbenzene | 20.5 | 20.0 | 102 | 73 - 123 |
| Methyl tert-Butyl Ether | 19.5 | 20.0 | 98 | 72 - 131 |
| Tetrachloroethene (PCE) | 22.6 | 20.0 | 113 | 65 - 133 |
| Toluene | 21.7 | 20.0 | 108 | 72 - 127 |
| Trichloroethene (TCE) | 20.9 | 20.0 | 104 | 72 - 129 |
| m,p-Xylenes | 43.2 | 40.0 | 108 | 77 - 125 |
| o-Xylene | 21.2 | 20.0 | 106 | 75 - 124 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 24.0 | 20.0 | 120 | 56 - 154 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/11/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 405989

| Analyte Name | Lab Control Sample RQ1409343-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 17.5 | 20.0 | 87 | 64 - 127 |
| 1,1,2-Trichloroethane | 18.7 | 20.0 | 93 | 76 - 123 |
| 1,1,2-Trichlorotrifluoroethane | 19.2 | 20.0 | 96 | 59 - 146 |
| 1,1-Dichloroethene (1,1-DCE) | 21.9 | 20.0 | 110 | 75 - 151 |
| 1,2-Dichloroethane | 16.8 | 20.0 | 84 | 66 - 123 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 20.8 | 20.0 | 104 | 61 - 138 |
| 2-Butanone (MEK) | 19.7 | 20.0 | 99 | 62 - 128 |
| Isopropanol | 375 | 400 | 94 | 62 - 142 |
| Acetone | 21.9 | 20.0 | 110 | 53 - 143 |
| Benzene | 18.6 | 20.0 | 93 | 74 - 123 |
| Bromodichloromethane | 17.8 | 20.0 | 89 | 77 - 127 |
| Bromoform | 18.8 | 20.0 | 94 | 65 - 133 |
| Chlorobenzene | 18.7 | 20.0 | 93 | 77 - 124 |
| Chloroform | 18.3 | 20.0 | 91 | 73 - 125 |
| Chloromethane | 19.1 | 20.0 | 95 | 56 - 154 |
| Dibromochloromethane | 18.5 | 20.0 | 92 | 77 - 124 |
| Dichlorofluoromethane (CFC 21) | 16.8 | 20.0 | 84 | 79 - 142 |
| Dichloromethane | 19.1 | 20.0 | 95 | 77 - 126 |
| Ethylbenzene | 17.5 | 20.0 | 87 | 73 - 123 |
| Methyl tert-Butyl Ether | 18.2 | 20.0 | 91 | 72 - 131 |
| Tetrachloroethene (PCE) | 20.1 | 20.0 | 100 | 65 - 133 |
| Toluene | 18.7 | 20.0 | 93 | 72 - 127 |
| Trichloroethene (TCE) | 18.3 | 20.0 | 92 | 72 - 129 |
| m,p-Xylenes | 37.5 | 40.0 | 94 | 77 - 125 |
| o-Xylene | 18.1 | 20.0 | 91 | 75 - 124 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.7 | 20.0 | 118 | 56 - 154 |

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/12/14

### Lab Control Sample Summary
### Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 406174

| | Lab Control Sample RQ1409410-03 | | | Duplicate Lab Control Sample RQ1409410-04 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| 1,1,1-Trichloroethane (TCA) | 19.4 | 20.0 | 97 | 18.3 | 20.0 | 91 | 64 - 127 | 6 | 30 |
| 1,1,2-Trichloroethane | 20.2 | 20.0 | 101 | 19.7 | 20.0 | 98 | 76 - 123 | 3 | 30 |
| 1,1,2-Trichlorotrifluoroethane | 21.9 | 20.0 | 109 | 20.0 | 20.0 | 100 | 59 - 146 | 9 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | 22.9 | 20.0 | 114 | 23.0 | 20.0 | 115 | 75 - 151 | <1 | 30 |
| 1,2-Dichloroethane | 18.9 | 20.0 | 95 | 18.2 | 20.0 | 91 | 66 - 123 | 4 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.4 | 20.0 | 107 | 20.8 | 20.0 | 104 | 61 - 138 | 3 | 30 |
| 2-Butanone (MEK) | 22.3 | 20.0 | 111 | 19.5 | 20.0 | 98 | 62 - 128 | 12 | 30 |
| Isopropanol | 396 | 400 | 99 | 384 | 400 | 96 | 62 - 142 | 3 | 30 |
| Acetone | 23.7 | 20.0 | 119 | 19.8 | 20.0 | 99 | 53 - 143 | 18 | 30 |
| Benzene | 20.8 | 20.0 | 104 | 20.5 | 20.0 | 102 | 74 - 123 | 2 | 30 |
| Bromodichloromethane | 20.2 | 20.0 | 101 | 19.4 | 20.0 | 97 | 77 - 127 | 4 | 30 |
| Bromoform | 21.1 | 20.0 | 106 | 19.9 | 20.0 | 99 | 65 - 133 | 7 | 30 |
| Chlorobenzene | 21.4 | 20.0 | 107 | 19.2 | 20.0 | 96 | 77 - 124 | 11 | 30 |
| Chloroform | 19.4 | 20.0 | 97 | 18.5 | 20.0 | 92 | 73 - 125 | 5 | 30 |
| Chloromethane | 20.4 | 20.0 | 102 | 19.3 | 20.0 | 96 | 56 - 154 | 6 | 30 |
| Dibromochloromethane | 19.6 | 20.0 | 98 | 19.0 | 20.0 | 95 | 77 - 124 | 3 | 30 |
| Dichlorofluoromethane (CFC 21) | 17.3 | 20.0 | 87 | 17.1 | 20.0 | 85 | 79 - 142 | 2 | 30 |
| Dichloromethane | 20.9 | 20.0 | 105 | 20.2 | 20.0 | 101 | 77 - 126 | 4 | 30 |
| Ethylbenzene | 19.7 | 20.0 | 99 | 18.0 | 20.0 | 90 | 73 - 123 | 10 | 30 |
| Methyl tert-Butyl Ether | 20.2 | 20.0 | 101 | 19.5 | 20.0 | 97 | 72 - 131 | 4 | 30 |
| Tetrachloroethene (PCE) | 23.0 | 20.0 | 115 | 20.4 | 20.0 | 102 | 65 - 133 | 12 | 30 |
| Toluene | 21.1 | 20.0 | 105 | 19.8 | 20.0 | 99 | 72 - 127 | 6 | 30 |
| Trichloroethene (TCE) | 20.8 | 20.0 | 104 | 19.9 | 20.0 | 100 | 72 - 129 | 4 | 30 |
| m,p-Xylenes | 42.8 | 40.0 | 107 | 38.0 | 40.0 | 95 | 77 - 125 | 12 | 30 |
| o-Xylene | 21.0 | 20.0 | 105 | 19.0 | 20.0 | 95 | 75 - 124 | 10 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 24.9 | 20.0 | 124 | 23.7 | 20.0 | 118 | 56 - 154 | 5 | 30 |

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405951
**Date Analyzed:** 8/12/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/L
**Basis:** NA

**Analysis Lot:** 406145

**Lab Control Sample**
RQ1409570-02

| Analyte Name | Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 19.7 | 20.0 | 98 | 71 - 123 |
| 1,1,2-Trichloroethane | 19.5 | 20.0 | 98 | 79 - 117 |
| 1,1,2-Trichlorotrifluoroethane | 18.0 | 20.0 | 90 | 64 - 136 |
| 1,1-Dichloroethene (1,1-DCE) | 21.1 | 20.0 | 106 | 74 - 135 |
| 1,2-Dichloroethane | 18.8 | 20.0 | 94 | 72 - 130 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 19.0 | 20.0 | 95 | 62 - 138 |
| 2-Butanone (MEK) | 20.3 | 20.0 | 101 | 66 - 129 |
| Isopropanol | 356 | 400 | 89 | 57 - 137 |
| Acetone | 21.2 | 20.0 | 106 | 51 - 146 |
| Benzene | 20.5 | 20.0 | 103 | 76 - 118 |
| Bromodichloromethane | 19.1 | 20.0 | 95 | 79 - 122 |
| Bromoform | 17.3 | 20.0 | 86 | 65 - 138 |
| Chlorobenzene | 21.1 | 20.0 | 105 | 80 - 121 |
| Chloroform | 19.9 | 20.0 | 100 | 76 - 120 |
| Chloromethane | 21.2 | 20.0 | 106 | 64 - 140 |
| Dibromochloromethane | 19.6 | 20.0 | 98 | 79 - 125 |
| Dichlorofluoromethane (CFC 21) | 16.8 | 20.0 | 84 | 79 - 144 |
| Dichloromethane | 20.3 | 20.0 | 102 | 73 - 122 |
| Ethylbenzene | 19.3 | 20.0 | 97 | 76 - 120 |
| Methyl tert-Butyl Ether | 18.6 | 20.0 | 93 | 73 - 131 |
| Tetrachloroethene (PCE) | 20.8 | 20.0 | 104 | 69 - 124 |
| Toluene | 20.4 | 20.0 | 102 | 77 - 120 |
| Trichloroethene (TCE) | 19.8 | 20.0 | 99 | 76 - 123 |
| m,p-Xylenes | 42.2 | 40.0 | 106 | 78 - 123 |
| o-Xylene | 21.4 | 20.0 | 107 | 77 - 131 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 22.3 | 20.0 | 112 | 65 - 143 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

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**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/ 6/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 214878

| | Lab Control Sample RQ1409122-02 | | | Duplicate Lab Control Sample RQ1409122-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2910 | 3330 | 87 | 3170 | 3330 | 95 | 50 - 142 | 8 | 30 |
| Di-n-butyl Phthalate | 3070 | 3330 | 92 | 3270 | 3330 | 98 | 36 - 164 | 6 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405951
**Date Analyzed:** 8/ 8/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3510C

**Units:** µg/L
**Basis:** NA

**Extraction Lot:** 215014

| | Lab Control Sample RQ1409198-02 | | | Duplicate Lab Control Sample RQ1409198-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 101 | 100 | 101 | 103 | 100 | 103 | 62 - 124 | 2 | 30 |
| Di-n-butyl Phthalate | 96.7 | 100 | 97 | 98.6 | 100 | 99 | 57 - 139 | 2 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/14/14

### Lab Control Sample Summary
### Semivolatile Organic Compounds by GC/MS

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 215433

| | Lab Control Sample RQ1409459-02 | | | Duplicate Lab Control Sample RQ1409459-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2940 | 3330 | 88 | 3250 | 3330 | 98 | 50 - 142 | 10 | 30 |
| Di-n-butyl Phthalate | 2980 | 3330 | 89 | 3180 | 3330 | 95 | 36 - 164 | 7 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Date 8-31-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (A/S) | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408020903 | 200-SB-17 | 2 | A | | X | | | | | | | |
| 1408020700 | " | 3 | A | X | | | | | | | | |
| 1408020900 | " | 3 | A | X | | | | | | | | |
| 1408030843 | 200-SB-17 48'/50' | 3 | S | X | | | | | | | | |
| 1408031315 | " 88'/90' | 3 | S | X | | | | | | | | |
| 1408020915 | " 8'/12' | 3 | S | X | | | | | | | | |
| 1408020916 | " " | 3 | S | X | | | | | | | | |
| 1408020929 | " " | 1 | S | | | X | | | | | | |
| 1408020930 | " " | 1 | S | | | X | | | | | | |
| 1408020923 | " " | 1 | S | | X | | | | | | | |
| 1408020924 | " " | 1 | S | | X | | | | | | | |
| 1408030852 | " 48'/50' | 1 | S | | | X | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 8-31-14 / 1100 HRS | [signature] ACS 8/5/14 | 0935 |
| | | | |
| | | | |

R1405951 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

Date 8-4-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408031322 | 200-SB-17 88'/90' | 1 | S | | | X | | | | | | |
| 1408030849 | " 48'/50' | 1 | S | | X | | | | | | | |
| 1408031319 | " 88'/90' | 1 | S | | X | | | | | | | |
| 1407311640 | 200-SB-6 | 3 | S | X | | | | | | | | |
| 1407311648 | " | 3 | S | X | | | | | | | | |
| 1407311649 | " | 3 | S | X | | | | | | | | |
| 1408040805 | 200-SB-7 | 3 | S | X | | | | | | | | |
| 1408040806 | " | 3 | S | X | | | | | | | | |
| 1408040807 | " | 3 | S | X | | | | | | | | * Matrix Spike for # 1408040805 |
| ~~1408~~ 1407311647 | 200-SB-6 | 1 | S | | | X | | | | | | |
| 1407311702 | " | 1 | S | | | X | | | | | | |
| 1407311703 | " | 1 | S | | | X | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| John M Trunch | 8-4-14 / 1100 HRS. | ALS | 8/5/14 0935 |
| | | | |
| | | | |

R1405951 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

Date 8-4-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407311644 | 200-SB-6 | 1 | S | | X | | | | | | | |
| 1407311656 | " | 1 | S | | X | | | | | | | |
| 1407311657 | " | 1 | S | | X | | | | | | | |
| 1408040817 | 200-SB-7 | 1 | S | | X | | | | | | | |
| 1408040818 | " | 1 | S | | X | | | | | | | |
| 1408040819 | " | 1 | S | | X | | | | | | | *Matrix Spike For # 1408040817 |
| 1408040826 | " | 1 | S | | | X | | | | | | |
| 1408040827 | " | 1 | S | | | X | | | | | | |
| 1408040828 | " | 1 | S | | | X | | | | | | *Matrix Spike For # 1408040826 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 8-4-14 / 1100 HRS. | [signature] ARS 8/5/14 0935 | R1405951 |

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number 14-5751

Cooler received on 8/5/14 by: JB

COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were Custody seals on outside of cooler? | Y N | 5a | Perchlorate samples have required headspace? | Y N NA |
| 2 | Custody papers properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk, or Sulfide have sig* bubbles? | Y N NA |
| 3 | Did all bottles arrive in good condition (unbroken)? | Y N | 6 | Where did the bottles originate? | ALS/ROC CLIENT |
| 4 | Circle: Wet Ice Dry Ice Gel packs present? | Y N | 7 | Soil VOA received as: Bulk Encore 5035set | |

8. Temperature Readings Date: 8/5/14 Time: 1040 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 2.0 | 4.3 | | | | | |
| Correction Factor (°C) | +0.0 | -1.8 | | | | | |
| Corrected Temp (°C) | 2.0 | 2.5 | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

& Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: NOR by JB on 8/5/14 at 1040

5035 samples placed in storage location: _____ by _____ on _____ at _____

PC Secondary Review: JMM 8/5/14

Cooler Breakdown: Date: 8/5/14 Time: 1637 by: JB

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: client

Other Comments:

PC Secondary Review: JMM 8/20/14

*significant air bubbles: VOA > 5-6 mm : WC>1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/8/14 09:53

### Method Blank Summary
### Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1409478-04
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\080814\W0215.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1409478-03 | I:\ACQUDATA\MSVOA7\DATA\080814\W0213.D\ | 8/8/14 08:32 |
| 1408030843 200-SB-17 48'/50' | R1405951-004 | I:\ACQUDATA\MSVOA7\DATA\080814\W0221.D\ | 8/8/14 13:46 |
| 1408031315 200-SB-17 88'/90' | R1405951-005 | I:\ACQUDATA\MSVOA7\DATA\080814\W0222.D\ | 8/8/14 14:23 |
| 1408020915 200-SB-17 8'/12' | R1405951-006 | I:\ACQUDATA\MSVOA7\DATA\080814\W0223.D\ | 8/8/14 15:01 |
| 1408020916 200-SB-17 8'/12' | R1405951-007 | I:\ACQUDATA\MSVOA7\DATA\080814\W0224.D\ | 8/8/14 15:39 |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/11/14 12:35

## Method Blank Summary
## Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1409343-04
**Analytical Method:** 8260C

**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\081114\W0257.D\

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1409343-03 | I:\ACQUDATA\MSVOA7\DATA\081114\W0255.D\ | 8/11/14 11:16 |
| 1407311640 200-SB-6 | R1405951-016 | I:\ACQUDATA\MSVOA7\DATA\081114\W0260.D\ | 8/11/14 14:35 |
| 1407311648 200-SB-6 | R1405951-017 | I:\ACQUDATA\MSVOA7\DATA\081114\W0261.D\ | 8/11/14 15:12 |
| 1407311649 200-SB-6 | R1405951-018 | I:\ACQUDATA\MSVOA7\DATA\081114\W0262.D\ | 8/11/14 15:49 |
| 1408040805 200-SB-7 | R1405951-019 | I:\ACQUDATA\MSVOA7\DATA\081114\W0263.D\ | 8/11/14 16:27 |
| 1408040806 200-SB-7 | R1405951-020 | I:\ACQUDATA\MSVOA7\DATA\081114\W0264.D\ | 8/11/14 17:04 |
| 1408040805 200-SB-7MS | RQ1409343-05 | I:\ACQUDATA\MSVOA7\DATA\081114\W0269.D\ | 8/11/14 20:12 |
| 1408040805 200-SB-7DMS | RQ1409343-06 | I:\ACQUDATA\MSVOA7\DATA\081114\W0270.D\ | 8/11/14 20:50 |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405951
**Date Analyzed:** 8/12/14 13:24

**Method Blank Summary**
**Volatile Organic Compounds by GC/MS**

**Sample Name:** Method Blank
**Lab Code:** RQ1409410-05
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\081214\W0295.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1409410-03 | I:\ACQUDATA\MSVOA7\DATA\081214\W0292.D\ | 8/12/14 11:17 |
| Duplicate Lab Control Sample | RQ1409410-04 | I:\ACQUDATA\MSVOA7\DATA\081214\W0293.D\ | 8/12/14 11:55 |
| 1407311648 200-SB-6RE | R1405951-017 | I:\ACQUDATA\MSVOA7\DATA\081214\W0300.D\ | 8/12/14 16:43 |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405951
**Date Analyzed:** 8/12/14 14:25

**Method Blank Summary**
**Volatile Organic Compounds by GC/MS**

**Sample Name:** Method Blank
**Lab Code:** RQ1409570-01
**Instrument ID:** R-MS-10
**File ID:** I:\ACQUDATA\msvoa10\data\081214\A1020.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1409570-02 | I:\ACQUDATA\msvoa10\data\081214\A1018.D\ | 8/12/14 13:10 |
| 1408020700 200-SB-17 | R1405951-002 | I:\ACQUDATA\msvoa10\data\081214\A1024.D\ | 8/12/14 16:26 |
| 1408020900 200-SB-17 | R1405951-003 | I:\ACQUDATA\msvoa10\data\081214\A1025.D\ | 8/12/14 16:56 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 | 50.000 | 0.4756 | 03 | 50.000 | 0.4875 | 01 | 50.000 | 0.4940 | 04 | 50.000 | 0.4931 |
| 02 | 50.000 | 0.4893 | 07 | 50.000 | 0.4775 | 06 | 50.000 | 0.4833 | 05 | 50.000 | 0.4819 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.3295 | 05 | 50.000 | 0.3361 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |
| 04 | 50.000 | 0.3406 | 01 | 50.000 | 0.3368 | 08 | 50.000 | 0.3299 | 03 | 50.000 | 0.3344 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 1.291 | 06 | 50.000 | 1.276 | 07 | 50.000 | 1.289 | 02 | 50.000 | 1.305 |
| 04 | 50.000 | 1.306 | 01 | 50.000 | 1.307 | 03 | 50.000 | 1.291 | 08 | 50.000 | 1.289 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| Analyte Name | Compound Type | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤20 | 1.294 | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\msvoa10\data\072114\A0510.D | 7/21/14 11:52 | 02 | I:\ACQUDATA\msvoa10\data\072114\A0511.D | 7/21/14 12:22 |
| 03 | I:\ACQUDATA\msvoa10\data\072114\A0512.D | 7/21/14 12:52 | 04 | I:\ACQUDATA\msvoa10\data\072114\A0513.D | 7/21/14 13:23 |
| 05 | I:\ACQUDATA\msvoa10\data\072114\A0514.D | 7/21/14 13:53 | 06 | I:\ACQUDATA\msvoa10\data\072114\A0515.D | 7/21/14 14:23 |
| 07 | I:\ACQUDATA\msvoa10\data\072114\A0516.D | 7/21/14 14:54 | 08 | I:\ACQUDATA\msvoa10\data\072114\A0517.D | 7/21/14 15:24 |
| 09 | I:\ACQUDATA\msvoa10\data\072114\A0518.D | 7/21/14 15:55 | | | |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6918 | 02 | 1.000 | 0.6746 | 03 | 2.000 | 0.6764 | 04 | 5.000 | 0.6882 |
| 05 | 10.000 | 0.6552 | 06 | 50.000 | 0.6704 | 07 | 100.000 | 0.7039 | 08 | 150.000 | 0.7085 |
| 09 | 200.000 | 0.6956 | | | | | | | | | |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2138 | 02 | 1.000 | 0.2359 | 03 | 2.000 | 0.2210 | 04 | 5.000 | 0.2135 |
| 05 | 10.000 | 0.2275 | 06 | 50.000 | 0.2228 | 07 | 100.000 | 0.2310 | 08 | 150.000 | 0.2371 |
| 09 | 200.000 | 0.2308 | | | | | | | | | |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4656 | 02 | 1.000 | 0.4831 | 03 | 2.000 | 0.4314 | 04 | 5.000 | 0.4561 |
| 05 | 10.000 | 0.3916 | 06 | 50.000 | 0.4226 | 07 | 100.000 | 0.4432 | 08 | 150.000 | 0.4463 |
| 09 | 200.000 | 0.4225 | | | | | | | | | |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3739 | 02 | 1.000 | 0.3370 | 03 | 2.000 | 0.3731 | 04 | 5.000 | 0.3533 |
| 05 | 10.000 | 0.3186 | 06 | 50.000 | 0.3314 | 07 | 100.000 | 0.3493 | 08 | 150.000 | 0.3586 |
| 09 | 200.000 | 0.3409 | | | | | | | | | |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4372 | 02 | 1.000 | 0.4170 | 03 | 2.000 | 0.4057 | 04 | 5.000 | 0.4372 |
| 05 | 10.000 | 0.4297 | 06 | 50.000 | 0.4205 | 07 | 100.000 | 0.4269 | 08 | 150.000 | 0.4293 |
| 09 | 200.000 | 0.4129 | | | | | | | | | |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6609 | 02 | 1.000 | 0.6670 | 03 | 2.000 | 0.6452 | 04 | 5.000 | 0.6070 |
| 05 | 10.000 | 0.5678 | 06 | 50.000 | 0.6230 | 07 | 100.000 | 0.5875 | 08 | 150.000 | 0.6055 |
| 09 | 200.000 | 0.5982 | | | | | | | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

**Analyte**

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 2.000 | 0.1904 | 04 | 5.000 | 0.1834 | 05 | 10.000 | 0.2011 | 06 | 50.000 | 0.2201 |
| 07 | 100.000 | 0.2046 | 08 | 150.000 | 0.2073 | 09 | 200.000 | 0.1978 | | | |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 10.000 | 0.02303 | 02 | 20.000 | 0.02185 | 03 | 40.000 | 0.01792 | 04 | 100.000 | 0.01762 |
| 05 | 200.000 | 0.02212 | 06 | 1000.000 | 0.02231 | 07 | 2000.000 | 0.02181 | 08 | 3000.000 | 0.02375 |
| 09 | 4000.000 | 0.02334 | | | | | | | | | |

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 2.000 | 0.2006 | 04 | 5.000 | 0.1539 | 05 | 10.000 | 0.1637 | 06 | 50.000 | 0.1371 |
| 07 | 100.000 | 0.1269 | 08 | 150.000 | 0.1454 | 09 | 200.000 | 0.1382 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.122 | 02 | 1.000 | 1.210 | 03 | 2.000 | 1.194 | 04 | 5.000 | 1.219 |
| 05 | 10.000 | 1.246 | 06 | 50.000 | 1.220 | 07 | 100.000 | 1.266 | 08 | 150.000 | 1.279 |
| 09 | 200.000 | 1.244 | | | | | | | | | |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3485 | 02 | 1.000 | 0.3826 | 03 | 2.000 | 0.4034 | 04 | 5.000 | 0.3794 |
| 05 | 10.000 | 0.3860 | 06 | 50.000 | 0.3881 | 07 | 100.000 | 0.4057 | 08 | 150.000 | 0.4125 |
| 09 | 200.000 | 0.4038 | | | | | | | | | |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.1633 | 02 | 1.000 | 0.1361 | 03 | 2.000 | 0.1570 | 04 | 5.000 | 0.1730 |
| 05 | 10.000 | 0.1680 | 06 | 50.000 | 0.1789 | 07 | 100.000 | 0.1952 | 08 | 150.000 | 0.2049 |
| 09 | 200.000 | 0.2022 | | | | | | | | | |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9164 | 02 | 1.000 | 0.9520 | 03 | 2.000 | 0.9738 | 04 | 5.000 | 0.9784 |
| 05 | 10.000 | 0.9472 | 06 | 50.000 | 0.9474 | 07 | 100.000 | 0.9968 | 08 | 150.000 | 0.9973 |
| 09 | 200.000 | 0.9671 | | | | | | | | | |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.8897 | 02 | 1.000 | 0.8677 | 03 | 2.000 | 0.8333 | 04 | 5.000 | 0.8272 |
| 05 | 10.000 | 0.8452 | 06 | 50.000 | 0.7861 | 07 | 100.000 | 0.8012 | 08 | 150.000 | 0.8076 |
| 09 | 200.000 | 0.7930 | | | | | | | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

**Analyte**

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.7430 | 02 | 1.000 | 0.6897 | 03 | 2.000 | 0.6771 | 04 | 5.000 | 0.6806 |
| 05 | 10.000 | 0.7672 | 06 | 50.000 | 0.7395 | 07 | 100.000 | 0.7395 | 08 | 150.000 | 0.7240 |
| 09 | 200.000 | 0.6966 | | | | | | | | | |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2648 | 02 | 1.000 | 0.2699 | 03 | 2.000 | 0.2753 | 04 | 5.000 | 0.2994 |
| 05 | 10.000 | 0.2882 | 06 | 50.000 | 0.3186 | 07 | 100.000 | 0.3388 | 08 | 150.000 | 0.3461 |
| 09 | 200.000 | 0.3473 | | | | | | | | | |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9548 | 02 | 1.000 | 0.9324 | 03 | 2.000 | 0.9495 | 04 | 5.000 | 0.9206 |
| 05 | 10.000 | 0.9227 | 06 | 50.000 | 0.9412 | 07 | 100.000 | 0.8810 | 08 | 150.000 | 0.9108 |
| 09 | 200.000 | 0.8868 | | | | | | | | | |

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4871 | 02 | 1.000 | 0.5054 | 03 | 2.000 | 0.4849 | 04 | 5.000 | 0.4477 |
| 05 | 10.000 | 0.4457 | 06 | 50.000 | 0.4347 | 07 | 100.000 | 0.4408 | 08 | 150.000 | 0.4399 |
| 09 | 200.000 | 0.4298 | | | | | | | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4418 | 02 | 1.000 | 0.4433 | 03 | 2.000 | 0.4482 | 04 | 5.000 | 0.4733 |
| 05 | 10.000 | 0.4752 | 06 | 50.000 | 0.4852 | 07 | 100.000 | 0.5209 | 08 | 150.000 | 0.5243 |
| 09 | 200.000 | 0.5112 | | | | | | | | | |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9383 | 02 | 1.000 | 0.9448 | 03 | 2.000 | 0.9733 | 04 | 5.000 | 0.9997 |
| 05 | 10.000 | 0.9967 | 06 | 50.000 | 1.010 | 07 | 100.000 | 1.034 | 08 | 150.000 | 1.052 |
| 09 | 200.000 | 1.037 | | | | | | | | | |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3021 | 02 | 1.000 | 0.2880 | 03 | 2.000 | 0.2711 | 04 | 5.000 | 0.2832 |
| 05 | 10.000 | 0.2704 | 06 | 50.000 | 0.2850 | 07 | 100.000 | 0.3031 | 08 | 150.000 | 0.3024 |
| 09 | 200.000 | 0.2970 | | | | | | | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

**Analyte**

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.246 | 02 | 1.000 | 1.295 | 03 | 2.000 | 1.260 | 04 | 5.000 | 1.262 |
| 05 | 10.000 | 1.253 | 06 | 50.000 | 1.270 | 07 | 100.000 | 1.323 | 08 | 150.000 | 1.338 |
| 09 | 200.000 | 1.279 | | | | | | | | | |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3247 | 02 | 1.000 | 0.3409 | 03 | 2.000 | 0.3377 | 04 | 5.000 | 0.3364 |
| 05 | 10.000 | 0.3286 | 06 | 50.000 | 0.3323 | 07 | 100.000 | 0.3515 | 08 | 150.000 | 0.3619 |
| 09 | 200.000 | 0.3526 | | | | | | | | | |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5081 | 02 | 2.000 | 0.5402 | 03 | 4.000 | 0.5776 | 04 | 10.000 | 0.6066 |
| 05 | 20.000 | 0.5903 | 06 | 100.000 | 0.6045 | 07 | 200.000 | 0.6497 | 08 | 300.000 | 0.6474 |
| 09 | 400.000 | 0.6075 | | | | | | | | | |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5477 | 02 | 1.000 | 0.4764 | 03 | 2.000 | 0.5469 | 04 | 5.000 | 0.5779 |
| 05 | 10.000 | 0.5754 | 06 | 50.000 | 0.6051 | 07 | 100.000 | 0.6320 | 08 | 150.000 | 0.6378 |
| 09 | 200.000 | 0.6138 | | | | | | | | | |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5669 | 02 | 1.000 | 0.5967 | 03 | 2.000 | 0.6050 | 04 | 5.000 | 0.5828 |
| 05 | 10.000 | 0.5599 | 06 | 50.000 | 0.6101 | 07 | 100.000 | 0.5673 | 08 | 150.000 | 0.5765 |
| 09 | 200.000 | 0.5612 | | | | | | | | | |

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.4506 | 04 | 60.000 | 0.4320 | 05 | 70.000 | 0.4485 | 07 | 100.000 | 0.4524 |
| 08 | 125.000 | 0.4462 | 09 | 150.000 | 0.4215 | | | | | | |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.3253 | 04 | 60.000 | 0.3151 | 05 | 70.000 | 0.3253 | 07 | 100.000 | 0.3250 |
| 08 | 125.000 | 0.3112 | 09 | 150.000 | 0.3110 | | | | | | |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 1.159 | 04 | 60.000 | 1.105 | 05 | 70.000 | 1.140 | 07 | 100.000 | 1.133 |
| 08 | 125.000 | 1.106 | 09 | 150.000 | 1.094 | | | | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 2.5 | | ≤20 | 0.6850 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 3.9 | | ≤20 | 0.2259 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.4403 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.3485 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 2.6 | | ≤20 | 0.4240 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.5 | | ≤20 | 0.6180 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.2007 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 10.4 | | ≤20 | 0.02153 | | |
| Acetone | TRG | Average RF | % RSD | 16.0 | | ≤20 | 0.1523 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 3.8 | | ≤20 | 1.222 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 5.0 | | ≤20 | 0.3900 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.1754 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 2.7 | | ≤20 | 0.9640 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 4.2 | | ≤20 | 0.8279 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 4.5 | | ≤20 | 0.7175 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 10.9 | | ≤20 | 0.3054 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 2.8 | | ≤20 | 0.9222 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.4573 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 6.8 | | ≤20 | 0.4804 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 4.0 | | ≤20 | 0.9984 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 4.5 | | ≤20 | 0.2891 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 2.5 | | ≤20 | 1.281 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 3.6 | | ≤20 | 0.3407 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 7.8 | | ≤20 | 0.5924 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 8.8 | | ≤20 | 0.5792 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.5807 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 2.8 | | ≤20 | 0.4419 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 2.2 | | ≤20 | 0.3188 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 2.2 | | ≤20 | 1.123 | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Date Analyzed:** 8/ 8/14

**Continuing Calibration Verification Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\080814\W0212.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 405720
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 43.6 | 0.7075 | 0.6173 | -12.7 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 49.2 | 0.3414 | 0.3361 | -1.5 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 48.6 | 0.4820 | 0.4681 | -2.9 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 49.4 | 0.4169 | 0.4117 | -1.2 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 46.9 | 0.4920 | 0.4619 | -6.1 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 51.2 | 0.8365 | 0.8564 | 2.4 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 46.6 | 0.7656 | 0.7138 | -6.8 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 1030 | 0.08660 | 0.08880 | 2.5 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 43.2 | 0.6020 | 0.5197 | -13.7 | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 49.0 | 1.440 | 1.410 | -2.1 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 48.2 | 0.4660 | 0.4495 | -3.5 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 53.3 | 0.2458 | 0.2620 | 6.6 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 48.1 | 0.9166 | 0.8809 | -3.9 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 45.8 | 1.049 | 0.9608 | -8.4 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 51.0 | 1.118 | 1.139 | 1.9 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 50.0 | 0.3859 | 0.3858 | 0.0 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 49.3 | 1.436 | 1.415 | -1.4 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 47.5 | 0.6951 | 0.6597 | -5.1 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 47.1 | 1.608 | 1.515 | -5.8 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 47.1 | 1.847 | 1.739 | -5.8 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 48.2 | 0.3262 | 0.3143 | -3.6 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 47.6 | 1.479 | 1.407 | -4.9 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 47.0 | 0.3311 | 0.3112 | -6.0 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 94.1 | 0.5809 | 0.5464 | -5.9 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 47.7 | 0.5852 | 0.5584 | -4.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 52.1 | 0.8761 | 0.9124 | 4.1 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 50.0 | 0.4853 | 0.4848 | -0.1 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 50.4 | 0.3338 | 0.3367 | 0.8 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 49.8 | 1.294 | 1.289 | -0.4 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Date Analyzed:** 8/11/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\081114\W0253.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 405989
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 42.1 | 0.7075 | 0.5961 | -15.7 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 45.0 | 0.3414 | 0.3074 | -9.9 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 44.9 | 0.4820 | 0.4330 | -10.2 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 44.9 | 0.4169 | 0.3740 | -10.3 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 41.6 | 0.4920 | 0.4097 | -16.7 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 45.9 | 0.8365 | 0.7671 | -8.3 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 40.0 | 0.7656 | 0.6120 | -20.1 * | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 838 | 0.08660 | 0.07260 | -16.2 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 39.2 | 0.6020 | 0.4715 | -21.7 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 44.2 | 1.440 | 1.272 | -11.6 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 43.0 | 0.4660 | 0.4009 | -14.0 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 48.5 | 0.2458 | 0.2386 | -2.9 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 45.5 | 0.9166 | 0.8338 | -9.0 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 42.8 | 1.049 | 0.8981 | -14.4 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 48.5 | 1.118 | 1.083 | -3.1 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 45.8 | 0.3859 | 0.3532 | -8.5 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 44.5 | 1.436 | 1.278 | -11.0 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 44.6 | 0.6951 | 0.6195 | -10.9 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 44.0 | 1.608 | 1.415 | -12.0 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 43.1 | 1.847 | 1.593 | -13.7 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 44.6 | 0.3262 | 0.2907 | -10.9 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 44.9 | 1.479 | 1.327 | -10.3 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 43.0 | 0.3311 | 0.2848 | -14.0 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 88.1 | 0.5809 | 0.5116 | -11.9 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 44.9 | 0.5852 | 0.5251 | -10.3 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 46.9 | 0.8761 | 0.8211 | -6.3 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 49.2 | 0.4853 | 0.4774 | -1.6 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 46.1 | 0.3338 | 0.3078 | -7.8 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.4 | 1.294 | 1.305 | 0.8 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Date Analyzed:** 8/12/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\msvoa10\data\081214\A1017.D\

**Calibration Date:** 7/21/14
**Calibration ID:** RC1400062
**Analysis Lot:** 406145
**Units:** µg/L

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 46.8 | 0.6850 | 0.6415 | -6.4 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.3 | 0.2259 | 0.2182 | -3.4 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 46.2 | 0.4403 | 0.4068 | -7.6 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 47.1 | 0.3485 | 0.3279 | -5.9 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 47.2 | 0.4240 | 0.4003 | -5.6 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 47.9 | 0.6180 | 0.5924 | -4.1 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 48.5 | 0.2007 | 0.1948 | -2.9 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 884 | 0.02153 | 0.01904 | -11.6 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 47.4 | 0.1523 | 0.1444 | -5.2 | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 50.9 | 1.222 | 1.244 | 1.8 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 48.0 | 0.3900 | 0.3743 | -4.0 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 46.3 | 0.1754 | 0.1625 | -7.4 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 50.5 | 0.9640 | 0.9739 | 1.0 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 47.8 | 0.8279 | 0.7911 | -4.4 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 52.3 | 0.7175 | 0.7510 | 4.7 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 48.8 | 0.3054 | 0.2979 | -2.4 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 48.6 | 0.9222 | 0.8971 | -2.7 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 48.2 | 0.4573 | 0.4406 | -3.7 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 52.3 | 0.4804 | 0.5026 | 4.6 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 46.4 | 0.9984 | 0.9268 | -7.2 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 51.1 | 0.2891 | 0.2952 | 2.1 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 50.4 | 1.281 | 1.290 | 0.7 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 50.1 | 0.3407 | 0.3411 | 0.1 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 106 | 0.5924 | 0.6284 | 6.1 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 53.6 | 0.5792 | 0.6212 | 7.2 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 48.8 | 0.5807 | 0.5664 | -2.5 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 48.7 | 0.4419 | 0.4305 | -2.6 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 50.0 | 0.3188 | 0.3188 | 0.0 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.5 | 1.123 | 1.134 | 1.0 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405951
**Date Analyzed:** 8/12/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\081214\W0291.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 406174
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 41.0 | 0.7075 | 0.5805 | -18.0 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 47.8 | 0.3414 | 0.3261 | -4.5 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 44.4 | 0.4820 | 0.4284 | -11.1 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 44.3 | 0.4169 | 0.3694 | -11.4 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 44.7 | 0.4920 | 0.4402 | -10.5 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 48.3 | 0.8365 | 0.8073 | -3.5 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 41.8 | 0.7656 | 0.6399 | -16.4 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 892 | 0.08660 | 0.07727 | -10.8 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 39.2 | 0.6020 | 0.4724 | -21.5 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 47.5 | 1.440 | 1.368 | -5.0 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 46.4 | 0.4660 | 0.4324 | -7.2 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 49.9 | 0.2458 | 0.2451 | -0.3 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 46.8 | 0.9166 | 0.8579 | -6.4 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 43.8 | 1.049 | 0.9184 | -12.4 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 48.1 | 1.118 | 1.076 | -3.8 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 46.9 | 0.3859 | 0.3620 | -6.2 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 47.1 | 1.436 | 1.351 | -5.9 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 45.2 | 0.6951 | 0.6279 | -9.7 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 44.7 | 1.608 | 1.439 | -10.5 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 45.0 | 1.847 | 1.661 | -10.0 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 46.1 | 0.3262 | 0.3006 | -7.9 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 45.8 | 1.479 | 1.354 | -8.4 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 45.4 | 0.3311 | 0.3005 | -9.2 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 90.5 | 0.5809 | 0.5256 | -9.5 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 46.0 | 0.5852 | 0.5381 | -8.0 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 48.9 | 0.8761 | 0.8560 | -2.3 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 49.0 | 0.4853 | 0.4754 | -2.0 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 48.1 | 0.3338 | 0.3213 | -3.7 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 49.3 | 1.294 | 1.276 | -1.4 | NA | ± 20 % | Average RF |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low **Folder #:** R1405951 **Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 110413-3:50852 | | R1405951-004 | 41.28 | 35.37 | 5/14/2014 | J. Cushman | 5.91 | **0.85** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50871 | | R1405951-004 | 41.42 | 35.33 | 5/14/2014 | J. Cushman | 6.09 | **0.82** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51404 | | R1405951-005 | 41.71 | 35.37 | 5/14/2014 | J. Cushman | 6.34 | **0.79** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51408 | | R1405951-005 | 41.03 | 34.96 | 5/14/2014 | J. Cushman | 6.07 | **0.82** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50901 | | R1405951-006 | 40.66 | 35.13 | 5/14/2014 | J. Cushman | 5.53 | **0.90** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50882 | | R1405951-006 | 39.79 | 35.06 | 5/14/2014 | J. Cushman | 4.73 | **1.06** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51405 | | R1405951-007 | 40.81 | 35.01 | 5/14/2014 | J. Cushman | 5.80 | **0.86** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51411 | | R1405951-007 | 41.43 | 35.34 | 5/14/2014 | J. Cushman | 6.09 | **0.82** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51403 | | R1405951-016 | 38.93 | 35.09 | 5/14/2014 | J. Cushman | 3.84 | **1.30** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51401 | | R1405951-016 | 39.66 | 35.19 | 5/14/2014 | J. Cushman | 4.47 | **1.12** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50860 | | R1405951-017 | 34.37 | 35.20 | 5/14/2014 | J. Cushman | -0.83 | **-6.02** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50855 | | R1405951-017 | 40.45 | 35.33 | 5/14/2014 | J. Cushman | 5.12 | **0.98** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51424 | | R1405951-018 | 39.01 | 35.10 | 5/14/2014 | J. Cushman | 3.91 | **1.28** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:51402 | | R1405951-018 | 38.91 | 35.12 | 5/14/2014 | J. Cushman | 3.79 | **1.32** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50853 | | R1405951-019 | 48.99 | 35.02 | 5/14/2014 | J. Cushman | 13.97 | **0.36** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50850 | | R1405951-019 | 40.69 | 35.33 | 5/14/2014 | J. Cushman | 5.36 | **0.93** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50886 | MS | R1405951-019 | 45.95 | 35.18 | 5/14/2014 | J. Cushman | 10.77 | **0.46** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50904 | DMS | R1405951-019 | 43.67 | 35.16 | 5/14/2014 | J. Cushman | 8.51 | **0.59** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50907 | | R1405951-020 | 45.53 | 35.21 | 5/14/2014 | J. Cushman | 10.32 | **0.48** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |
| 110413-3:50893 | | R1405951-020 | 41.03 | 34.80 | 5/14/2014 | J. Cushman | 6.23 | **0.80** | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewic | |



Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium

**Folder #:** R1405951

**Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10361 | | R1405951-004 | 42.04 | 36.58 | 4/28/2014 | J. Cushman | 5.46 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10349 | | R1405951-005 | 42.07 | 36.47 | 4/28/2014 | J. Cushman | 5.60 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10320 | | R1405951-006 | 42.37 | 36.57 | 4/28/2014 | J. Cushman | 5.80 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10355 | | R1405951-007 | 37.71 | 36.13 | 4/28/2014 | J. Cushman | 1.58 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10342 | | R1405951-016 | 40.77 | 36.22 | 4/28/2014 | J. Cushman | 4.55 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10362 | | R1405951-017 | 40.65 | 36.49 | 4/28/2014 | J. Cushman | 4.16 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10351 | | R1405951-018 | 39.54 | 36.45 | 4/28/2014 | J. Cushman | 3.09 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10391 | | R1405951-019 | 44.26 | 36.26 | 4/28/2014 | J. Cushman | 8.00 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10387 | | R1405951-019 | 41.34 | 36.26 | 4/28/2014 | J. Cushman | 5.08 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |
| 040714-3:10372 | | R1405951-020 | 47.88 | 36.52 | 4/28/2014 | J. Cushman | 11.36 | | 7/31/2014 | Field | 8/8/2014 | . Wojtasiewi | |

00122

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

Analysis: 8260 soil  Analyst: Ben Wojtsewicz  Tune Method: T052914m

Date: 08/08/14  Data Path: j:\acqdata\msvoa 7 \DATA\080814  Run Method: 5052914m

Instr. MS#7  LIMS Run#: 405720

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Tune | - | | | | - | 1 | - | W0211 | YT | |
| 2 | CCV | - | | | | - | 1 | - | 12 | YC | |
| 3 | LCS | - | | | | - | 1 | - | 13 | YC | |
| 4 | MBlank | - | | | | - | 1 | - | 14 | (N) | pH for c/a |
| 5 | MBlank | - | | | | - | 2 | - | 15 | YC | |
| 6 | R1406093-002 | 1 | Cr6 Lot # 072114-3AWX | [redacted] | 6730 | 1 | 1 | NA | 16 | (N) | MeCl? pH |
| 7 | R1405997-009 | 0.97 | 10086 | [redacted] | 6767 | 2 | 1 | | 17 | (N) | IS ↓, pH |
| 8 | -021 | 0.86 | 10296 | | | | 1 | | 18 | Y | |
| 9 | -022 | 0.78 | 10118 | | | | 1 | | 19 | Y | |
| 10 | R1405997-002 | 1 | | [redacted] | 6369 | 2 | 2 | | 20 | Y | |
| 11 | R1405951-004 | 0.85 | 50952 | [redacted] | | 3 | 1 | | 21 | Y | |
| 12 | -005 | 0.79 | 51404 | | | | 1 | | 22 | Y | |
| 13 | -006 | 0.90 | 50901 | | | | 1 | | 23 | Y | |
| 14 | -007 | 0.96 | 51405 | | | | 1 | | 24 | Y | |
| 15 | CSBlank | - | | | | - | 1 | - | 25 | - | |
| 16 | R1405997-009 | 1.04 | 10300 | [redacted] | 6767 | 2 | 2 | NA | 26 | Y | |
| 17 | R1405997-002MS | 1 | | [redacted] | 6369 | 2 | 3 | | 27 | Y | |
| 18 | -002DMS | 1 | | | | | 4 | | 28 | Y | |
| 19-20 | Blanks | - | | | | - | 1-2 | - | 29-30 | - | |
| 21 | R1405997-026 | 500x | 10mL/5mL | | | | | | 31 | NA | MeOH screen data only |
| 22 | -027 | | | | | | | | 32 | | |
| 23 | -028 | | | | | | | | 33 | | |
| 24 | -029 | | | | | | | | 34 | | |
| 25 | -030 | | | | | | | | 35 | | |
| 26 | -031 | | | | | | | | 36 | | |
| 27 | -032 | | | | | | | | 37 | | |
| 28 | -033 | | | | | | | | 38 | | |
| 29 | -034 | | | | | | | | 39 | | |
| 30 | -035 | | | | | | | | 40 | | |
| 31 | -036 | | | | | | | | 41 | | |
| 32 | -037 | | | | | | | | 42 | | |
| 33 | -038 | | | | | | | | 43 | | |

BW 08/12/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

320 Primary TG : 72627 5mL
Primary MBD : 72865
Primary MSL : 73190
Primary Ext : 72625
Primary :

50mL = CCV

Secondary TG : 72866 2mL
Secondary MBD : 72455
Secondary MSL : 73191
200 Secondary Ext : 72454 5mL
Secondary :

SD3 = LCS

5mL → 12.5mL

SD3 = MS DMS

Combined IS/Surr 250 : 72889
Surrogate : —
Internal Std : —

BW 08/13/14

Runlog-MSVOAr2 9/20/13
Page 146

0013

| | | | |
|---|---|---|---|
| Analysis: 8260-soil | Analyst: Ben Wojtasiewicz | | Tune Method: T052914.M |
| Date: 08/11/14 AM | Data Path: j:\acqdata\msvoa7\DATA\081114 | | Run Method: S052914.M |
| Instr. MS#7 | | | LIMS Run#: 405989 |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | - | | | | - | 1 | - | W0249 | - | |
| 2 | ↓ | - | | | | - | 2 | - | 50 | - | |
| 3 | Tune | - | | | | - | 1 | - | 51 | (N) | |
| 4 | Tune | - | | | | - | 2 | - | 52 | YT | |
| 5 | CCV | - | | | | - | 1 | - | 53 | YC | |
| 6 | LCS | - | | | | - | 1 | - | 54 | (N) | empty ↓, prep new 2° Fr+ |
| 7 | LCS | - | | | | - | 2 | - | 55 | YL | |
| 8 | MBlank | - | | | | - | 1 | - | 56 | (N) | opt for c/o |
| 9 | MBlank | - | | | | - | 2 | - | 57 | YB | |
| 10 | R1405997-030 | 0.95 | 10107 | [redacted] | 6767 | 2 | 1 | NA | 58 | Y | |
| 11 | ↓ -038 | 1.19 | 10239 | ↓ | ↓ | ↓ | 1 | ↓ | 59 | Y | |
| 12 | R1405951-016 | 1.30 | 51403 | [redacted] | 11813 | 3 | 1 | | 60 | Y | |
| 13 | -017 | 0.98 | 50855 | | | | 1 | | 61 | (N) | IS ↓, report rpt as RA |
| 14 | -019 | 1.28 | 51924 | | | | 1 | | 62 | Y | |
| 15 | -019 | 0.36 | 50953 | | | | 1 | | 63 | Y | |
| 16 | -020 | 0.48 | 50907 | | | | 1 | | 64 | Y | |
| 17 | R1406147-001 | 1 | | [redacted] | 6702 | 1 | 1 | | 65 | Y | |
| 18 | -005 | 1 | | | | | 1 | | 66 | Y | |
| 19 | -006 | 1 | | | | | 1 | | 67 | Y | |
| 20 | -007 | 1 | | | | | 1 | | 68 | Y | |
| 21 | R1405951-019MS | 0.46 | 50886 | [redacted] | 11813 | 3 | 2 | | 69 | Y | |
| 22 | ↓ -019AMS | 0.59 | 50904 | | | | 3 | | 70 | Y | |
| 23 | Blank | - | | | | - | 1 | - | 71 | - | |
| 24 | ↓ | - | | | | - | 2 | - | 72 | - | |

Rev 08/12/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary TG : 73361 5uL
Primary MSO : 72865
Primary MSL : 73190
Primary Fr+ : 73360
Primary :
50mL = CCV

500 Secondary TG : 72866 2uL
Secondary MSO : 73476
Secondary MSL : 73191
200 Secondary Fr+ : 73446 5uL
Secondary :
50g = LCS

Combined IS/Surr 250 : 72889
Surrogate : -
Internal Std : -

10uL 2° Spike (73475) / 5g = MS, AMS

Analysis: 8260C
Date: 8/12/14
Instr. MS #10

Analyst: F. Naegler
Data Path: j:\acqudata\msvoa10\ 081214

Tune Method: T072114.M
Run Method: W072114.M
LIMS Run#: 406145

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BLK | | | | | | | | A1014 | Y | |
| 2 | BLK | | | | | | | | 15 | Y | |
| 1 | TUNE | | | | | | | | 16 | Y | |
| 2 | CCV | | | | | | | | 17 | Y | |
| 3 | LCS | | | | | | | | 18 | Y | |
| 4 | MBLK | | | | | | | | 19 | N | |
| 5 | MBLK | | | | | | | | 20 | Y | RQ1409570-01 |
| 6 | R1406190-001 | 1.0 | | [redacted] | 12017 | 4 | 1 | <2 | 21 | Y | |
| 7 | ↓ -002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 22 | Y | |
| 8 | R1405947-001 | 1.0 | | [redacted] | 6656 | 3 | 2 | <2 | 23 | Y | |
| 9 | R1405951-002 | 1.0 | | [redacted] | 11813 | 3 | 1 | <2 | 24 | Y | |
| 10 | ↓ -003 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 25 | Y | |
| 11 | R1406017-006 | 1.0 | | [redacted] | 6702 | 1 | 1 | <2 | 26 | Y | |
| 12 | ↓ -003 | 10.0 | 5/50mL | ↓ | ↓ | ↓ | 1 | <2 | 27 | N | Rpt 1/5 |
| 13 | R1406074-001 | 1.0 | | [redacted] | 6639 | 2 | 1 | <2 | 28 | Y | |
| 14 | -002 | 1.0 | | | | | 1 | <2 | 29 | Y | |
| 15 | -003 | 1.0 | | | | | 1 | <2 | 30 | Y | Rpt 1/10 |
| 16 | -004 | 1.0 | | | | | 1 | <2 | 31 | Y | Rpt 1/10 |
| 17 | -005 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 32 | Y | Rpt 1/10 |
| 18 | R1406075-001 | 1.0 | | [redacted] | 6638 | 2 | 1 | <2 | 33 | Y | |
| 19 | -002 | 1.0 | | | | | 1 | <2 | 34 | N | Rpt 1/1 c/o? |
| 20 | -003 | 1.0 | | | | | 1 | <2 | 35 | N | |
| 21 | ↓ -004 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 36 | N | ↓ |
| 22 | R1406173-001MS | 50.0 | 1/50mL | [redacted] | 12017 | 4 | 2 | <2 | 37 | Y | |
| 23 | ↓ -001MSD | 50.0 | ↓ | ↓ | ↓ | ↓ | 2 | <2 | 38 | Y | |
| 24 | BLK | | | | | | | | 39 | Y | |

FW 8/12/14

All samples = 10 mL + 1 uL combined IS/Surr. 10 mL purged

T/G Primary 500 : 72623 - 5uL | 50mL
HBL Primary : 73190 -
FC Primary : 72625 -
HBO Primary : 72865 -
OCC Primary : 73171 - (CCV)

FC Secondary 200 : 73446 - 5uL
T/G Secondary 500 : 72866 - 2uL
HBL Secondary : 73191 -
HBO Secondary : 73176 -
OCC Secondary : 73172 - | 50mL (LCS)

-12.5uL
-5uL | 50mL (SPK)

Combined IS/Surr 500 : 73416
Surrogate : —
Internal Std : —

Analysis: 8260-soil  Analyst: Ben Wojcieszewski  Tune Method: T052914.m

Date: 09/12/14  Data Path: j:\acqudata\msvoa 7\ 4 MS \091214  Run Method: S052914.m

Instr. 7  LIMS Run#: 406174

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | - | | | | - | 1 | - | W0289 | - | |
| 2 | Tune | - | | | | - | 1 | - | 90 | YT | |
| 3 | CCV | - | | | | - | 1 | - | 91 | YC | |
| 4 | LCS | - | | | | - | 1 | - | 92 | YL | |
| 5 | DLCS | - | | | | - | 2 | - | 93 | YA | |
| 6 | MBlank | - | | | | - | 1 | - | 94 | (N) | re for clo |
| 7 | MBlank | - | | | | - | 2 | - | 95 | YB | |
| 8 | R1406017-001 | 0.91 | 10015 | [redacted] | 6702 | 1 | 1 | NA | 96 | Y | |
| 9 | -002 | 0.76 | 10219 | | | | 1 | | 97 | Y | |
| 10 | -004 | 1.00 | 10002 | | | | 1 | | 98 | Y | |
| 11 | -005 | 0.84 | 10207 | | | | 1 | | 99 | Y | |
| 12 | R1405951-017 | 1 | 5g | [redacted] | 11813 | 3 | 2 | | 300 | Y | RA |
| 13 | LBlank | - | | | | - | 1 | - | 01 | - | |
| 14 | R1406183-001 | 1 | | [redacted] | 6653 | 4 | 1 | NA | 02 | Y | |
| 15 | -002 | 1 | | | | | 1 | | 03 | Y | |
| 16 | -003 | 1 | | | | | 1 | | 04 | Y | |
| 17 | -004 | 1 | | | | | 1 | | 05 | Y | |
| 18 | -005 | 1 | | | | | 1 | | 06 | Y | |
| 19 | -006 | 1 | | | | | 1 | | 07 | Y | |
| 20 | -007 | 1 | | | | | 1 | | 08 | Y | |
| 21 | Blank | - | | | | - | 1 | - | 09 | - | |
| 22 | Blank | - | | | | - | 2 | - | 10 | - | |

BW 09/15/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

Primary TG : 73361 5ml
Primary HBC : 72845
Primary HSL : 73190
Primary Ext : 73360
Primary :

STD HSL = CCV

Secondary TG : 72866 2ml
Secondary HBC : 73476
Secondary HSL : 73171
Secondary Ext : 73446 5ml
Secondary :

STD = LCS, DLCS

Combined IS/Surr 250 : 72889
Surrogate : -
Internal Std : -



00169

# Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Initial Calibration

Calibration Files
5 =CZ503.D 10 =CZ504.D 50 =CZ505.D
80 =CZ506.D 100 =CZ507.D 120 =CZ508.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichlorobenzen | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | | |
| 2) | TM | Pyridine | | | 1.282 | 1.444 | 1.417 | 1.375 | 1.376 | 4.50 |
| 3) | TM | N-Nitrosodimethylam | 0.805 | 0.685 | 0.726 | 0.815 | 0.765 | 0.787 | 0.765 | 5.98 |
| 4) | S | SURR1,2-FLUOROPHENO | 1.244 | 1.245 | 1.249 | 1.337 | 1.298 | 1.230 | 1.266 | 2.98 |
| 5) | TM | Benzaldehyde | | | 0.484 | 0.496 | 0.441 | 0.402 | 0.432 | 14.72 |
| 6) | TM | Aniline | 1.930 | 2.064 | 1.856 | 1.820 | 1.774 | 1.763 | 1.840 | 6.94 |
| 7) | S | SURR2,PHENOL-D6 | 1.708 | 1.678 | 1.661 | 1.756 | 1.659 | 1.605 | 1.668 | 3.18 |
| 8) | TMC | Phenol | 2.063 | 1.912 | 1.622 | 1.635 | 1.605 | 1.560 | 1.707 | 11.64 |
| 9) | TM | bis(2-Clethyl)Ether | 1.338 | 1.354 | 1.189 | 1.366 | 1.256 | 1.110 | 1.256 | 8.00 |
| 10) | TM | 2-Chlorophenol | 1.543 | 1.579 | 1.378 | 1.496 | 1.405 | 1.352 | 1.450 | 6.11 |
| 11) | TM | 1,3-Diclbenzene | 1.766 | 1.631 | 1.478 | 1.643 | 1.479 | 1.420 | 1.552 | 8.28 |
| 12) | TMC | 1,4-Dichlorobenzene | 1.704 | 1.774 | 1.460 | 1.590 | 1.495 | 1.436 | 1.556 | 8.84 |
| 13) | TM | 1,2-Diclbenzene | 1.563 | 1.518 | 1.375 | 1.509 | 1.418 | 1.396 | 1.448 | 5.55 |
| 14) | TM | Benzyl Alcohol | 1.051 | 1.364 | 1.091 | 1.182 | 1.155 | 1.093 | 1.150 | 9.02 |
| 15) | TM | 2,2'-oxybis(1-Chlor | 1.333 | 1.389 | 1.112 | 1.237 | 1.163 | 1.093 | 1.207 | 9.64 |
| 16) | TM | 2-Methylphenol | 1.441 | 1.324 | 1.249 | 1.333 | 1.206 | 1.203 | 1.279 | 7.15 |
| 17) | TM | Acetophenone | 1.928 | 2.058 | 1.731 | 1.900 | 1.774 | 1.733 | 1.823 | 7.90 |
| 18) | TMP | N-Nitroso-Di-n-prop | 1.100 | 1.052 | 0.933 | 0.975 | 0.953 | 0.896 | 0.969 | 8.49 |
| 19) | TM | Hexachloroethane | 0.678 | 0.655 | 0.573 | 0.667 | 0.625 | 0.601 | 0.627 | 6.52 |
| 20) | TM | 3+4-Methylphenol | 1.478 | 1.322 | 1.263 | 1.352 | 1.310 | 1.277 | 1.326 | 5.56 |
| 21) | T | 1-Methyl-2-pyrrolid | | 0.954 | 0.946 | 0.944 | 0.911 | 0.881 | 0.920 | 3.57 |
| 22) | IR | d8-Naphthalene | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | | |
| 23) | S | SURR4,NITROBENZENE- | 0.405 | 0.462 | 0.425 | 0.419 | 0.369 | 0.419 | 0.416 | 6.67 |
| 24) | TM | Nitrobenzene | 0.409 | 0.402 | 0.352 | 0.346 | 0.352 | 0.353 | 0.365 | 7.71 |
| 25) | TM | Isophorone | 0.688 | 0.684 | 0.655 | 0.653 | 0.640 | 0.665 | 0.658 | 3.49 |
| 26) | TCM | 2-Nitrophenol | 0.205 | 0.211 | 0.198 | 0.203 | 0.208 | 0.211 | 0.207 | 2.21 |
| 27) | TM | Benzoic Acid | | 0.303 | 0.368 | 0.378 | 0.395 | 0.421 | 0.380 | 11.31 |
| 28) | TM | 2,4-Dimethylphenol | 0.426 | 0.361 | 0.347 | 0.358 | 0.349 | 0.367 | 0.366 | 7.44 |
| 29) | TM | bis(-2-Chloroethoxy | 0.443 | 0.415 | 0.394 | 0.391 | 0.380 | 0.384 | 0.399 | 5.57 |
| 30) | TCM | 2,4-Dichlorophenol | 0.290 | 0.336 | 0.297 | 0.323 | 0.303 | 0.306 | 0.309 | 5.11 |
| 31) | TM | 1,2,4-Trichlorobenz | 0.336 | 0.364 | 0.323 | 0.325 | 0.316 | 0.320 | 0.329 | 5.01 |
| 32) | TM | Naphthalene | 1.044 | 1.087 | 0.977 | 0.937 | 0.910 | 0.967 | 0.973 | 7.25 |
| 33) | TM | 4-Chloroaniline | 0.404 | 0.425 | 0.427 | 0.408 | 0.399 | 0.405 | 0.407 | 3.78 |
| 34) | TCM | Hexachlorobutadiene | 0.188 | 0.195 | 0.185 | 0.179 | 0.174 | 0.185 | 0.184 | 3.61 |
| 35) | TMC | 4-Chloro-3-methylph | 0.313 | 0.328 | 0.291 | 0.314 | 0.301 | 0.309 | 0.309 | 3.79 |
| 36) | TM | Caprolactam | | 0.110 | 0.111 | 0.115 | 0.114 | 0.114 | 0.113 | 2.20 |
| 37) | TM | 2-Methylnaphthalene | 0.723 | 0.788 | 0.692 | 0.679 | 0.647 | 0.686 | 0.696 | 6.77 |
| 38) | TM | 1-Methylnaphthalene | 0.695 | 0.698 | 0.626 | 0.623 | 0.600 | 0.623 | 0.638 | 6.55 |
| 39) | IR | d10-Acenaphthene | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | | |
| 40) | TPM | Hexachlorocyclopent | 0.093 | 0.107 | 0.213 | 0.221 | 0.229 | 0.235 | 0.191 | 32.92 OA |
| 41) | TCM | 2,4,6-Trichlorophen | 0.347 | 0.369 | 0.379 | 0.356 | 0.359 | 0.367 | 0.361 | 3.23 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Initial Calibration

Calibration Files
5 =CZ503.D 10 =CZ504.D 50 =CZ505.D
80 =CZ506.D 100 =CZ507.D 120 =CZ508.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 42) | TM | 2,4,5-Trichlorophen | 0.416 | 0.426 | 0.401 | 0.363 | 0.371 | 0.384 | 0.389 | 6.56 |
| 43) | S | SURR5,2-FLUOROBIPHE | 1.376 | 1.367 | 1.259 | 1.185 | 1.158 | 1.165 | 1.232 | 8.52 |
| 44) | TM | 1,1'-Biphenyl | 1.567 | 1.562 | 1.375 | 1.336 | 1.277 | 1.277 | 1.376 | 9.96 |
| 45) | TM | 2-Chloronaphthalene | 1.159 | 1.217 | 1.118 | 1.072 | 1.032 | 1.044 | 1.088 | 7.53 |
| 46) | TM | 2-Nitroaniline | | | 0.334 | 0.312 | 0.305 | 0.313 | 0.312 | 4.51 |
| 47) | TM | Acenaphthylene | 1.794 | 1.856 | 1.788 | 1.625 | 1.574 | 1.575 | 1.669 | 8.61 |
| 48) | TM | Dimethyl phthalate | 1.411 | 1.286 | 1.274 | 1.196 | 1.161 | 1.150 | 1.223 | 8.99 |
| 49) | TM | 2,6-Dinitrotoluene | 0.265 | 0.328 | 0.335 | 0.294 | 0.304 | 0.309 | 0.304 | 7.73 |
| 50) | TMC | Acenaphthene | 1.249 | 1.136 | 1.092 | 1.032 | 1.001 | 1.009 | 1.070 | 9.11 |
| 51) | TM | 3-Nitroaniline | | | 0.342 | 0.299 | 0.315 | 0.315 | 0.314 | 5.38 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.154 | 0.163 | 0.189 | 0.191 | 0.176 | 9.61 |
| 53) | TM | Dibenzofuran | 1.813 | 1.791 | 1.580 | 1.455 | 1.434 | 1.475 | 1.555 | 11.76 |
| 54) | TM | 2,4-Dinitrotoluene | 0.374 | 0.422 | 0.393 | 0.375 | 0.390 | 0.400 | 0.393 | 4.17 |
| 55) | TMP | 4-Nitrophenol | | | 0.233 | 0.209 | 0.209 | 0.218 | 0.216 | 4.59 |
| 56) | TM | Fluorene | 1.383 | 1.423 | 1.301 | 1.188 | 1.185 | 1.183 | 1.252 | 9.52 |
| 57) | TM | 4-Chlorophenyl-phen | 0.546 | 0.654 | 0.612 | 0.572 | 0.582 | 0.609 | 0.592 | 6.05 |
| 58) | TM | Diethylphthalate | 1.343 | 1.471 | 1.218 | 1.127 | 1.093 | 1.110 | 1.200 | 12.93 |
| 59) | TM | 4-Nitroaniline | | | 0.310 | 0.322 | 0.343 | 0.346 | 0.326 | 5.31 |
| 60) | S | SURR3,2,4,6-TRIBROM | 0.141 | 0.132 | 0.130 | 0.122 | 0.127 | 0.128 | 0.130 | 4.48 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | |
| 62) | T | 1-Phenyl-1(4-methyl | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-methy | | | 0.149 | 0.166 | 0.166 | 0.165 | 0.161 | 4.72 |
| 64) | TM | 1,2 Diphenylhydrazi | 0.860 | 0.829 | 0.863 | 0.780 | 0.730 | 0.698 | 0.773 | 10.71 |
| 65) | TCM | N-Nitrosodiphenylam | 0.716 | 0.616 | 0.616 | 0.550 | 0.524 | 0.518 | 0.578 | 13.09 |
| 66) | TM | 4-Bromophenyl-pheny | 0.238 | 0.210 | 0.217 | 0.208 | 0.200 | 0.190 | 0.208 | 7.99 |
| 67) | T | 1-Phenyl-1(2,4-dime | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.216 | 0.217 | 0.213 | 0.212 | 0.206 | 0.202 | 0.209 | 3.63 |
| 69) | TM | Atrazine | 0.092 | 0.066 | 0.080 | 0.084 | 0.069 | 0.082 | 0.078 | 11.31 |
| 70) | TCM | Pentachlorophenol | | | 0.119 | 0.123 | 0.135 | 0.140 | 0.130 | 6.83 |
| 71) | TM | Phenanthrene | 1.124 | 1.116 | 0.988 | 0.961 | 0.947 | 0.943 | 0.996 | 8.98 |
| 72) | TM | Anthracene | 1.186 | 1.231 | 1.081 | 1.065 | 1.031 | 1.017 | 1.081 | 8.89 |
| 73) | TM | Carbazole | 1.051 | 1.098 | 1.145 | 1.093 | 1.072 | 1.059 | 1.072 | 4.67 |
| 74) | TM | Di-n-butylphthalate | 1.201 | 1.290 | 1.354 | 1.324 | 1.269 | 1.221 | 1.261 | 5.32 |
| 75) | TCM | Fluoranthene | 1.129 | 1.124 | 1.226 | 1.199 | 1.216 | 1.186 | 1.170 | 4.02 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | |
| 77) | TM | Benzidine | | | 0.708 | 0.573 | 0.757 | 0.503 | 0.595 | 22.81 Avg |
| 78) | TM | Pyrene | 1.434 | 1.238 | 1.313 | 1.299 | 1.231 | 1.228 | 1.268 | 7.33 |
| 79) | S | SURR6,TERPHENYL-D14 | 0.924 | 0.844 | 0.858 | 0.830 | 0.830 | 0.835 | 0.845 | 4.77 |
| 80) | TM | Butyl benzyl phthal | 0.692 | 0.665 | 0.698 | 0.670 | 0.656 | 0.655 | 0.666 | 3.68 |
| 81) | TM | 3,3'-Dichlorobenzid | 0.421 | 0.444 | 0.438 | 0.424 | 0.452 | 0.432 | 0.432 | 3.02 |
| 82) | TM | Benzo(a)anthracene | 1.438 | 1.312 | 1.224 | 1.188 | 1.218 | 1.213 | 1.247 | 8.00 |
| 83) | TM | Chrysene | 1.127 | 1.213 | 1.177 | 1.134 | 1.158 | 1.126 | 1.142 | 4.19 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Initial Calibration

Calibration Files
5 =CZ503.D 10 =CZ504.D 50 =CZ505.D
80 =CZ506.D 100 =CZ507.D 120 =CZ508.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 84) | TM | bis(2-Ethylhexyl)ph | 0.968 | 0.918 | 0.899 | 0.859 | 0.883 | 0.859 | 0.888 | 5.13 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | |
| 86) | TCM | Di-n-octyl phthalat | 1.575 | 1.459 | 1.551 | 1.516 | 1.464 | 1.464 | 1.487 | 4.41 |
| 87) | TM | Benzo(b)Fluoranthen | 1.016 | 1.103 | 1.060 | 1.076 | 1.073 | 1.080 | 1.061 | 3.08 |
| 88) | TM | Benzo(k)fluoranthen | 1.130 | 1.129 | 1.094 | 1.114 | 1.050 | 1.063 | 1.088 | 3.53 |
| 89) | TCM | Benzo(a)pyrene | 1.090 | 1.158 | 1.095 | 1.087 | 1.040 | 1.065 | 1.081 | 3.88 |
| 90) | TM | Indeno(1,2,3-cd)Pyr | 0.880 | 0.945 | 0.974 | 0.963 | 0.937 | 0.942 | 0.939 | 3.16 |
| 91) | TM | Dibenz(a,h)anthrace | 0.957 | 0.956 | 0.990 | 0.968 | 0.941 | 0.937 | 0.956 | 1.97 |
| 92) | TM | Benzo(g,h,i)perylen | 1.037 | 0.953 | 0.950 | 0.942 | 0.889 | 0.908 | 0.936 | 5.74 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973D

Method Path : I:\ACQUDATA\5973D\Methods\
Method File : 82700801D.M
Title : 8270 BNA ANALYSIS
Last Update : Mon Aug 04 11:04:12 2014
Response Via : Initial Calibration

Calibration Files
5 =AV279.D 10 =AV280.D 50 =AV281.D 80 =AV282.D 100 =AV283.D 120 =AV284.D 160 =AV285.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | |
| 2) | TM | Pyridine | | 1.232 | 1.310 | 1.280 | 1.346 | 1.317 | 1.297 | 3.33 | |
| 3) | TM | N-Nitrosodimet... | 0.606 | 0.674 | 0.682 | 0.728 | 0.711 | 0.747 | 0.716 | 0.695 | 6.71 |
| 4) | S | SURR1,2-FLUORO... | 1.220 | 1.206 | 1.153 | 1.215 | 1.195 | 1.263 | 1.257 | 1.216 | 3.08 |
| 5) | TM | Benzaldehyde | | | 0.363 | 0.303 | 0.246 | 0.220 | 0.152 | 0.257 | 31.29 AVG |
| 6) | TM | Aniline | 1.943 | 2.094 | 1.852 | 1.880 | 1.773 | 1.821 | 1.754 | 1.874 | 6.20 |
| 7) | S | SURR2,PHENOL-D6 | 1.475 | 1.542 | 1.508 | 1.625 | 1.581 | 1.643 | 1.621 | 1.570 | 4.08 |
| 8) | TMC | Phenol | 1.513 | 1.556 | 1.570 | 1.656 | 1.603 | 1.677 | 1.676 | 1.607 | 3.99 |
| 9) | TM | bis(2-Clethyl)... | 1.315 | 1.218 | 1.108 | 1.156 | 1.122 | 1.197 | 1.198 | 1.188 | 5.83 |
| 10) | TM | 2-Chlorophenol | 1.349 | 1.336 | 1.340 | 1.437 | 1.367 | 1.442 | 1.430 | 1.386 | 3.50 |
| 11) | TM | 1,3-Diclbenzene | 1.693 | 1.572 | 1.518 | 1.567 | 1.507 | 1.593 | 1.551 | 1.572 | 3.93 |
| 12) | TMC | 1,4-Dichlorobe... | 1.686 | 1.638 | 1.542 | 1.599 | 1.562 | 1.659 | 1.614 | 1.614 | 3.19 |
| 13) | TM | 1,2-Diclbenzene | 1.656 | 1.564 | 1.498 | 1.543 | 1.460 | 1.537 | 1.521 | 1.540 | 3.99 |
| 14) | TM | Benzyl Alcohol | 0.969 | 0.980 | 1.007 | 1.079 | 1.030 | 1.096 | 1.083 | 1.035 | 5.01 |
| 15) | TM | 2,2'-oxybis(1-... | 1.863 | 1.738 | 1.649 | 1.724 | 1.670 | 1.749 | 1.717 | 1.730 | 3.99 |
| 16) | TM | 2-Methylphenol | 1.193 | 1.215 | 1.221 | 1.248 | 1.242 | 1.327 | 1.311 | 1.251 | 4.03 |
| 17) | TM | Acetophenone | 1.760 | 1.760 | 1.758 | 1.865 | 1.774 | 1.857 | 1.826 | 1.800 | 2.66 |
| 18) | TMP | N-Nitroso-Di-n... | 0.925 | 0.941 | 0.888 | 0.945 | 0.919 | 0.968 | 0.991 | 0.940 | 3.60 |
| 19) | TM | Hexachloroethane | 0.572 | 0.615 | 0.560 | 0.595 | 0.582 | 0.630 | 0.605 | 0.594 | 4.13 |
| 20) | TM | 3+4-Methylphenol | 1.172 | 1.216 | 1.275 | 1.361 | 1.309 | 1.394 | 1.392 | 1.303 | 6.67 |
| 21) | T | 1-Methyl-2-pyr... | | 0.894 | 0.893 | 0.954 | 0.909 | 0.986 | 0.936 | 0.929 | 3.97 |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.367 | 0.395 | 0.367 | 0.337 | 0.340 | 0.342 | 0.344 | 0.356 | 5.98 |
| 24) | TM | Nitrobenzene | 0.341 | 0.355 | 0.345 | 0.342 | 0.350 | 0.354 | 0.346 | 0.348 | 1.65 |
| 25) | TM | Isophorone | 0.594 | 0.609 | 0.612 | 0.622 | 0.631 | 0.641 | 0.636 | 0.621 | 2.72 |
| 26) | TCM | 2-Nitrophenol | 0.189 | 0.167 | 0.185 | 0.197 | 0.197 | 0.198 | 0.205 | 0.191 | 6.62 |
| 27) | TM | Benzoic Acid | | 0.236 | 0.319 | 0.359 | 0.373 | 0.371 | 0.384 | 0.340 | 16.38 |
| 28) | TM | 2,4-Dimethylph... | 0.296 | 0.330 | 0.332 | 0.339 | 0.339 | 0.346 | 0.348 | 0.333 | 5.20 |
| 29) | TM | bis(-2-Chloroe... | 0.380 | 0.366 | 0.356 | 0.367 | 0.373 | 0.370 | 0.371 | 0.369 | 1.99 |
| 30) | TCM | 2,4-Dichloroph... | 0.254 | 0.278 | 0.298 | 0.314 | 0.323 | 0.320 | 0.327 | 0.302 | 8.94 |
| 31) | TM | 1,2,4-Trichlor... | 0.362 | 0.378 | 0.350 | 0.345 | 0.356 | 0.357 | 0.359 | 0.358 | 2.89 |
| 32) | TM | Naphthalene | 1.059 | 1.080 | 1.027 | 1.040 | 1.055 | 1.044 | 1.040 | 1.049 | 1.64 |
| 33) | TM | 4-Chloroaniline | 0.391 | 0.419 | 0.416 | 0.422 | 0.423 | 0.424 | 0.417 | 0.416 | 2.79 |
| 34) | TCM | Hexachlorobuta... | 0.211 | 0.208 | 0.196 | 0.203 | 0.207 | 0.207 | 0.211 | 0.206 | 2.51 |
| 35) | TMC | 4-Chloro-3-met... | 0.224 | 0.252 | 0.277 | 0.285 | 0.286 | 0.297 | 0.290 | 0.273 | 9.50 |
| 36) | TM | Caprolactam | | 0.114 | 0.100 | 0.103 | 0.102 | 0.105 | 0.086 | 0.101 | 8.99 |
| 37) | TM | 2-Methylnaphth... | 0.733 | 0.724 | 0.715 | 0.731 | 0.725 | 0.735 | 0.742 | 0.729 | 1.21 |

Method Path : I:\ACQUDATA\5973D\Methods\
Method File : 82700801D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.698 | 0.655 | 0.658 | 0.663 | 0.677 | 0.671 | 0.678 | 0.672 | 2.20 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.289 | 0.291 | 0.361 | 0.372 | 0.371 | 0.371 | 0.391 | 0.349 | 11.90 |
| 41) | TCM | 2,4,6-Trichlor... | 0.346 | 0.352 | 0.391 | 0.387 | 0.391 | 0.391 | 0.412 | 0.382 | 6.18 |
| 42) | TM | 2,4,5-Trichlor... | 0.357 | 0.362 | 0.394 | 0.417 | 0.408 | 0.400 | 0.408 | 0.392 | 5.97 |
| 43) | S | SURR5,2-FLUORO... | 1.241 | 1.263 | 1.247 | 1.249 | 1.272 | 1.249 | 1.279 | 1.257 | 1.14 |
| 44) | TM | 1,1'-Biphenyl | 1.465 | 1.399 | 1.391 | 1.389 | 1.410 | 1.384 | 1.431 | 1.410 | 2.06 |
| 45) | TM | 2-Chloronaphth... | 1.095 | 1.115 | 1.086 | 1.090 | 1.108 | 1.081 | 1.132 | 1.101 | 1.66 |
| 46) | TM | 2-Nitroaniline | | | 0.294 | 0.301 | 0.297 | 0.294 | 0.299 | 0.297 | 1.02 |
| 47) | TM | Acenaphthylene | 1.709 | 1.728 | 1.758 | 1.783 | 1.767 | 1.764 | 1.795 | 1.758 | 1.71 |
| 48) | TM | Dimethyl phtha... | 1.274 | 1.207 | 1.207 | 1.185 | 1.137 | 1.122 | 1.168 | 1.186 | 4.29 |
| 49) | TM | 2,6-Dinitrotol... | 0.276 | 0.234 | 0.272 | 0.278 | 0.269 | 0.262 | 0.273 | 0.266 | 5.68 |
| 50) | TMC | Acenaphthene | 1.226 | 1.155 | 1.130 | 1.144 | 1.146 | 1.158 | 1.174 | 1.162 | 2.69 |
| 51) | TM | 3-Nitroaniline | | | 0.295 | 0.295 | 0.295 | 0.307 | 0.314 | 0.301 | 2.94 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.106 | 0.133 | 0.146 | 0.159 | 0.179 | 0.145 | 18.87 |
| 53) | TM | Dibenzofuran | 1.677 | 1.701 | 1.657 | 1.649 | 1.632 | 1.652 | 1.650 | 1.660 | 1.37 |
| 54) | TM | 2,4-Dinitrotol... | 0.297 | 0.305 | 0.334 | 0.354 | 0.363 | 0.371 | 0.380 | 0.343 | 9.44 |
| 55) | TMP | 4-Nitrophenol | | | 0.212 | 0.216 | 0.229 | 0.229 | 0.236 | 0.224 | 4.45 |
| 56) | TM | Fluorene | 1.303 | 1.366 | 1.322 | 1.339 | 1.308 | 1.266 | 1.293 | 1.314 | 2.46 |
| 57) | TM | 4-Chlorophenyl... | 0.688 | 0.687 | 0.658 | 0.659 | 0.649 | 0.640 | 0.641 | 0.660 | 3.06 |
| 58) | TM | Diethylphthalate | 1.165 | 1.212 | 1.058 | 1.080 | 1.093 | 1.119 | 1.158 | 1.126 | 4.84 |
| 59) | TM | 4-Nitroaniline | | | 0.337 | 0.341 | 0.339 | 0.346 | 0.355 | 0.343 | 2.06 |
| 60) | S | SURR3,2,4,6-TR... | 0.185 | 0.190 | 0.183 | 0.191 | 0.193 | 0.209 | 0.218 | 0.196 | 6.74 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.130 | 0.143 | 0.143 | 0.148 | 0.155 | 0.144 | 6.41 |
| 64) | TM | 1,2 Diphenylhy... | 0.684 | 0.710 | 0.789 | 0.742 | 0.701 | 0.670 | 0.648 | 0.706 | 6.71 |
| 65) | TCM | N-Nitrosodiphe... | 0.514 | 0.509 | 0.533 | 0.494 | 0.505 | 0.504 | 0.514 | 0.511 | 2.33 |
| 66) | TM | 4-Bromophenyl-... | 0.218 | 0.234 | 0.249 | 0.229 | 0.226 | 0.220 | 0.221 | 0.228 | 4.72 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.265 | 0.267 | 0.281 | 0.256 | 0.252 | 0.253 | 0.251 | 0.261 | 4.17 |
| 69) | TM | Atrazine | 0.051 | 0.071 | 0.086 | 0.081 | 0.078 | 0.074 | 0.071 | 0.073 | 15.51 |
| 70) | TCM | Pentachlorophenol | | | 0.155 | 0.176 | 0.181 | 0.184 | 0.187 | 0.176 | 7.12 |
| 71) | TM | Phenanthrene | 1.082 | 1.067 | 1.061 | 1.073 | 1.085 | 1.077 | 1.086 | 1.076 | 0.90 |
| 72) | TM | Anthracene | 1.064 | 1.041 | 1.139 | 1.146 | 1.155 | 1.155 | 1.165 | 1.124 | 4.41 |
| 73) | TM | Carbazole | 0.890 | 0.907 | 1.163 | 1.137 | 1.107 | 1.103 | 1.091 | 1.057 | 10.51 |
| 74) | TM | Di-n-butylphth... | 0.879 | 0.928 | 1.255 | 1.263 | 1.253 | 1.276 | 1.256 | 1.159 | 15.10 |
| 75) | TCM | Fluoranthene | 0.967 | 0.981 | 1.364 | 1.359 | 1.353 | 1.359 | 1.344 | 1.247 | 14.95 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.412 | 0.363 | 0.344 | 0.331 | 0.304 | 0.351 | 11.55 |
| 78) | TM | Pyrene | 1.055 | 1.009 | 1.098 | 1.126 | 1.171 | 1.157 | 1.163 | 1.111 | 5.51 |
| 79) | S | SURR6,TERPHENY... | 0.816 | 0.779 | 0.778 | 0.785 | 0.826 | 0.827 | 0.835 | 0.807 | 3.09 |
| 80) | TM | Butyl benzyl p... | 0.403 | 0.432 | 0.465 | 0.468 | 0.485 | 0.494 | 0.495 | 0.463 | 7.38 |
| 81) | TM | 3,3'-Dichlorob... | 0.372 | 0.360 | 0.366 | 0.377 | 0.380 | 0.381 | 0.383 | 0.374 | 2.30 |
| 82) | TM | Benzo(a)anthra... | 1.124 | 1.090 | 1.111 | 1.112 | 1.146 | 1.149 | 1.147 | 1.126 | 2.01 |

Method Path : I:\ACQUDATA\5973D\Methods\
Method File : 82700801D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.213 | 1.158 | 1.099 | 1.092 | 1.127 | 1.124 | 1.123 | 1.134 | 3.61 |
| 84) | TM | bis(2-Ethylhex... | 0.554 | 0.573 | 0.592 | 0.602 | 0.612 | 0.636 | 0.633 | 0.600 | 5.02 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.687 | 0.805 | 0.970 | 1.015 | 1.052 | 1.083 | 1.129 | 0.963 | 16.61 |
| 87) | TM | Benzo(b)Fluora... | 0.985 | 0.979 | 1.044 | 1.065 | 1.076 | 1.096 | 1.129 | 1.053 | 5.26 |
| 88) | TM | Benzo(k)fluora... | 1.061 | 1.103 | 1.137 | 1.144 | 1.180 | 1.163 | 1.200 | 1.141 | 4.12 |
| 89) | TCM | Benzo(a)pyrene | 0.921 | 0.946 | 1.052 | 1.059 | 1.092 | 1.089 | 1.125 | 1.041 | 7.42 |
| 90) | TM | Indeno(1,2,3-c... | 0.942 | 0.905 | 0.903 | 0.914 | 0.956 | 0.952 | 0.968 | 0.934 | 2.84 |
| 91) | TM | Dibenz(a,h)ant... | 0.967 | 0.929 | 0.955 | 0.988 | 1.006 | 1.000 | 1.034 | 0.983 | 3.57 |
| 92) | TM | Benzo(g,h,i)pe... | 1.040 | 0.984 | 0.976 | 0.938 | 0.960 | 0.940 | 0.960 | 0.971 | 3.56 |

(#) = Out of Range

001442

Data Path : I:\ACQUDATA\5973D\Data\080114\
Data File : AV282.D
Acq On : 1 Aug 2014 4:42 pm
Operator : Z.Miao
Sample : SSTD080 Inst : 5973D
Misc : 80 PPM 8270/625
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 04 09:52:18 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.297 | 1.310 | -1.0 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.695 | 0.728 | -4.7 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.216 | 1.215 | 0.1 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.257 | 0.303 | -17.9 | 100 | 0.00 |
| 6 | TM | Aniline | 1.874 | 1.880 | -0.3 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.570 | 1.625 | -3.5 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.607 | 1.656 | -3.0 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.188 | 1.156 | 2.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.386 | 1.437 | -3.7 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.572 | 1.567 | 0.3 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.614 | 1.599 | 0.9 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.540 | 1.543 | -0.2 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.035 | 1.079 | -4.3 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.730 | 1.724 | 0.3 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.251 | 1.248 | 0.2 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.800 | 1.865 | -3.6 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.940 | 0.945 | -0.5 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.594 | 0.595 | -0.2 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.303 | 1.361 | -4.5 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.929 | 0.954 | -2.7 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.356 | 0.337 | 5.3 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.348 | 0.342 | 1.7 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.621 | 0.622 | -0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.191 | 0.197 | -3.1 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.340 | 0.359 | -5.6 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.333 | 0.339 | -1.8 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.369 | 0.367 | 0.5 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.302 | 0.314 | -4.0 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.358 | 0.345 | 3.6 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.040 | 0.9 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.416 | 0.422 | -1.4 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.203 | 1.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.273 | 0.285 | -4.4 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.101 | 0.103 | -2.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.729 | 0.731 | -0.3 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.672 | 0.663 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.349 | 0.372 | -6.6 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.382 | 0.387 | -1.3 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.392 | 0.417 | -6.4 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.257 | 1.249 | 0.6 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.410 | 1.389 | 1.5 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.101 | 1.090 | 1.0 | 100 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\080114\
Data File : AV282.D
Acq On : 1 Aug 2014 4:42 pm
Operator : Z.Miao
Sample : SSTD080 Inst : 5973D
Misc : 80 PPM 8270/625
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 04 09:52:18 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.297 | 0.301 | -1.3 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.758 | 1.783 | -1.4 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.186 | 1.185 | 0.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.266 | 0.278 | -4.5 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.162 | 1.144 | 1.5 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.301 | 0.295 | 2.0 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.145 | 0.133 | 8.3 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.660 | 1.649 | 0.7 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.343 | 0.354 | -3.2 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.224 | 0.216 | 3.6 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.314 | 1.339 | -1.9 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.660 | 0.659 | 0.2 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.126 | 1.080 | 4.1 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.343 | 0.341 | 0.6 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.196 | 0.191 | 2.6 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.144 | 0.143 | 0.7 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.706 | 0.742 | -5.1 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.511 | 0.494 | 3.3 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.228 | 0.229 | -0.4 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 68 | TM | Hexachlorobenzene | 0.261 | 0.256 | 1.9 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.073 | 0.081 | -11.0 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.176 | 0.176 | 0.0 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.076 | 1.073 | 0.3 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.124 | 1.146 | -2.0 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.057 | 1.137 | -7.6 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.159 | 1.263 | -9.0 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.247 | 1.359 | -9.0 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.351 | 0.363 | -3.4 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.111 | 1.126 | -1.4 | 100 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.807 | 0.785 | 2.7 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.463 | 0.468 | -1.1 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.374 | 0.377 | -0.8 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.126 | 1.112 | 1.2 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.134 | 1.092 | 3.7 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.600 | 0.602 | -0.3 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.963 | 1.015 | -5.4 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.053 | 1.065 | -1.1 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.141 | 1.144 | -0.3 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.041 | 1.059 | -1.7 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\080114\
Data File : AV282.D
Acq On : 1 Aug 2014 4:42 pm
Operator : Z.Miao
Sample : SSTD080 Inst : 5973D
Misc : 80 PPM 8270/625
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 04 09:52:18 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.934 | 0.914 | 2.1 | 100 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.983 | 0.988 | -0.5 | 100 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.971 | 0.938 | 3.4 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\073114\CZ506.D  Vial: 9
Acq On : 31 Jul 2014 6:03 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.376 | 1.444 | -4.9 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.765 | 0.815 | -6.5 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.266 | 1.337 | -5.6 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.432 | 0.496 | -14.8 | 100 | 0.00 |
| 6 | TM | Aniline | 1.840 | 1.820 | 1.1 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.668 | 1.756 | -5.3 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.707 | 1.635 | 4.2 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.256 | 1.366 | -8.8 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.450 | 1.496 | -3.2 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.552 | 1.643 | -5.9 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.556 | 1.590 | -2.2 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.448 | 1.509 | -4.2 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.150 | 1.182 | -2.8 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.207 | 1.237 | -2.5 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.279 | 1.333 | -4.2 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.823 | 1.900 | -4.2 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.969 | 0.975 | -0.6 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.627 | 0.667 | -6.4 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.326 | 1.352 | -2.0 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.920 | 0.944 | -2.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.416 | 0.419 | -0.7 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.365 | 0.346 | 5.2 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.658 | 0.653 | 0.8 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.207 | 0.203 | 1.9 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.380 | 0.378 | 0.5 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.366 | 0.358 | 2.2 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.399 | 0.391 | 2.0 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.309 | 0.323 | -4.5 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.329 | 0.325 | 1.2 | 100 | 0.00 |
| 32 | TM | Naphthalene | 0.973 | 0.937 | 3.7 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.407 | 0.408 | -0.2 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.184 | 0.179 | 2.7 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.309 | 0.314 | -1.6 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.113 | 0.115 | -1.8 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.696 | 0.679 | 2.4 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.638 | 0.623 | 2.4 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\073114\CZ506.D Vial: 9
Acq On : 31 Jul 2014 6:03 pm Operator: Z.Miao
Sample : SSTD080 Inst : 5973-A
Misc : 80 PPM STD 8270/625 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 0.191 | 0.221 | -15.7 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.361 | 0.356 | 1.4 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.389 | 0.363 | 6.7 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.232 | 1.185 | 3.8 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.376 | 1.336 | 2.9 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.088 | 1.072 | 1.5 | 100 | 0.00 |
| 46 | TM | 2-Nitroaniline | 0.312 | 0.312 | 0.0 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.669 | 1.625 | 2.6 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.223 | 1.196 | 2.2 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.304 | 0.294 | 3.3 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.070 | 1.032 | 3.6 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.314 | 0.299 | 4.8 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.176 | 0.163 | 7.4 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.555 | 1.455 | 6.4 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.393 | 0.375 | 4.6 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.216 | 0.209 | 3.2 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.252 | 1.188 | 5.1 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.592 | 0.572 | 3.4 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.200 | 1.127 | 6.1 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.326 | 0.322 | 1.2 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.130 | 0.122 | 6.2 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.161 | 0.166 | -3.1 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.773 | 0.780 | -0.9 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.578 | 0.550 | 4.8 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.208 | 0.208 | 0.0 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 68 | TM | Hexachlorobenzene | 0.209 | 0.212 | -1.4 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.078 | 0.084 | -7.7 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.130 | 0.123 | 5.4 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 0.996 | 0.961 | 3.5 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.081 | 1.065 | 1.5 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.072 | 1.093 | -2.0 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.261 | 1.324 | -5.0 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.170 | 1.199 | -2.5 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.595 | 0.573 | 3.7 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.268 | 1.299 | -2.4 | 100 | 0.00 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\073114\CZ506.D  Vial: 9
Acq On : 31 Jul 2014 6:03 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 0.845 | 0.830 | 1.8 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.666 | 0.670 | -0.6 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.432 | 0.424 | 1.9 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.247 | 1.188 | 4.7 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.142 | 1.134 | 0.7 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.888 | 0.859 | 3.3 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 1.487 | 1.516 | -2.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.061 | 1.076 | -1.4 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.088 | 1.114 | -2.4 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.081 | 1.087 | -0.6 | 100 | 0.00 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 0.939 | 0.963 | -2.6 | 100 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 0.956 | 0.968 | -1.3 | 100 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 0.936 | 0.942 | -0.6 | 100 | 0.00 |

(#) = Out of Range  SPCC's out = 0  CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\080814\CZ554.D  Vial: 3
Acq On : 8 Aug 2014 4:41 pm  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

LR: #40

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 184 | 0.00 |
| 2 | TM | Pyridine | 1.376 | 1.393 | -1.2 | 177 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.765 | 0.798 | -4.3 | 180 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.266 | 1.296 | -2.4 | 178 | 0.00 |
| 5 | TM | Benzaldehyde | 0.432 | 0.354 | 18.1 | 131 | 0.00 |
| 6 | TM | Aniline | 1.840 | 1.659 | 9.8 | 167 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.668 | 1.670 | -0.1 | 175 | 0.00 |
| 8 | TMC | Phenol | 1.707 | 1.607 | 5.9 | 181 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.256 | 1.271 | -1.2 | 171 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.450 | 1.378 | 5.0 | 169 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.552 | 1.513 | 2.5 | 169 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.556 | 1.494 | 4.0 | 173 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.448 | 1.445 | 0.2 | 176 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.150 | 1.171 | -1.8 | 182 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.207 | 1.094 | 9.4 | 162 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.279 | 1.247 | 2.5 | 172 | 0.00 |
| 17 | TM | Acetophenone | 1.823 | 1.769 | 3.0 | 171 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.969 | 0.904 | 6.7 | 170 | 0.00 |
| 19 | TM | Hexachloroethane | 0.627 | 0.654 | -4.3 | 180 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.326 | 1.282 | 3.3 | 174 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.920 | 0.922 | -0.2 | 179 | 0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 174 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.416 | 0.381 | 8.4 | 158 | 0.00 |
| 24 | TM | Nitrobenzene | 0.365 | 0.350 | 4.1 | 176 | 0.00 |
| 25 | TM | Isophorone | 0.658 | 0.645 | 2.0 | 172 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.207 | 0.207 | 0.0 | 177 | 0.00 |
| 27 | TM | Benzoic Acid | 0.380 | 0.385 | -1.3 | 178 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.366 | 0.365 | 0.3 | 177 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.399 | 0.389 | 2.5 | 173 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.309 | 0.314 | -1.6 | 169 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.329 | 0.321 | 2.4 | 172 | 0.00 |
| 32 | TM | Naphthalene | 0.973 | 0.939 | 3.5 | 174 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.407 | 0.390 | 4.2 | 166 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.184 | 0.178 | 3.3 | 173 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.309 | 0.308 | 0.3 | 170 | 0.00 |
| 36 | TM | Caprolactam | 0.113 | 0.111 | 1.8 | 167 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.696 | 0.672 | 3.4 | 172 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.638 | 0.619 | 3.0 | 173 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 174 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.191 | 0.247 | -29.3# | 194 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.361 | 0.365 | -1.1 | 178 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.389 | 0.383 | 1.5 | 183 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.232 | 1.182 | 4.1 | 173 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.376 | 1.297 | 5.7 | 169 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.088 | 1.017 | 6.5 | 165 | 0.00 |
| 46 | TM | 2-Nitroaniline | 0.312 | 0.301 | 3.5 | 168 | 0.00 |
| 47 | TM | Acenaphthylene | 1.669 | 1.562 | 6.4 | 167 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.223 | 1.148 | 6.1 | 167 | 0.00 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\080814\CZ554.D Vial: 3
Acq On : 8 Aug 2014 4:41 pm Operator: Z.Miao
Sample : CCV Inst : 5973-A
Misc : 80 PPM STD 8270/625 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 49 | TM | 2,6-Dinitrotoluene | 0.304 | 0.303 | 0.3 | 179 | 0.00 |
| 50 | TMC | Acenaphthene | 1.070 | 1.013 | 5.3 | 170 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.314 | 0.295 | 6.1 | 171 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.176 | 0.160 | 9.1 | 170 | 0.00 |
| 53 | TM | Dibenzofuran | 1.555 | 1.411 | 9.3 | 168 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.393 | 0.381 | 3.1 | 177 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.216 | 0.190 | 12.0 | 158 | 0.00 |
| 56 | TM | Fluorene | 1.252 | 1.163 | 7.1 | 170 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.592 | 0.591 | 0.2 | 179 | 0.00 |
| 58 | TM | Diethylphthalate | 1.200 | 1.062 | 11.5 | 164 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.326 | 0.320 | 1.8 | 173 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.130 | 0.132 | -1.5 | 187 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 169 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 165 | 0.00 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.161 | 0.171 | -6.2 | 174 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.773 | 0.742 | 4.0 | 161 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.578 | 0.567 | 1.9 | 175 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.208 | 0.220 | -5.8 | 180 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 30# | 0.02 |
| 68 | TM | Hexachlorobenzene | 0.209 | 0.220 | -5.3 | 176 | 0.00 |
| 69 | TM | Atrazine | 0.078 | 0.076 | 2.6 | 154 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.130 | 0.147 | -13.1 | 201# | 0.00 |
| 71 | TM | Phenanthrene | 0.996 | 0.973 | 2.3 | 172 | 0.00 |
| 72 | TM | Anthracene | 1.081 | 1.045 | 3.3 | 166 | 0.00 |
| 73 | TM | Carbazole | 1.072 | 1.083 | -1.0 | 168 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.261 | 1.262 | -0.1 | 162 | 0.00 |
| 75 | TCM | Fluoranthene | 1.170 | 1.200 | -2.6 | 170 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 174 | 0.00 |
| 77 | TM | Benzidine | 0.595 | 0.441 | 25.9# | 134 | 0.00 |
| 78 | TM | Pyrene | 1.268 | 1.237 | 2.4 | 166 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.845 | 0.861 | -1.9 | 180 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.666 | 0.655 | 1.7 | 170 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.432 | 0.426 | 1.4 | 175 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.247 | 1.209 | 3.0 | 177 | 0.00 |
| 83 | TM | Chrysene | 1.142 | 1.121 | 1.8 | 172 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.888 | 0.881 | 0.8 | 178 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 178 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 1.487 | 1.488 | -0.1 | 174 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.061 | 1.069 | -0.8 | 177 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.088 | 1.115 | -2.5 | 178 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.081 | 1.095 | -1.3 | 179 | 0.00 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 0.939 | 0.996 | -6.1 | 184 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 0.956 | 0.997 | -4.3 | 183 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 0.936 | 0.964 | -3.0 | 182 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\080814\CZ554.D  Vial: 3
Acq On : 8 Aug 2014 4:41 pm  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 184 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 80.990 | -1.2 | 177 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 83.466 | -4.3 | 180 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 81.867 | -2.3 | 178 | 0.00 |
| 5 | TM | Benzaldehyde | 80.000 | 65.459 | 18.2 | 131 | 0.00 |
| 6 | TM | Aniline | 80.000 | 72.160 | 9.8 | 167 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 80.098 | -0.1 | 175 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 75.338 | 5.8 | 181 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 80.994 | -1.2 | 171 | 0.00 |
| 10 | TM | 2-Chlorophenol | 80.000 | 76.008 | 5.0 | 169 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 77.994 | 2.5 | 169 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 76.812 | 4.0 | 173 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 79.825 | 0.2 | 176 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 81.438 | -1.8 | 182 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 72.509 | 9.4 | 162 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 77.987 | 2.5 | 172 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 77.597 | 3.0 | 171 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 74.653 | 6.7 | 170 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 83.433 | -4.3 | 180 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 77.375 | 3.3 | 174 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 80.208 | -0.3 | 179 | 0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 174 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 73.236 | 8.5 | 158 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 76.735 | 4.1 | 176 | 0.00 |
| 25 | TM | Isophorone | 80.000 | 78.314 | 2.1 | 172 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 80.091 | -0.1 | 177 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 81.086 | -1.4 | 178 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 79.806 | 0.2 | 177 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 77.962 | 2.5 | 173 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 81.438 | -1.8 | 169 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 77.980 | 2.5 | 172 | 0.00 |
| 32 | TM | Naphthalene | 80.000 | 77.132 | 3.6 | 174 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 76.675 | 4.2 | 166 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 77.512 | 3.1 | 173 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 79.638 | 0.5 | 170 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 77.960 | 2.6 | 167 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 77.250 | 3.4 | 172 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 77.634 | 3.0 | 173 | 0.00 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 174 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 89.999 | -12.5 | 194 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 80.951 | -1.2 | 178 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 78.711 | 1.6 | 183 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 76.777 | 4.0 | 173 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 75.401 | 5.7 | 169 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 74.747 | 6.6 | 165 | 0.00 |
| 46 | TM | 2-Nitroaniline | 80.000 | 77.242 | 3.4 | 168 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 74.857 | 6.4 | 167 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 75.142 | 6.1 | 167 | 0.00 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\080814\CZ554.D Vial: 3
Acq On : 8 Aug 2014 4:41 pm Operator: Z.Miao
Sample : CCV Inst : 5973-A
Misc : 80 PPM STD 8270/625 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700731.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Fri Aug 01 12:14:50 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 79.777 | 0.3 | 179 | 0.00 |
| 50 | TMC | Acenaphthene | 80.000 | 75.735 | 5.3 | 170 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 75.095 | 6.1 | 171 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 72.513 | 9.4 | 170 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 72.585 | 9.3 | 168 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 77.479 | 3.2 | 177 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 70.274 | 12.2 | 158 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 74.323 | 7.1 | 170 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 79.861 | 0.2 | 179 | 0.00 |
| 58 | TM | Diethylphthalate | 80.000 | 70.757 | 11.6 | 164 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 78.520 | 1.9 | 173 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 81.057 | -1.3 | 187 | 0.00 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 169 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 165 | 0.00 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 84.868 | -6.1 | 174 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 76.794 | 4.0 | 161 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.534 | 1.8 | 175 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 84.878 | -6.1 | 180 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 30 | 0.02 |
| 68 | TM | Hexachlorobenzene | 80.000 | 84.087 | -5.1 | 176 | 0.00 |
| 69 | TM | Atrazine | 80.000 | 77.917 | 2.6 | 154 | 0.00 |
| 70 | TCM | Pentachlorophenol | 80.000 | 90.059 | -12.6 | 201 | 0.00 |
| 71 | TM | Phenanthrene | 80.000 | 78.159 | 2.3 | 172 | 0.00 |
| 72 | TM | Anthracene | 80.000 | 77.319 | 3.4 | 166 | 0.00 |
| 73 | TM | Carbazole | 80.000 | 80.826 | -1.0 | 168 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 80.075 | -0.1 | 162 | 0.00 |
| 75 | TCM | Fluoranthene | 80.000 | 82.026 | -2.5 | 170 | 0.00 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 174 | 0.00 |
| 77 | TM | Benzidine | 80.000 | 59.240 | 25.9# | 134 | 0.00 |
| 78 | TM | Pyrene | 80.000 | 78.038 | 2.5 | 166 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 81.530 | -1.9 | 180 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 78.675 | 1.7 | 170 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 78.814 | 1.5 | 175 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 77.580 | 3.0 | 177 | 0.00 |
| 83 | TM | Chrysene | 80.000 | 78.506 | 1.9 | 172 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 79.374 | 0.8 | 178 | 0.00 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 178 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 80.040 | -0.1 | 174 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 80.639 | -0.8 | 177 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 81.979 | -2.5 | 178 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 81.027 | -1.3 | 179 | 0.00 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 84.798 | -6.0 | 184 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 80.000 | 83.479 | -4.3 | 183 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 80.000 | 82.353 | -2.9 | 182 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\080614\
Data File : AV360.D
Acq On : 6 Aug 2014 10:56 am
Operator : Z.Miao
Sample : CCV
Misc : 80 PPM STD 8270~~IXAP~~ 2m 8/12/14 NO LR
ALS Vial : 3 Sample Multiplier: 1

Inst : 5973D

Quant Time: Aug 06 11:12:34 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 120 | 0.00 |
| 2 | TM | Pyridine | 1.297 | 1.313 | -1.2 | 120 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.695 | 0.701 | -0.9 | 116 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.216 | 1.213 | 0.2 | 120 | 0.00 |
| 5 | TM | Benzaldehyde | 0.257 | 0.299 | -16.3 | 119 | 0.00 |
| 6 | TM | Aniline | 1.874 | 1.755 | 6.4 | 112 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.570 | 1.586 | -1.0 | 117 | 0.00 |
| 8 | TMC | Phenol | 1.607 | 1.626 | -1.2 | 118 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.188 | 1.132 | 4.7 | 118 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.386 | 1.423 | -2.7 | 119 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.572 | 1.564 | 0.5 | 120 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.614 | 1.608 | 0.4 | 121 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.540 | 1.527 | 0.8 | 119 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.035 | 1.058 | -2.2 | 118 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.730 | 1.685 | 2.6 | 117 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.251 | 1.285 | -2.7 | 124 | 0.00 |
| 17 | TM | Acetophenone | 1.800 | 1.833 | -1.8 | 118 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.940 | 0.946 | -0.6 | 120 | 0.00 |
| 19 | TM | Hexachloroethane | 0.594 | 0.609 | -2.5 | 123 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.303 | 1.344 | -3.1 | 119 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.929 | 0.941 | -1.3 | 118 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 116 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.356 | 0.343 | 3.7 | 118 | 0.00 |
| 24 | TM | Nitrobenzene | 0.348 | 0.350 | -0.6 | 119 | 0.00 |
| 25 | TM | Isophorone | 0.621 | 0.635 | -2.3 | 119 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.191 | 0.196 | -2.6 | 115 | 0.00 |
| 27 | TM | Benzoic Acid | 0.340 | 0.372 | -9.4 | 120 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.333 | 0.347 | -4.2 | 119 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.369 | 0.372 | -0.8 | 118 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.302 | 0.326 | -7.9 | 121 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.358 | 0.362 | -1.1 | 122 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.058 | -0.9 | 118 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.416 | 0.416 | 0.0 | 115 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.203 | 1.5 | 116 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.273 | 0.295 | -8.1 | 120 | 0.00 |
| 36 | TM | Caprolactam | 0.101 | 0.104 | -3.0 | 118 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.729 | 0.741 | -1.6 | 118 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.672 | 0.676 | -0.6 | 118 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 116 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.349 | 0.343 | 1.7 | 107 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.382 | 0.412 | -7.9 | 124 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.392 | 0.420 | -7.1 | 117 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.257 | 1.295 | -3.0 | 120 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.410 | 1.429 | -1.3 | 119 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.101 | 1.108 | -0.6 | 118 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\080614\
Data File : AV360.D
Acq On : 6 Aug 2014 10:56 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270IXAP
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Aug 06 11:12:34 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.297 | 0.301 | -1.3 | 116 | 0.00 |
| 47 | TM | Acenaphthylene | 1.758 | 1.804 | -2.6 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.186 | 1.197 | -0.9 | 117 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.266 | 0.278 | -4.5 | 116 | 0.00 |
| 50 | TMC | Acenaphthene | 1.162 | 1.162 | 0.0 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.301 | 0.300 | 0.3 | 118 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.145 | 0.114 | 21.4# | 99 | 0.00 |
| 53 | TM | Dibenzofuran | 1.660 | 1.688 | -1.7 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.343 | 0.364 | -6.1 | 119 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.224 | 0.224 | 0.0 | 120 | 0.00 |
| 56 | TM | Fluorene | 1.314 | 1.355 | -3.1 | 117 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.660 | 0.664 | -0.6 | 117 | 0.00 |
| 58 | TM | Diethylphthalate | 1.126 | 1.138 | -1.1 | 122 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.343 | 0.352 | -2.6 | 120 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.196 | 0.205 | -4.6 | 125 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 120 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.144 | 0.139 | 3.5 | 117 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.706 | 0.723 | -2.4 | 117 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.511 | 0.505 | 1.2 | 123 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.228 | 0.230 | -0.9 | 121 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 222# | 0.00 |
| 68 | TM | Hexachlorobenzene | 0.261 | 0.254 | 2.7 | 119 | 0.00 |
| 69 | TM | Atrazine | 0.073 | 0.072 | 1.4 | 106 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.176 | 0.173 | 1.7 | 118 | 0.00 |
| 71 | TM | Phenanthrene | 1.076 | 1.097 | -2.0 | 123 | 0.00 |
| 72 | TM | Anthracene | 1.124 | 1.157 | -2.9 | 122 | 0.00 |
| 73 | TM | Carbazole | 1.057 | 1.103 | -4.4 | 117 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.159 | 1.305 | -12.6 | 124 | 0.00 |
| 75 | TCM | Fluoranthene | 1.247 | 1.365 | -9.5 | 121 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 113 | 0.00 |
| 77 | TM | Benzidine | 0.351 | 0.336 | 4.3 | 104 | 0.00 |
| 78 | TM | Pyrene | 1.111 | 1.197 | -7.7 | 120 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.807 | 0.849 | -5.2 | 122 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.463 | 0.499 | -7.8 | 120 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.374 | 0.389 | -4.0 | 116 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.126 | 1.158 | -2.8 | 117 | 0.00 |
| 83 | TM | Chrysene | 1.134 | 1.152 | -1.6 | 119 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.600 | 0.668 | -11.3 | 125 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 114 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.963 | 1.152 | -19.6 | 130 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.053 | 1.118 | -6.2 | 120 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.141 | 1.176 | -3.1 | 117 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.041 | 1.107 | -6.3 | 119 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\080614\
Data File : AV360.D
Acq On : 6 Aug 2014 10:56 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270IXAP
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Aug 06 11:12:34 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.934 | 0.983 | -5.2 | 123 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.983 | 1.022 | -4.0 | 118 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.971 | 0.991 | -2.1 | 121 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\080814\
Data File : AV416.D
Acq On : 8 Aug 2014 10:19 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 08 10:43:22 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M NO LR
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 130 | 0.00 |
| 2 | TM | Pyridine | 1.297 | 1.316 | -1.5 | 130 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.695 | 0.744 | -7.1 | 133 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.216 | 1.236 | -1.6 | 132 | 0.00 |
| 5 | TM | Benzaldehyde | 0.257 | 0.290 | -12.8 | 124 | 0.00 |
| 6 | TM | Aniline | 1.874 | 1.767 | 5.7 | 122 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.570 | 1.623 | -3.4 | 130 | 0.00 |
| 8 | TMC | Phenol | 1.607 | 1.650 | -2.7 | 129 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.188 | 1.222 | -2.9 | 137 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.386 | 1.439 | -3.8 | 130 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.572 | 1.603 | -2.0 | 133 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.614 | 1.639 | -1.5 | 133 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.540 | 1.544 | -0.3 | 130 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.035 | 1.093 | -5.6 | 131 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.730 | 1.802 | -4.2 | 136 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.251 | 1.283 | -2.6 | 133 | 0.00 |
| 17 | TM | Acetophenone | 1.800 | 1.840 | -2.2 | 128 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.940 | 0.985 | -4.8 | 135 | 0.00 |
| 19 | TM | Hexachloroethane | 0.594 | 0.616 | -3.7 | 134 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.303 | 1.376 | -5.6 | 131 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.929 | 0.935 | -0.6 | 127 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 126 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.356 | 0.344 | 3.4 | 129 | 0.00 |
| 24 | TM | Nitrobenzene | 0.348 | 0.351 | -0.9 | 129 | 0.00 |
| 25 | TM | Isophorone | 0.621 | 0.649 | -4.5 | 132 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.191 | 0.203 | -6.3 | 130 | 0.00 |
| 27 | TM | Benzoic Acid | 0.340 | 0.392 | -15.3 | 138 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.333 | 0.350 | -5.1 | 130 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.369 | 0.384 | -4.1 | 132 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.302 | 0.323 | -7.0 | 130 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.358 | 0.360 | -0.6 | 131 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.062 | -1.2 | 129 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.416 | 0.419 | -0.7 | 125 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.217 | -5.3 | 135 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.273 | 0.290 | -6.2 | 129 | 0.00 |
| 36 | TM | Caprolactam | 0.101 | 0.102 | -1.0 | 126 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.729 | 0.753 | -3.3 | 130 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.672 | 0.685 | -1.9 | 130 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 125 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.349 | 0.376 | -7.7 | 126 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.382 | 0.410 | -7.3 | 132 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.392 | 0.424 | -8.2 | 127 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.257 | 1.339 | -6.5 | 134 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.410 | 1.452 | -3.0 | 130 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.101 | 1.127 | -2.4 | 129 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\080814\
Data File : AV416.D
Acq On : 8 Aug 2014 10:19 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 08 10:43:22 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.297 | 0.303 | -2.0 | 125 | 0.00 |
| 47 | TM | Acenaphthylene | 1.758 | 1.805 | -2.7 | 126 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.186 | 1.217 | -2.6 | 128 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.266 | 0.282 | -6.0 | 126 | 0.00 |
| 50 | TMC | Acenaphthene | 1.162 | 1.184 | -1.9 | 129 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.301 | 0.303 | -0.7 | 128 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.145 | 0.152 | -4.8 | 142 | 0.00 |
| 53 | TM | Dibenzofuran | 1.660 | 1.690 | -1.8 | 128 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.343 | 0.376 | -9.6 | 132 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.224 | 0.219 | 2.2 | 126 | 0.00 |
| 56 | TM | Fluorene | 1.314 | 1.346 | -2.4 | 125 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.660 | 0.701 | -6.2 | 133 | 0.00 |
| 58 | TM | Diethylphthalate | 1.126 | 1.175 | -4.4 | 136 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.343 | 0.339 | 1.2 | 124 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.196 | 0.203 | -3.6 | 133 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 129 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.144 | 0.149 | -3.5 | 134 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.706 | 0.735 | -4.1 | 128 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.511 | 0.516 | -1.0 | 135 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.228 | 0.226 | 0.9 | 128 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 236# | 0.00 |
| 68 | TM | Hexachlorobenzene | 0.261 | 0.254 | 2.7 | 128 | 0.00 |
| 69 | TM | Atrazine | 0.073 | 0.074 | -1.4 | 118 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.176 | 0.183 | -4.0 | 134 | 0.00 |
| 71 | TM | Phenanthrene | 1.076 | 1.103 | -2.5 | 133 | 0.00 |
| 72 | TM | Anthracene | 1.124 | 1.172 | -4.3 | 132 | 0.00 |
| 73 | TM | Carbazole | 1.057 | 1.096 | -3.7 | 124 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.159 | 1.402 | -21.0# | 143 | 0.00 |
| 75 | TCM | Fluoranthene | 1.247 | 1.351 | -8.3 | 128 | -0.01 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 77 | TM | Benzidine | 0.351 | 0.326 | 7.1 | 107 | 0.00 |
| 78 | TM | Pyrene | 1.111 | 1.187 | -6.8 | 125 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.807 | 0.872 | -8.1 | 132 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.463 | 0.552 | -19.2 | 140 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.374 | 0.403 | -7.8 | 127 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.126 | 1.182 | -5.0 | 126 | 0.00 |
| 83 | TM | Chrysene | 1.134 | 1.118 | 1.4 | 122 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.600 | 0.756 | -26.0# | 149 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 122 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.963 | 1.294 | -34.4# | 156 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.053 | 1.100 | -4.5 | 126 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.141 | 1.192 | -4.5 | 127 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.041 | 1.101 | -5.8 | 127 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\080814\
Data File : AV416.D
Acq On : 8 Aug 2014 10:19 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 08 10:43:22 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.934 | 1.001 | -7.2 | 134 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.983 | 1.043 | -6.1 | 129 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.971 | 1.008 | -3.8 | 131 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 1

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\081114\
Data File : AV461.D
Acq On : 11 Aug 2014 5:30 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 11 17:53:18 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

NO LR

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 102 | -0.02 |
| 2 | TM | Pyridine | 1.297 | 1.379 | -6.3 | 108 | -0.03 |
| 3 | TM | N-Nitrosodimethylamine | 0.695 | 0.722 | -3.9 | 101 | -0.03 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.216 | 1.281 | -5.3 | 108 | -0.02 |
| 5 | TM | Benzaldehyde | 0.257 | 0.286 | -11.3 | 97 | -0.02 |
| 6 | TM | Aniline | 1.874 | 1.759 | 6.1 | 96 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 1.570 | 1.635 | -4.1 | 103 | -0.01 |
| 8 | TMC | Phenol | 1.607 | 1.726 | -7.4 | 106 | -0.01 |
| 9 | TM | bis(2-Clethyl)Ether | 1.188 | 1.234 | -3.9 | 109 | -0.01 |
| 10 | TM | 2-Chlorophenol | 1.386 | 1.460 | -5.3 | 104 | -0.01 |
| 11 | TM | 1,3-Diclbenzene | 1.572 | 1.612 | -2.5 | 105 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.614 | 1.667 | -3.3 | 106 | -0.01 |
| 13 | TM | 1,2-Diclbenzene | 1.540 | 1.583 | -2.8 | 105 | -0.02 |
| 14 | TM | Benzyl Alcohol | 1.035 | 1.108 | -7.1 | 105 | -0.01 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.730 | 1.730 | 0.0 | 102 | -0.01 |
| 16 | TM | 2-Methylphenol | 1.251 | 1.313 | -5.0 | 107 | -0.01 |
| 17 | TM | Acetophenone | 1.800 | 1.867 | -3.7 | 102 | -0.01 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.940 | 0.989 | -5.2 | 107 | -0.01 |
| 19 | TM | Hexachloroethane | 0.594 | 0.645 | -8.6 | 111 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.303 | 1.387 | -6.4 | 104 | -0.01 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.929 | 0.962 | -3.6 | 103 | -0.02 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 103 | -0.02 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.356 | 0.335 | 5.9 | 102 | -0.01 |
| 24 | TM | Nitrobenzene | 0.348 | 0.349 | -0.3 | 105 | -0.01 |
| 25 | TM | Isophorone | 0.621 | 0.630 | -1.4 | 104 | -0.01 |
| 26 | TCM | 2-Nitrophenol | 0.191 | 0.195 | -2.1 | 102 | -0.01 |
| 27 | TM | Benzoic Acid | 0.340 | 0.370 | -8.8 | 106 | -0.01 |
| 28 | TM | 2,4-Dimethylphenol | 0.333 | 0.348 | -4.5 | 105 | -0.01 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.369 | 0.368 | 0.3 | 103 | -0.02 |
| 30 | TCM | 2,4-Dichlorophenol | 0.302 | 0.320 | -6.0 | 105 | -0.02 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.358 | 0.354 | 1.1 | 106 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.032 | 1.6 | 102 | -0.02 |
| 33 | TM | 4-Chloroaniline | 0.416 | 0.421 | -1.2 | 103 | -0.01 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.205 | 0.5 | 104 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.273 | 0.294 | -7.7 | 106 | -0.01 |
| 36 | TM | Caprolactam | 0.101 | 0.106 | -5.0 | 106 | -0.02 |
| 37 | TM | 2-Methylnaphthalene | 0.729 | 0.733 | -0.5 | 103 | -0.01 |
| 38 | TM | 1-Methylnaphthalene | 0.672 | 0.673 | -0.1 | 104 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.349 | 0.355 | -1.7 | 96 | -0.01 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.382 | 0.405 | -6.0 | 105 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.392 | 0.433 | -10.5 | 104 | -0.01 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.257 | 1.305 | -3.8 | 105 | -0.01 |
| 44 | TM | 1,1'-Biphenyl | 1.410 | 1.451 | -2.9 | 105 | -0.01 |
| 45 | TM | 2-Chloronaphthalene | 1.101 | 1.117 | -1.5 | 103 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\081114\
Data File : AV461.D
Acq On : 11 Aug 2014 5:30 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 11 17:53:18 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.297 | 0.310 | -4.4 | 103 | -0.02 |
| 47 | TM | Acenaphthylene | 1.758 | 1.848 | -5.1 | 104 | -0.01 |
| 48 | TM | Dimethyl phthalate | 1.186 | 1.216 | -2.5 | 103 | -0.01 |
| 49 | TM | 2,6-Dinitrotoluene | 0.266 | 0.279 | -4.9 | 101 | -0.01 |
| 50 | TMC | Acenaphthene | 1.162 | 1.195 | -2.8 | 105 | -0.01 |
| 51 | TM | 3-Nitroaniline | 0.301 | 0.310 | -3.0 | 105 | -0.01 |
| 52 | TPM | 2,4-Dinitrophenol | 0.145 | 0.161 | -11.0 | 121 | -0.01 |
| 53 | TM | Dibenzofuran | 1.660 | 1.730 | -4.2 | 105 | -0.02 |
| 54 | TM | 2,4-Dinitrotoluene | 0.343 | 0.373 | -8.7 | 106 | -0.01 |
| 55 | TMP | 4-Nitrophenol | 0.224 | 0.231 | -3.1 | 108 | -0.01 |
| 56 | TM | Fluorene | 1.314 | 1.382 | -5.2 | 104 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.660 | 0.693 | -5.0 | 106 | -0.01 |
| 58 | TM | Diethylphthalate | 1.126 | 1.153 | -2.4 | 107 | -0.01 |
| 59 | TM | 4-Nitroaniline | 0.343 | 0.359 | -4.7 | 106 | -0.01 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.196 | 0.204 | -4.1 | 107 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 103 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.144 | 0.145 | -0.7 | 105 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.706 | 0.757 | -7.2 | 105 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.511 | 0.523 | -2.3 | 109 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.228 | 0.235 | -3.1 | 106 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 110 | -0.02 |
| 68 | TM | Hexachlorobenzene | 0.261 | 0.262 | -0.4 | 106 | -0.01 |
| 69 | TM | Atrazine | 0.073 | 0.070 | 4.1 | 90 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.176 | 0.181 | -2.8 | 106 | 0.00 |
| 71 | TM | Phenanthrene | 1.076 | 1.122 | -4.3 | 108 | 0.00 |
| 72 | TM | Anthracene | 1.124 | 1.185 | -5.4 | 107 | 0.00 |
| 73 | TM | Carbazole | 1.057 | 1.140 | -7.9 | 104 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.159 | 1.304 | -12.5 | 107 | 0.00 |
| 75 | TCM | Fluoranthene | 1.247 | 1.381 | -10.7 | 105 | -0.01 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 98 | -0.01 |
| 77 | TM | Benzidine | 0.351 | 0.293 | 16.5 | 79 | 0.00 |
| 78 | TM | Pyrene | 1.111 | 1.201 | -8.1 | 105 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.807 | 0.832 | -3.1 | 104 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.463 | 0.494 | -6.7 | 104 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.374 | 0.386 | -3.2 | 101 | -0.01 |
| 82 | TM | Benzo(a)anthracene | 1.126 | 1.157 | -2.8 | 102 | -0.01 |
| 83 | TM | Chrysene | 1.134 | 1.149 | -1.3 | 104 | -0.01 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.600 | 0.642 | -7.0 | 105 | -0.01 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 99 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 0.963 | 1.065 | -10.6 | 104 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 1.053 | 1.104 | -4.8 | 103 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.141 | 1.159 | -1.6 | 100 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.041 | 1.084 | -4.1 | 101 | -0.02 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\081114\
Data File : AV461.D
Acq On : 11 Aug 2014 5:30 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 11 17:53:18 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.934 | 0.955 | -2.2 | 104 | -0.02 |
| 91 TM | Dibenz(a,h)anthracene | 0.983 | 1.015 | -3.3 | 102 | -0.02 |
| 92 TM | Benzo(g,h,i)perylene | 0.971 | 0.985 | -1.4 | 104 | -0.02 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\081414\
Data File : AV511.D
Acq On : 14 Aug 2014 6:40 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 14 10:52:56 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

No LR

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 122 | -0.02 |
| 2 | TM | Pyridine | 1.297 | 1.327 | -2.3 | 124 | -0.03 |
| 3 | TM | N-Nitrosodimethylamine | 0.695 | 0.723 | -4.0 | 121 | -0.03 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.216 | 1.227 | -0.9 | 123 | -0.02 |
| 5 | TM | Benzaldehyde | 0.257 | 0.198 | 23.0# | 80 | -0.02 |
| 6 | TM | Aniline | 1.874 | 1.814 | 3.2 | 118 | -0.02 |
| 7 | S | SURR2,PHENOL-D6 | 1.570 | 1.604 | -2.2 | 120 | -0.01 |
| 8 | TMC | Phenol | 1.607 | 1.644 | -2.3 | 121 | -0.02 |
| 9 | TM | bis(2-Clethyl)Ether | 1.188 | 1.170 | 1.5 | 123 | -0.02 |
| 10 | TM | 2-Chlorophenol | 1.386 | 1.416 | -2.2 | 120 | -0.02 |
| 11 | TM | 1,3-Diclbenzene | 1.572 | 1.547 | 1.6 | 120 | -0.02 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.614 | 1.601 | 0.8 | 122 | -0.02 |
| 13 | TM | 1,2-Diclbenzene | 1.540 | 1.511 | 1.9 | 120 | -0.02 |
| 14 | TM | Benzyl Alcohol | 1.035 | 1.040 | -0.5 | 118 | -0.02 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.730 | 1.750 | -1.2 | 124 | -0.02 |
| 16 | TM | 2-Methylphenol | 1.251 | 1.284 | -2.6 | 126 | -0.01 |
| 17 | TM | Acetophenone | 1.800 | 1.829 | -1.6 | 120 | -0.01 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.940 | 0.954 | -1.5 | 123 | -0.01 |
| 19 | TM | Hexachloroethane | 0.594 | 0.615 | -3.5 | 126 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.303 | 1.345 | -3.2 | 121 | -0.01 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.929 | 0.945 | -1.7 | 121 | -0.02 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 119 | -0.02 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.356 | 0.395 | -11.0 | 139 | -0.02 |
| 24 | TM | Nitrobenzene | 0.348 | 0.350 | -0.6 | 122 | -0.01 |
| 25 | TM | Isophorone | 0.621 | 0.630 | -1.4 | 120 | -0.02 |
| 26 | TCM | 2-Nitrophenol | 0.191 | 0.203 | -6.3 | 122 | -0.02 |
| 27 | TM | Benzoic Acid | 0.340 | 0.396 | -16.5 | 131 | -0.01 |
| 28 | TM | 2,4-Dimethylphenol | 0.333 | 0.339 | -1.8 | 118 | -0.01 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.369 | 0.369 | 0.0 | 119 | -0.02 |
| 30 | TCM | 2,4-Dichlorophenol | 0.302 | 0.324 | -7.3 | 122 | -0.02 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.358 | 0.359 | -0.3 | 123 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.043 | 0.6 | 119 | -0.02 |
| 33 | TM | 4-Chloroaniline | 0.416 | 0.417 | -0.2 | 117 | -0.02 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.208 | -1.0 | 121 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.273 | 0.287 | -5.1 | 120 | -0.01 |
| 36 | TM | Caprolactam | 0.101 | 0.103 | -2.0 | 119 | -0.01 |
| 37 | TM | 2-Methylnaphthalene | 0.729 | 0.728 | 0.1 | 118 | -0.01 |
| 38 | TM | 1-Methylnaphthalene | 0.672 | 0.671 | 0.1 | 120 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.349 | 0.340 | 2.6 | 105 | -0.02 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.382 | 0.419 | -9.7 | 125 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.392 | 0.428 | -9.2 | 119 | -0.01 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.257 | 1.291 | -2.7 | 119 | -0.02 |
| 44 | TM | 1,1'-Biphenyl | 1.410 | 1.440 | -2.1 | 120 | -0.02 |
| 45 | TM | 2-Chloronaphthalene | 1.101 | 1.129 | -2.5 | 120 | -0.02 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\081414\
Data File : AV511.D
Acq On : 14 Aug 2014 6:40 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 14 10:52:56 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.297 | 0.313 | -5.4 | 120 | -0.02 |
| 47 | TM | Acenaphthylene | 1.758 | 1.829 | -4.0 | 118 | -0.01 |
| 48 | TM | Dimethyl phthalate | 1.186 | 1.218 | -2.7 | 119 | -0.02 |
| 49 | TM | 2,6-Dinitrotoluene | 0.266 | 0.274 | -3.0 | 114 | -0.01 |
| 50 | TMC | Acenaphthene | 1.162 | 1.172 | -0.9 | 118 | -0.02 |
| 51 | TM | 3-Nitroaniline | 0.301 | 0.311 | -3.3 | 122 | -0.02 |
| 52 | TPM | 2,4-Dinitrophenol | 0.145 | 0.114 | 21.4# | 99 | -0.01 |
| 53 | TM | Dibenzofuran | 1.660 | 1.699 | -2.3 | 119 | -0.02 |
| 54 | TM | 2,4-Dinitrotoluene | 0.343 | 0.366 | -6.7 | 119 | -0.01 |
| 55 | TMP | 4-Nitrophenol | 0.224 | 0.226 | -0.9 | 121 | -0.01 |
| 56 | TM | Fluorene | 1.314 | 1.351 | -2.8 | 116 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.660 | 0.686 | -3.9 | 120 | -0.01 |
| 58 | TM | Diethylphthalate | 1.126 | 1.153 | -2.4 | 123 | -0.01 |
| 59 | TM | 4-Nitroaniline | 0.343 | 0.350 | -2.0 | 118 | -0.02 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.196 | 0.208 | -6.1 | 126 | -0.01 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 122 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.144 | 0.135 | 6.2 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.706 | 0.728 | -3.1 | 120 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.511 | 0.501 | 2.0 | 124 | -0.02 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.228 | 0.232 | -1.8 | 124 | -0.02 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 192 | -0.03 |
| 68 | TM | Hexachlorobenzene | 0.261 | 0.255 | 2.3 | 121 | -0.02 |
| 69 | TM | Atrazine | 0.073 | 0.074 | -1.4 | 112 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.176 | 0.189 | -7.4 | 131 | -0.02 |
| 71 | TM | Phenanthrene | 1.076 | 1.079 | -0.3 | 123 | -0.02 |
| 72 | TM | Anthracene | 1.124 | 1.149 | -2.2 | 122 | -0.02 |
| 73 | TM | Carbazole | 1.057 | 1.094 | -3.5 | 118 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 1.159 | 1.310 | -13.0 | 127 | -0.02 |
| 75 | TCM | Fluoranthene | 1.247 | 1.333 | -6.9 | 120 | -0.03 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 113 | -0.03 |
| 77 | TM | Benzidine | 0.351 | 0.362 | -3.1 | 113 | -0.02 |
| 78 | TM | Pyrene | 1.111 | 1.174 | -5.7 | 118 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.807 | 0.828 | -2.6 | 119 | -0.03 |
| 80 | TM | Butyl benzyl phthalate | 0.463 | 0.512 | -10.6 | 124 | -0.03 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.374 | 0.382 | -2.1 | 115 | -0.03 |
| 82 | TM | Benzo(a)anthracene | 1.126 | 1.133 | -0.6 | 115 | -0.03 |
| 83 | TM | Chrysene | 1.134 | 1.107 | 2.4 | 114 | -0.03 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.600 | 0.697 | -16.2 | 131 | -0.03 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 112 | -0.03 |
| 86 | TCM | Di-n-octyl phthalate | 0.963 | 1.196 | -24.2 | 131 | -0.04 |
| 87 | TM | Benzo(b)Fluoranthene | 1.053 | 1.073 | -1.9 | 112 | -0.03 |
| 88 | TM | Benzo(k)fluoranthene | 1.141 | 1.149 | -0.7 | 112 | -0.03 |
| 89 | TCM | Benzo(a)pyrene | 1.041 | 1.070 | -2.8 | 113 | -0.03 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\081414\
Data File : AV511.D
Acq On : 14 Aug 2014 6:40 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Aug 14 10:52:56 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700801D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Mon Aug 04 11:04:12 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.934 | 0.980 | -4.9 | 120 | -0.03 |
| 91 TM | Dibenz(a,h)anthracene | 0.983 | 1.007 | -2.4 | 114 | -0.03 |
| 92 TM | Benzo(g,h,i)perylene | 0.971 | 0.998 | -2.8 | 119 | -0.03 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 214878
**Team:** Semivoa GCMS/LPRUNOSKE

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 8/6/14 09:00 AM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1409122-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate/sand | 1.0000 mL/72216 | |
| 2 | RQ1409122-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate/sand | 1.0000 mL/72216; 1.0000 mL/72870; 1.0000 mL/72864 | |
| 3 | RQ1409122-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate/sand | 1.0000 mL/72870; 1.0000 mL/72864; 1.0000 mL/72216 | |
| 4 | R1405839-004RE | BN-8' | .01 | 30.0g | 8270D/SVO /PAH | | | | 5.00mL | dark gray-brown sandy clay with gravel | 1.0000 mL/72216 | |
| 5 | R1405951-010 [redacted] | 1408020923 200-SB-17 3'/12' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | red/brown fine soil | 1.0000 mL/72216 | 8/19. II. SJV |
| 6 | R1405951-011 | 1408020924 200-SB-17 3'/12' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | red/brown fine soil | 1.0000 mL/72216 | |
| 7 | R1405951-014 | 1408030849 200-SB-17 48'/50' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown soil/fine sand | 1.0000 mL/72216 | |
| 8 | R1405951-015 | 1408031319 200-SB-17 88'/90' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown soil/fine sand | 1.0000 mL/72216 | |
| 9 | R1405951-025 | 1407311644 200-SB-6 | .01 | 30.0g | 8270D/SVO | | | | 5.00mL | wet brown clay/soil | 1.0000 mL/72216 | |
| 10 | R1405951-026 | 1407311656 200-SB-6 | .01 | 30.0g | 8270D/SVO | | | | 5.00mL | wet brown clay/soil | 1.0000 mL/72216 | |
| 11 | R1405951-027 | 1407311657 200-SB-6 | .01 | 30.0g | 8270D/SVO | | | | 5.00mL | wet brown clay/soil | 1.0000 mL/72216 | |
| 12 | R1405951-028 | 1408040817 200-SB-7 | .02 | 30.0g | 8270D/SVO | | | | 5.00mL | wet brown clay/soil | 1.0000 mL/72216 | |
| 13 | RQ1409122-04 | R1405951-028 MS | .02 | 30.0g | 8270D/SVO | | | | 5.00mL | wet brown clay/soil | 1.0000 mL/72870; 1.0000 mL/72216; 1.0000 mL/72864 | |
| 14 | RQ1409122-05 | R1405951-028 DMS | .02 | 30.0g | 8270D/SVO | | | | 5.00mL | wet brown clay/soil | 1.0000 mL/72870; 1.0000 mL/72216; 1.0000 mL/72864 | |
| 15 | R1405951-029 | 1408040818 200-SB-7 | .01 | 30.0g | 8270D/SVO | | | | 5.00mL | wet brown clay/soil | 1.0000 mL/72216 | |
| 16 | R1405997-001 [redacted] | 2014 Wayside Topsoil | .04 | 30.0g | 8270D/SVO /TCL | | | | 1.00mL | dark brown organic topsoil | 1.0000 mL/72216 | 8/19 II |
| 17 | R1405997-002 | 2014 Wayside Compost | .04 | 30.0g | 8270D/SVO | | | | 5.00mL | dark brown organic topsoil | 1.0000 mL/72216 | |

## Spiking Solutions

2m 8/1/14

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | 8270 Soil Surrogate 100-200ppm | Inventory ID | 72216 | Logbook Ref: | 8270 Soil Surrogate | Expires On: | 01/07/2015 | | |
| Name: | OLM/SOM additionals Spike 100ppm | Inventory ID | 72864 | Logbook Ref: | | Expires On: | 09/01/2014 | | |
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 72870 | Logbook Ref: | | Expires On: | 05/31/2015 | Lot #: | LC07038' |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #15 (67588) | 2mL Graduated Vials | (72916) | 50:50 Dichloromethane:Acetone | (73254) |
| Prepared Sodium Sulfate Na2SO4 | (72910) | Sand Reagent Grade | SVOA (72239) | SVOA BALANCE | R-BALANCE-05 (12939) |

# *Preparation Information Benchsheet*

**Prep Run#:** 214878
**Team:** Semivoa GCMS/LPRUNOSKE

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 8/6/14 09:00 AM

**Preparation Steps**

| | | | | | |
|---|---|---|---|---|---|
| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
| Started: | 8/6/14 09:00 | Started: | 8/6/14 13:20 | Started: | 8/6/14 13:20 |
| Finished: | 8/6/14 13:00 | Finished: | 8/6/14 15:15 | Finished: | 8/6/14 15:15 |
| By: | LPRUNOSKE | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: Date: Spike Witness: JWU Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

# *Preparation Information Benchsheet*

**Prep Run#:** 215014
**Team:** Semivoa GCMS/DMURPHY

**Prep WorkFlow:** OrgExtAq(7)
**Prep Method:** EPA 3510C

**Status:** Prepped
**Prep Date/Time:** 8/7/14 07:50 AM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1409198-01 | MB | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | |
| 2 | RQ1409198-01 | MB | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | |
| 3 | RQ1409198-02 | LCS | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467; 1.0000 mL/72491; 1.0000 mL/72864; 1.0000 mL/72870 | |
| 4 | RQ1409198-02 | LCS | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467; 1.0000 mL/72864; 1.0000 mL/72491; 1.0000 mL/72870 | |
| 5 | RQ1409198-03 | DLCS | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/72864; 1.0000 mL/72491; 1.0000 mL/71467; 1.0000 mL/72870 | |
| 6 | RQ1409198-03 | DLCS | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/72491; 1.0000 mL/72870; 1.0000 mL/71467; 1.0000 mL/72864 | |
| 7 | R1405951-001 [redacted] | 1408020903 200-SB-17 | .02 | 1060mL | 8270D/SVO BEHP | 7 | x | x | 1.00mL | yellow-cloudy | 1.0000 mL/71467 | 8/9 [illegible] SHV |
| 8 | R1405953-002 [redacted] | 64G-3Q2M-IX-GS | .01 | 1060mL | 625/SVO/ppc | 7 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | 8/12/14 [illegible] |
| 9 | R1405987-001 [redacted] | LTFTWWNA009 | .10 | 1060mL | 625/SVO | 7 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | 8/19 [illegible] |

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | Color Coded BNA Surrogate Solution 10 | Inventory ID | 71467 | Logbook Ref: | Expires On: | 05/21/2016 | Lot #: | 229244 |
| Name: | Benzidine LCS Spike 100ppm | Inventory ID | 72491 | Logbook Ref: | Expires On: | 11/30/2014 | | |
| Name: | OLM/SOM additionals Spike 100ppm | Inventory ID | 72864 | Logbook Ref: | Expires On: | 09/01/2014 | | |
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 72870 | Logbook Ref: | Expires On: | 05/31/2015 | Lot #: | LC07038[illegible] |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #14 (61350) | 2mL Graduated Vials | (72916) | Sulfuric Acid, 50% H2SO4 | (72983) |
| Dichloromethane (Methylene Chloride) 99.9% MeCl2 | canister (72863) | Sodium Hydroxide 50% NaOH | (72105) | Prepared Sodium Sulfate Na2SO4 | (72910) |

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Final Volume |
|---|---|---|---|---|---|
| Started: | 8/7/14 07:50 | Started: | 8/7/14 15:40 | Started: | 8/7/14 19:22 |
| Finished: | 8/7/14 14:59 | Finished: | 8/7/14 17:10 | Finished: | 8/7/14 19:22 |
| By: | DMURPHY | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

# *Preparation Information Benchsheet*

**Prep Run#:** 215014
**Team:** Semivoa GCMS/DMURPHY

**Prep WorkFlow:** OrgExtAq(7)
**Prep Method:** EPA 3510C

**Status:** Prepped
**Prep Date/Time:** 8/7/14 07:50 AM

Comments:

Reviewed By: Date: 8/8/14 Spike Witness: JWU Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

# *Preparation Information Benchsheet*

**Prep Run#:** 215433 **Prep WorkFlow:** OrgExtS(14) **Status:** Prepped
**Team:** Semivoa GCMS/LPRUNOSKE **Prep Method:** EPA 3541 **Prep Date/Time:** 8/13/14 09:36 AM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1409459-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate/sand | 1.0000 mL/72216 | |
| 2 | RQ1409459-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate/sand | 1.0000 mL/72870; 1.0000 mL/72216; 1.0000 mL/72864 | |
| 3 | RQ1409459-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate/sand | 1.0000 mL/72864; 1.0000 mL/72870; 1.0000 mL/72216 | |
| 4 | R1406067-004RE | IWF-GERNATT #6 | .05 | 30.0g | 8270D/SVO /OLM4.2 | | | | 1.00mL | wet sand/medium soil | 1.0000 mL/72216 | |
| 5 | RQ1409459-04 | R1406067-004 MS | .05 | 30.0g | 8270D/SVO | | | | 1.00mL | wet sand/medium soil | 1.0000 mL/72870; 1.0000 mL/72216; 1.0000 mL/72864 | |
| 6 | RQ1409459-05 | R1406067-004 DMS | .05 | 30.0g | 8270D/SVO | | | | 1.00mL | wet sand/medium soil | 1.0000 mL/72216; 1.0000 mL/72864; 1.0000 mL/72870 | |
| 7 | R1406147-002RE | PE-11' | .01 | 30.0g | 8270D/SVO /PAHs | | | | 1.00mL | fine soil | 1.0000 mL/72216 | filtered |
| 8 | R1406147-003RE | PE-8' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | fine soil | 1.0000 mL/72216 | filtered |
| 9 | R1406147-004RE | PE-4' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | wet sand | 1.0000 mL/72216 | filtered |
| 10 | R1406147-005RE | J-12' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | wet sand | 1.0000 mL/72216 | filtered |
| 11 | R1406147-009RE | OF-13' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | fine soil | 1.0000 mL/72216 | filtered |
| 12 | R1405951-014RE | 1408030849 200-SB-17 48'/50' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | brown soil/fine sand | 1.0000 mL/72216 | filtered STV. |
| 13 | R1405951-028RE | 1408040817 200-SB-7 | .02 | 30.0g | 8270D/SVO | | | | 1.00mL | wet brown clay/soil | 1.0000 mL/72216 | filtered STV |
| 14 | RQ1409459-06 | R1405951-028 MS | .02 | 30.0g | 8270D/SVO | | | | 1.00mL | wet brown clay/soil | 1.0000 mL/72216; 1.0000 mL/72864; 1.0000 mL/72870 | filtered |
| 15 | RQ1409459-07 | R1405951-028 DMS | .02 | 30.0g | 8270D/SVO | | | | 1.00mL | wet brown clay/soil | 1.0000 mL/72864; 1.0000 mL/72216; 1.0000 mL/72870 | filtered |
| 16 | R1405997-001RE | 2014 Wayside Topsoil | .04 | 30.0g | 8270D/SVO /TCL | | | | 1.00mL | dark brown organic topsoil | 1.0000 mL/72216 | filtered |

OK X

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | 8270 Soil Surrogate 100-200ppm | Inventory ID | 72216 | Logbook Ref: | 8270 Soil Surrogate | Expires On: | 01/07/2015 | | |
| Name: | OLM/SOM additionals Spike 100ppm | Inventory ID | 72864 | Logbook Ref: | | Expires On: | 09/01/2014 | | |
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 72870 | Logbook Ref: | | Expires On: | 05/31/2015 | Lot #: | LC07038 |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #14 (61350) | 2mL Graduated Vials | (72916) | 50:50 Dichloromethane:Acetone | (73469) |
| Dichloromethane (Methylene Chloride) 99.9% MeCl2 | canister (72863) | Prepared Sodium Sulfate Na2SO4 | (73387) | Sand Reagent Grade | SVOA (72239) |
| SVOA BALANCE | R-BALANCE-05 (12939) | | | | |

# *Preparation Information Benchsheet*

**Prep Run#:** 215433
**Team:** Semivoa GCMS/LPRUNOSKE

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 8/13/14 09:36 AM

## Preparation Steps

| | | | | | |
|---|---|---|---|---|---|
| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
| Started: | 8/13/14 09:36 | Started: | 8/13/14 08:39 | Started: | 8/14/14 08:39 |
| Finished: | 8/13/14 13:27 | Finished: | 8/14/14 08:39 | Finished: | 8/14/14 08:39 |
| By: | LPRUNOSKE | By: | LPRUNOSKE | By: | LPRUNOSKE |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: MPedro Date: 8/14/14 Spike Witness: MPEDRO Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

10ML 4000ppm 1STD to 1.0ml
#0461

5973-A



LOG BOOK #

8/8/14

| | | | | | |
|---|---|---|---|---|---|
| | Time | 50ng VPTPP | Time p.m | CZ551 N | 73373 |
| | Time | Tu | ↓ | 52 N | |
| | Time | | ↓ | 53 YT 4:20pm | |
| 3 | CCV | 80 ppm 8270073l.m | | 54 YC | |
| 4 | CCV | 80 ppm 360E078.m | | 55 YC | |
| 5 | [redacted] | R 9074-01 BILL 8270ASP 8/5/14 W | | 56 Ym | |
| 6 | | -02 MS | | 57 YC | |
| 7 | | -03 MSD | | 58 YC | |
| 8 | | 5910-014 | | 59 Y | |
| 9 | [redacted] | R 9197-01 BILL 8270ASPHT 8/7/14 W | | 60 Ym | |
| 10 | | -02 MS | | 61 YC | |
| 11 | | -03 MSD | | 62 YC | |
| 12 | | 5966-003 X10 | | 63 Y | |
| 13 | | -001 | | 64 Y | |
| 14 | | -001MS | R9197-04 | 65 YC | |
| 15 | | -001MSD | -05 | 66 YC | |
| 16 | | -004 | | 67 Y | |
| 17 | [redacted] | R 5951-001 8270BEHP | | 68 Y | |

406068

ZM

[redacted]

| Analysis: 8270 | Analyst: ZM | Run Method: 8270080ID.m |
|---|---|---|
| Date: 8/6/14 | Instr. 5973-D | Quant Method: 8270080ID, 360E0613P |
| | | LIMS Run#: 405490 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| | Tune 50 ng | Tune-D.m | | AV358 | YT | 9:57 AM #70613 |
| 2 | CCV 80 ppm | 8270080ID.m | | 59 | N | |
| 3 | CCV 80 ppm | 8270080ID.m | | 60 | YC | |
| 4 | CCV 80 ppm | 360E0613P.m | | 61 | YL | |
| 5 | BLK | | | 62 | Ym | |
| 6 | [redacted] R5895-01 | Y10 | 8270080444 8/4 W | 63 | NO | hit for Benzaldehyde. >PQL. Rpt. |
| 7 | -02 | Y10 | | 64 | Not run | |
| 8 | -03 | Y10 | | 65 | / | |
| 9 | -4 | Y20 | | / | / | |
| 10 | -001 | Y100 | DL | / | / | |
| 11 | -002 | Y100 | ↓ | / | / | |
| 12 | -003 | Y100 | ↓ | / | / | |
| 7 | [redacted] RQ9099-01 | BLK | 8/5/14 8270PAH 50ml | 364 | Ym | R5876 8270 short (IV) |
| 8 | -02 | LCS | | 65 | YQ | 590.5 8270TCL II. |
| 9 | -03 | LCSD | | 66 | YQ | 5942 8270TCL 42 |
| 10 | R5839-002 | Re-ex | | 67 | Y | 5839 8270PAH |
| 11 | [redacted] R5896-003 | | | 68 | Y | 5896 ↓ |
| 12 | -005 | | | 69 | Y | |
| 13 | -007 | | | 70 | Y | |
| 14 | [redacted] RG9122-01 | BLK | 8270PAH 8/6/14 50ml | 71 | Ym | R-5915 NASA 8270BEHP II. 8/19/14 |
| 15 | -02 | LCS | | 72 | YQ | 5889 Re-ex 8270PAH |
| 16 | -03 | LCSD | | 73 | YQ | 5997 8270TCL II 8/19 |
| 17 | 5839-004 | Re-ex | | 74 | Y | Sm#4.5 ↓ 5mL |
| 18 | [redacted] 5905-001 | | 8270TCL 8/5/14 50ml | 75 | Y | 5mL |
| 19 | -002 | | | 76 | Y | ↓ |
| 20 | [redacted] R5895-002 | Y10 | 8270080444 8/4 W | 77 | Y | |
| 21 | -003 | Y10 | | 78 | Y | |
| 22 | -004 | Y20 | | 79 | Y | |
| 23 | -001 | Y100 | DL | 80 | NO | hit for Benzaldehyde. Rpt |
| 24 | -002 | Y100 | DL | 81 | Y | |
| 25 | -003 | Y100 | DL | 82 | Y | |
| 26 | [redacted] R5898-015 | | 8270PAH 8/5 W | 83 | Y | |
| 27 | -016 | | | 84 | Y | |
| 28 | -017 | | | AV385 | Y | 9:54 pm. |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary: _____ exp: Secondary: _____ exp:

Primary: _____ exp: Secondary: _____ exp:

Runlog GCEXT r1 12/5/12

Analysis: 8270 | Analyst: ZM | Run Method: 8270080D.M
Date: 8/8/14 | Instr. 5973-D | Quant Method:
LIMS Run#: 405899

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| 1 | Tune 50 ng | DFTPP | Tune-D | AV415 | Y | 10:00 AM 73373 |
| 2 | CCV 80 ppm | 8270080D | | 16 | Y | |
| 3 | CCV 80 ppm | 360E0613.D | | AV417 | N | not need. |
| 4 | BK | | | 18 | N | |
| 5 | Initial Calibration 5.0 ppm | | Benzo080D | 19 | N | ICV failed |
| 6 | | 10 | | 20 | N | |
| 7 | | 50 | | 21 | N | |
| 8 | | 80 | | 22 | N | |
| 9 | | 100 | | 23 | N | |
| 10 | | 120 | | 24 | N | |
| 11 | | 160 | | 25 | N | |
| 12 | | ICV | | 26 | N | |
| 13 | [redacted] R608993 | -01 | BLK 8270 8/4 | 28 | Not run | |
| 14 | | -02 | LCS | | | |
| 15 | | -03 | LCSD | | | |
| 16 | 5895 | -001 | Y/10 | | | |
| 17 | 5895 | -001 | Y/200 | | | |
| 18 | [redacted] R5942 | -004 | 8270 1014-2 8/5 | | | |
| 19 | | -005 | R609099 ZM 8/8/14 | | | |
| 20 | | -005MS | R609099-04 | | | |
| 21 | | -005MSD | -05 | | | |
| 22 | ICV | | | AV427 | N. | |
| 23 | 14 BLK | | | 28 | Y | |
| 24 | 15 [redacted] R5942 | -004 | 8270 1014-2 8/5 | 29 | Y | |
| 25 | 16 | -005 | | 30 | Y | |
| 26 | 17 | -005MS | R609904 | 31 | Y | Sur #4,5 ↓. |
| 27 | 18 | -005MSD | -05 | 32 | Y | |
| | 19 [redacted] R5951 | -010 | 8270BEH 8/4/14 | 33 | Y | |
| | 20 | -011 | | 34 | Y | |
| | 21 | -014 | | 35 | N | Sur #5 ↓ Rpt |
| | 22 | -015 | | 36 | Y | |
| | 23 | -025 | | 37 | Y | 5 ml |
| | 24 | -026 | | 38 | Y | |
| | 25 | -027 | | 39 | Y | |
| | 26 | -028 | 9/22-04 | 40 | Y | Sur #4,5 ↓ |
| | 27 | -028MS | ~~R515~~ | 41 | Y | ~~Sur 5~~ 9:36 pm. ZM 8/14/14 |
| | 28 [redacted] R6109198 | -01 | BLK 8/7/14 675 PPU | 42 | Y | |
| | 29 | -02 | LCS | 43 | Y | |
| | 30 | -03 | LCSD | 44 | Y | |
| | 31 R1953 | -002 | | 45 | Y | |
| | 32 [redacted] R.5987 | -001 | | 46 | | |

All samples = 1 mL + 10 uL Combined IS/Surr.: 70461

Primary: exp: Secondary: exp:
Primary: exp: Secondary: exp:

Runlog GCEXT r1 12/5/12

| Analysis: 8270 | Analyst: ZM | Run Method: 82700SOIID |
|---|---|---|
| Date: 8/11/14 | Instr. 5973-D | Quant Method: 82700SOIII, 360E0613D, Bay0SHP. |
| | | LIMS Run#: 406133 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| | Tune 50ng | M-TPP | Tune-D | AV460 | Y | 5:05pm 73373 |
| 2 | CCV 80ppm | 82700SOIID | | 61 | Y | |
| 3 | CCV 80 ppm | 360E0613D.m | | 62 | Y | |
| 4 | Blk | | | 63 | Y | |
| 5 | Initial Calibration | 5.0 | Bay0SHIIm | 64 | Y | |
| 6 | | 10 | | 65 | Y | |
| 7 | | 50 | | 66 | Y | |
| 8 | | 80 | | 67 | Y | |
| 9 | | 100 | | 68 | Y | |
| 10 | | 120 | | 69 | Y | |
| 11 | | 160 | | 70 | Y | |
| 12 | | ICV | | 71 | Y | |
| 13 | [redacted] RQ8993-01 | 1:11 | 82700SIIA 8/4 | 72 | Y | |
| 14 | -02 | 1:5 | | 73 | Y | |
| 15 | -03 | 1:50 | | 74 | Y | |
| 16 | 5895-001 | 1:10 | | 75 | Y | Sm #4 ↑ |
| 17 | -001 | 1:200 | DL | 76 | Y | |
| 18 | [redacted] R5951-01 | 1 | 82701SEHP 8/6 | 77 | N Y | not Sm #5 ↓ |
| 19 | R5951-028msp | | R69122-05 | 78 | Y | Sm #3 ↑ . 5ml |
| 20 | -029 | | | 79 | Y | 5ml |
| 21 | [redacted] R5997-002 | 1:10 | 82701CU 8/6 | 80 | N | Rpt Sm. 5ml |
| 22 | -001 | | ↓ | 81 | Y | Sm #4.5 ↓ 2:16pm |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary : exp: Secondary : exp:

Primary: exp: Secondary : exp:

Runlog GCEXT r1 12/5/12

| | | | |
|---|---|---|---|
| Analysis: 8270 | Analyst: ZM/JM | Run Method: 8270080ID. | |
| Date: 8/14/14 | Instr. 5973-D | Quant Method: 8270080ID | |
| | | LIMS Run#: | 406645 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| 1 | Tune 50ng DFTPP | Tune-D m | | AV510 | YT | 73373 73373 |
| 2 | CCV 80 ppm | 8270080I.m | | 11 | YC | 72174 |
| 3 | RQ1409459-01 | 1.0 MB | | 12 | Y | |
| 4 | ↓ -02 | 1.0 LCS | | 13 | YC | Sw# 5 ↓ ✓ |
| 5 | ↓ -03 | 1.0 LCSD | | 14 | YC | |
| 6 | [redacted] R6067-004 | 1.0 | | 15 | Y | Sw# 5 ↓ ✓ |
| 7 | RQ1409459-04 | 1.0 MS | | 16 | YC | Sw# 4.5 ↓ ✓ |
| 8 | ↓ -05 | 1.0 MSD | | 17 | YC | |
| 9 | [redacted] R6147-004 | 1.0 | 8270PAH | 18 | Y | Sw# 4.5 ↓ ✓ |
| 10 | -002 ~~-005~~ | | | 19 | Y | Sw# 4.5 ↓ ✓ |
| 11 | -003 ~~-009~~ | | | 20 | Y | Sw# 4.5 ↓ ✓ |
| 12 | ~~[redacted] R5951-014~~ | 005 | 8270BEHP | 21 | Y | |
| 13 | ~~-028~~ | -009 | | 22 | Y | Sw# 5 ↓ ✓ |
| 14 | [redacted] 5951 ~~-028MS~~ | 014 | R6945906 | 23 | Y | |
| 15 | ~~-028MSD~~ | 028 | -07 | 24 | Y | Sw# 4.5 ↓ ✓ |
| 16 | ZM 8/14/14 028MS | RQ1409459-06 | | 25 | YC | Sw# 5 ↓ ✓ |
| 17 | 028MSD | -07 | | 26 | YC | |
| 18 | R6183-005 | 8270 01MA2 8/12 Sw.d | | 27 | N | ALS check only ✓ |
| 19 | R5997-001 | 8270 TALL 8/13 Sw.d | | 28 | Y | Sw# 4.5 ↓ ✓ |
| 20 | [redacted] R6183-014 | 8270dm42 8/12 Sw.d | | 29 | Y | |
| 21 | | | | | | |
| 22 | | | | | | |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary : exp: Secondary : exp:

Primary: exp: Secondary : exp:

Runlog GCEXT01 12/5/2

00175

July 21, 2014

Service Request No: R1405032

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 2, 2014. For your reference, these analyses have been assigned our service request number **R1405032**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



ADDRESS 1565 Jefferson Rd, Building 300, Suite 360, Rochester, NY 14623 PHONE 585-288-5380 | FAX 585-288-8475
ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental | www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Soil | **Date Received:** | 07/01/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 06/28-30/14 and received on 07/01/14 at cooler temperatures of 4.9-5.1°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory. The 5035 vials were not received within 48 hours of collection. The client was notified, the samples were frozen upon receipt and the samples analyzed.

**Volatile Organics**

Soil samples were analyzed for a site list of Volatile Organics by Methods 5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable except Dichloromethane was outside limits high on the 07/11/14 LCS/LCSD and have been flagged with an "*". All samples with positive detections for Dichloromethane are possibly biased high.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination except for low level detections of Acetone and Dichloromethane in the 07/11/14 blank. All affected data has been flagged with a "B".

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405032

| Lab ID | Client ID |
|---|---|
| R1405032-001 | 1406281018 200-SB-10 (16'-18') |
| R1405032-002 | 1406281021 200-SB-10 (16'-18') |
| R1405032-003 | 1406281024 200-SB-10 (16'-18') |
| R1405032-004 | 1406281505 200-SB-10 (36'-38') |
| R1405032-005 | 1406281508 200-SB-10 (36'-38') |
| R1405032-006 | 1406281511 200-SB-10 (36'-38') |
| R1405032-007 | 1406281200 200-SB-10 (26'-28') |
| R1405032-008 | 1406281203 200-SB-10 (26'-28') |
| R1405032-009 | 1406281206 200-SB-10 (26'-28') |
| R1405032-010 | 1406301545 200-SB-09 |
| R1405032-011 | 1406301548 200-SB-09 |
| R1405032-012 | 1406301551 200-SB-09 |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Analyzed:** | 7/11/14 16:45 |
| **Sample Name:** | 1406281018 200-SB-10 (16'-18') | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-001 | **Basis:** | Basis Adjustment Factor Missing |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9793.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .93 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.7 | 0.68 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.7 | 0.68 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.7 | 1.2 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.7 | 1.2 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.7 | 0.57 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.7 | 1.3 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.7 | 2.2 | |
| 67-63-0 | Isopropanol | ND | U | 93 | 26 | |
| 67-64-1 | Acetone | ND | U | 4.7 | 2.7 | |
| 71-43-2 | Benzene | ND | U | 4.7 | 0.27 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.7 | 0.57 | |
| 75-25-2 | Bromoform | ND | U | 4.7 | 0.87 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.7 | 0.27 | |
| 67-66-3 | Chloroform | ND | U | 4.7 | 1.2 | |
| 74-87-3 | Chloromethane | ND | U | 4.7 | 0.38 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.7 | 0.68 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.7 | 1.4 | |
| 75-09-2 | Dichloromethane | ND | U | 4.7 | 0.54 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.7 | 0.22 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.7 | 0.88 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.7 | 0.82 | |
| 108-88-3 | Toluene | **2.1** | J | 4.7 | 0.93 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.7 | 0.94 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 9.3 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 4.7 | 0.45 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.7 | 1.3 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 51-136 | 7/11/14 16:45 | |
| Dibromofluoromethane | 100 | 63-138 | 7/11/14 16:45 | |
| Toluene-d8 | 97 | 66-138 | 7/11/14 16:45 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281018 200-SB-10 (16'-18') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-001 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | TWALTON |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406281021 200-SB-10 (16'-18') | | |
| **Lab Code:** | R1405032-002 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **95.7** | | Percent | 1.0 | 1 | NA | 7/8/14 10:48 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Extracted:** | 7/7/14 |
| | | **Date Analyzed:** | 7/9/14 18:55 |
| **Sample Name:** | 1406281021 200-SB-10 (16'-18') | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-002 | **Basis:** | Dry |
| | | **Percent Solids:** | 95.7 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 401079 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 212266 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\070914\CZ394.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 45 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 53 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 65 | 47-126 | 7/9/14 18:55 | |
| Nitrobenzene-d5 | 55 | 39-136 | 7/9/14 18:55 | |
| p-Terphenyl-d14 | 67 | 35-152 | 7/9/14 18:55 | |

**ALS ENVIRONMENTAL**

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281021 200-SB-10 (16'-18') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-002 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406281024 200-SB-10 (16'-18') | | |
| **Lab Code:** | R1405032-003 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.68 | | pH Units | | 1 | NA | 7/7/14 15:00 | H |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281024 200-SB-10 (16'-18') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-003 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Analyzed:** | 7/11/14 17:23 |
| **Sample Name:** | 1406281505 200-SB-10 (36'-38') | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-004 | **Basis:** | Basis Adjustment Factor Missing |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9794.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.04 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.2 | 0.76 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.2 | 0.76 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.2 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.2 | 1.4 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.2 | 0.64 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.2 | 1.5 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.2 | 2.4 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 30 | |
| 67-64-1 | Acetone | **8.2** | B | 5.2 | 3.0 | |
| 71-43-2 | Benzene | ND | U | 5.2 | 0.31 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.2 | 0.64 | |
| 75-25-2 | Bromoform | ND | U | 5.2 | 0.97 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.2 | 0.31 | |
| 67-66-3 | Chloroform | ND | U | 5.2 | 1.4 | |
| 74-87-3 | Chloromethane | ND | U | 5.2 | 0.42 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.2 | 0.76 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.2 | 1.6 | |
| 75-09-2 | Dichloromethane | ND | U | 5.2 | 0.60 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.2 | 0.24 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.2 | 0.98 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.2 | 0.92 | |
| 108-88-3 | Toluene | **2.5** | J | 5.2 | 1.1 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.2 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.2 | |
| 95-47-6 | o-Xylene | ND | U | 5.2 | 0.50 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.2 | 1.5 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 51-136 | 7/11/14 17:23 | |
| Dibromofluoromethane | 98 | 63-138 | 7/11/14 17:23 | |
| Toluene-d8 | 99 | 66-138 | 7/11/14 17:23 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281505 200-SB-10 (36'-38') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-004 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | TWALTON |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406281508 200-SB-10 (36'-38') | | |
| **Lab Code:** | R1405032-005 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.0** | | Percent | 1.0 | 1 | NA | 7/8/14 10:48 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Extracted:** | 7/7/14 |
| | | **Date Analyzed:** | 7/9/14 20:14 |
| **Sample Name:** | 1406281508 200-SB-10 (36'-38') | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-005 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.0 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 401079 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 212266 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\070914\CZ397.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 55 | 47-126 | 7/9/14 20:14 | |
| Nitrobenzene-d5 | 49 | 39-136 | 7/9/14 20:14 | |
| p-Terphenyl-d14 | 55 | 35-152 | 7/9/14 20:14 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281508 200-SB-10 (36'-38') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-005 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406281511 200-SB-10 (36'-38') | | |
| **Lab Code:** | R1405032-006 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.89 | | pH Units | | 1 | NA | 7/7/14 15:00 | H |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281511 200-SB-10 (36'-38') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-006 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Analyzed:** | 7/11/14 18:00 |
| **Sample Name:** | 1406281200 200-SB-10 (26'-28') | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-007 | **Basis:** | Basis Adjustment Factor Missing |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9795.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .73 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 3.7 | 0.54 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 3.7 | 0.54 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 3.7 | 0.91 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 3.7 | 0.94 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 3.7 | 0.45 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 3.7 | 1.1 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 3.7 | 1.7 | |
| 67-63-0 | Isopropanol | ND | U | 73 | 21 | |
| 67-64-1 | Acetone | **5.7** | **B** | 3.7 | 2.1 | |
| 71-43-2 | Benzene | ND | U | 3.7 | 0.22 | |
| 75-27-4 | Bromodichloromethane | ND | U | 3.7 | 0.45 | |
| 75-25-2 | Bromoform | ND | U | 3.7 | 0.68 | |
| 108-90-7 | Chlorobenzene | ND | U | 3.7 | 0.22 | |
| 67-66-3 | Chloroform | ND | U | 3.7 | 0.92 | |
| 74-87-3 | Chloromethane | ND | U | 3.7 | 0.30 | |
| 124-48-1 | Dibromochloromethane | ND | U | 3.7 | 0.54 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 3.7 | 1.1 | |
| 75-09-2 | Dichloromethane | ND | U | 3.7 | 0.42 | |
| 100-41-4 | Ethylbenzene | ND | U | 3.7 | 0.17 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 3.7 | 0.69 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 3.7 | 0.65 | |
| 108-88-3 | Toluene | **2.1** | **J** | 3.7 | 0.73 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 3.7 | 0.74 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 7.3 | 0.80 | |
| 95-47-6 | o-Xylene | ND | U | 3.7 | 0.36 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 3.7 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 7/11/14 18:00 | |
| Dibromofluoromethane | 99 | 63-138 | 7/11/14 18:00 | |
| Toluene-d8 | 98 | 66-138 | 7/11/14 18:00 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281200 200-SB-10 (26'-28') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-007 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | TWALTON |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406281203 200-SB-10 (26'-28') | | |
| **Lab Code:** | R1405032-008 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **90.9** | | Percent | 1.0 | 1 | NA | 7/8/14 10:48 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Extracted:** | 7/7/14 |
| | | **Date Analyzed:** | 7/9/14 20:41 |
| **Sample Name:** | 1406281203 200-SB-10 (26'-28') | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-008 | **Basis:** | Dry |
| | | **Percent Solids:** | 90.9 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 401079 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 212266 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\070914\CZ398.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 360 | 47 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 360 | 56 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 59 | 47-126 | 7/9/14 20:41 | |
| Nitrobenzene-d5 | 50 | 39-136 | 7/9/14 20:41 | |
| p-Terphenyl-d14 | 58 | 35-152 | 7/9/14 20:41 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281203 200-SB-10 (26'-28') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-008 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/28/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406281206 200-SB-10 (26'-28') | | |
| **Lab Code:** | R1405032-009 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.73 | | pH Units | | 1 | NA | 7/7/14 15:00 | H |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406281206 200-SB-10 (26'-28') | **Date Collected:** | 6/28/14 |
| **Lab Code:** | R1405032-009 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/30/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Analyzed:** | 7/11/14 18:37 |
| **Sample Name:** | 1406301545 200-SB-09 | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-010 | **Basis:** | Basis Adjustment Factor Missing |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9796.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .93 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.7 | 0.68 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.7 | 0.68 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.7 | 1.2 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.7 | 1.2 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.7 | 0.57 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.7 | 1.3 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.7 | 2.2 | |
| 67-63-0 | Isopropanol | ND | U | 93 | 26 | |
| 67-64-1 | Acetone | ND | U | 4.7 | 2.7 | |
| 71-43-2 | Benzene | ND | U | 4.7 | 0.27 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.7 | 0.57 | |
| 75-25-2 | Bromoform | ND | U | 4.7 | 0.87 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.7 | 0.27 | |
| 67-66-3 | Chloroform | ND | U | 4.7 | 1.2 | |
| 74-87-3 | Chloromethane | ND | U | 4.7 | 0.38 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.7 | 0.68 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.7 | 1.4 | |
| 75-09-2 | Dichloromethane | ND | U | 4.7 | 0.54 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.7 | 0.22 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.7 | 0.88 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.7 | 0.82 | |
| 108-88-3 | Toluene | ND | U | 4.7 | 0.93 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.7 | 0.94 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 9.3 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 4.7 | 0.45 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.7 | 1.3 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 51-136 | 7/11/14 18:37 | |
| Dibromofluoromethane | 100 | 63-138 | 7/11/14 18:37 | |
| Toluene-d8 | 98 | 66-138 | 7/11/14 18:37 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406301545 200-SB-09 | **Date Collected:** | 6/30/14 |
| **Lab Code:** | R1405032-010 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | TWALTON |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/30/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406301548 200-SB-09 | | |
| **Lab Code:** | R1405032-011 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.1** | | Percent | 1.0 | 1 | NA | 7/8/14 10:48 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/30/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| | | **Date Extracted:** | 7/7/14 |
| | | **Date Analyzed:** | 7/9/14 21:08 |
| **Sample Name:** | 1406301548 200-SB-09 | **Units:** | µg/Kg |
| **Lab Code:** | R1405032-011 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.1 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 401079 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 212266 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\070914\CZ399.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 53 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 78 | 47-126 | 7/9/14 21:08 | |
| Nitrobenzene-d5 | 59 | 39-136 | 7/9/14 21:08 | |
| p-Terphenyl-d14 | 77 | 35-152 | 7/9/14 21:08 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406301548 200-SB-09 | **Date Collected:** | 6/30/14 |
| **Lab Code:** | R1405032-011 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 6/30/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 2/14 |
| **Sample Name:** | 1406301551 200-SB-09 | | |
| **Lab Code:** | R1405032-012 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.83 | | pH Units | | 1 | NA | 7/7/14 15:00 | H |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1406301551 200-SB-09 | **Date Collected:** | 6/30/14 |
| **Lab Code:** | R1405032-012 | **Date Received:** | 7/2/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405032-MB | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | ND | U | Percent | 1.0 | 1 | NA | 7/8/14 10:48 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/11/14 14:52 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408043-05 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9790.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | **3.6** | J | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | **0.64** | J | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 7/11/14 14:52 | |
| Dibromofluoromethane | 101 | 63-138 | 7/11/14 14:52 | |
| Toluene-d8 | 100 | 66-138 | 7/11/14 14:52 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405032 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/7/14 |
| | | **Date Analyzed:** | 7/9/14 15:51 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1407691-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 401079 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 212266 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\070914\CZ387.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 73 | 47-126 | 7/9/14 15:51 | |
| Nitrobenzene-d5 | 60 | 39-136 | 7/9/14 15:51 | |
| p-Terphenyl-d14 | 75 | 35-152 | 7/9/14 15:51 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405032
**Date Analyzed:** 7/11/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 401474

| Analyte Name | Lab Control Sample RQ1408043-03 Result | Spike Amount | % Rec | Duplicate Lab Control Sample RQ1408043-04 Result | Spike Amount | % Rec | % Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 19.4 | 20.0 | 97 | 17.8 | 20.0 | 89 | 64 - 127 | 9 | 30 |
| 1,1,2-Trichloroethane | 19.4 | 20.0 | 97 | 19.9 | 20.0 | 99 | 76 - 123 | 2 | 30 |
| 1,1,2-Trichlorotrifluoroethane | 21.3 | 20.0 | 106 | 19.2 | 20.0 | 96 | 59 - 146 | 10 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | 23.3 | 20.0 | 116 | 22.3 | 20.0 | 112 | 75 - 151 | 4 | 30 |
| 1,2-Dichloroethane | 19.8 | 20.0 | 99 | 19.4 | 20.0 | 97 | 66 - 123 | 2 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 20.2 | 20.0 | 101 | 19.1 | 20.0 | 95 | 61 - 138 | 6 | 30 |
| 2-Butanone (MEK) | 21.8 | 20.0 | 109 | 20.9 | 20.0 | 105 | 62 - 128 | 4 | 30 |
| Isopropanol | 380 | 400 | 95 | 388 | 400 | 97 | 62 - 142 | 2 | 30 |
| Acetone | 22.5 | 20.0 | 112 | 21.5 | 20.0 | 107 | 53 - 143 | 5 | 30 |
| Benzene | 20.5 | 20.0 | 103 | 19.7 | 20.0 | 99 | 74 - 123 | 4 | 30 |
| Bromodichloromethane | 20.5 | 20.0 | 102 | 19.8 | 20.0 | 99 | 77 - 127 | 3 | 30 |
| Bromoform | 19.6 | 20.0 | 98 | 18.9 | 20.0 | 95 | 65 - 133 | 3 | 30 |
| Chlorobenzene | 19.9 | 20.0 | 100 | 19.7 | 20.0 | 98 | 77 - 124 | 2 | 30 |
| Chloroform | 19.7 | 20.0 | 99 | 18.9 | 20.0 | 94 | 73 - 125 | 5 | 30 |
| Chloromethane | 21.8 | 20.0 | 109 | 20.7 | 20.0 | 103 | 56 - 154 | 6 | 30 |
| Dibromochloromethane | 19.3 | 20.0 | 97 | 19.7 | 20.0 | 98 | 77 - 124 | 1 | 30 |
| Dichlorofluoromethane (CFC 21) | 16.3 | 20.0 | 81 | 15.9 | 20.0 | 80 | 79 - 142 | 1 | 30 |
| Dichloromethane | 26.8 | 20.0 | 134 * | 25.7 | 20.0 | 128 * | 77 - 126 | 5 | 30 |
| Ethylbenzene | 18.0 | 20.0 | 90 | 17.4 | 20.0 | 87 | 73 - 123 | 3 | 30 |
| Methyl tert-Butyl Ether | 20.8 | 20.0 | 104 | 21.0 | 20.0 | 105 | 72 - 131 | <1 | 30 |
| Tetrachloroethene (PCE) | 20.2 | 20.0 | 101 | 19.1 | 20.0 | 96 | 65 - 133 | 5 | 30 |
| Toluene | 19.7 | 20.0 | 98 | 19.2 | 20.0 | 96 | 72 - 127 | 2 | 30 |
| Trichloroethene (TCE) | 20.2 | 20.0 | 101 | 19.1 | 20.0 | 96 | 72 - 129 | 5 | 30 |
| m,p-Xylenes | 39.5 | 40.0 | 99 | 37.6 | 40.0 | 94 | 77 - 125 | 5 | 30 |
| o-Xylene | 19.5 | 20.0 | 97 | 18.9 | 20.0 | 94 | 75 - 124 | 3 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.3 | 20.0 | 116 | 22.3 | 20.0 | 112 | 56 - 154 | 4 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405032
**Date Analyzed:** 7/ 9/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 212266

| | Lab Control Sample RQ1407691-02 | | | Duplicate Lab Control Sample RQ1407691-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2100 | 3330 | 63 | 2420 | 3330 | 73 | 50 - 142 | 14 | 30 |
| Di-n-butyl Phthalate | 2160 | 3330 | 65 | 2280 | 3330 | 68 | 36 - 164 | 5 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

# WSTF CHAIN OF CUSTODY RECORD

Date 7/1/14

Page 1 of 2

Laboratory / PO #

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

Analysis Requirements

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: 8260C | UDMH/Biomass 15mL | 8270C/Perchlorate | Dioxins/Furans | Total Metals, Anions + total Cyanide | Soil pH | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 140628 1018 | 200-SB-10 (16'-18') | 3 | S | X | | | | | | | | |
| ~~1020~~ | | 1 | | | | | | | | | | |
| 1021 | | 1 | | | | X | | | | | | |
| 1022 | | 1 | | | | | X | | | | | |
| 1023 | | 1 | | | | | | X | | | | |
| 1024 | | 1 | | | | | | | X | | | |
| 140628 1505 | 200-SB-10 (36'-38') | 3 | S | X | | | | | | | | |
| 1508 | | 1 | | | | X | | | | | | |
| 1509 | | 1 | | | | | X | | | | | |
| 1510 | | 1 | | | | | | X | | | | |
| 1511 | | 1 | | | | | | | X | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] Eglen | 7/1/14 1315 | [signature] | 7/1/14 1310 |
| | | [signature] MS | 7/2/14 1000 |
| | | | |

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NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7/1/14



Laboratory / PO #

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analysis Requirements: Method / Analytes: 8260C | 8270C/Perchlorate | Dioxins/Furans | Total Metals, Anions | Total Cyanide | Soil pH | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1406281200 | 200-SB-10 (26'-28') | 3 | S | X | | | | | | | | | |
| 1203 | | 1 | | | X | | | | | | | | |
| 1204 | | 1 | | | | X | | | | | | | |
| 1205 | | 1 | | | | | X | | | | | | |
| 1206 | | 1 | | | | | | X | | | | | |
| 1406301545 | 200-SB-09 | 3 | S | X | | | | | | | | | |
| 1548 | | 1 | | | X | | | | | | | | |
| 1549 | | 1 | | | | X | | | | | | | |
| 1550 | | 1 | | | | | X | | | | | | |
| 1551 | | 1 | | | | | | X | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7/1/14 1315 | [signature] | 7/1/14 1318 |
| | | [signature] pcs | 7/2/14 1002 |

R1405032 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number R14-5082

Cooler received on 7/2/14 by: CW

COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were Custody seals on outside of cooler? | Y N | 5a | Perchlorate samples have required headspace? | Y N NA |
| 2 | Custody papers properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk,or Sulfide have sig* bubbles? | Y N NA |
| 3 | Did all bottles arrive in good condition (unbroken)? | Y N | 6 | Where did the bottles originate? ALS/ROC | CLIENT |
| 4 | Circle: Wet Ice Dry Ice Gel packs present? | Y N | 7 | Soil VOA received as: Bulk Encore ~~5035set~~ | NA |

8. Temperature Readings Date: 7/2/14 Time: 1025 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 4.9 | ~~7.5~~ CW | 5.1 | | | | |
| Correction Factor (°C) | – | ~~-0.2~~ | – | | | | |
| Corrected Temp (°C) | 4.9 | ~~7.3~~ | 5.1 | | | | |
| Within 0-6°C? | Y N | ~~Y N~~ | Y N | Y N | Y N | Y N | Y N |

If out of Temperature, note packing/ice condition: ~~YES Cooler~~ ~~Ice melted~~ Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R002 by JS on 7/2/14 at 1047

5035 samples placed in storage location: F-05 by CW on 7/2/14 at 1042

PC Secondary Review: JMS 7/21/14

Cooler Breakdown: Date: 7/2/14 Time: 1814 by: DM

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated ~~N/A~~

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: client.

Other Comments:

VOA Headspace - 200-SB-10 (2)
200-SB-005 (3)
200-SB-9 (1)

did not meet 75% gas for -001, -004, -007, -010
result from: -002, -005, -008, -011

Perchlorate headspace corrected upon receipt

PC Secondary Review: JMS 7/21/14

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental · Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405032
**Date Analyzed:** 7/11/14 14:52

### Method Blank Summary
### Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408043-05
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\071114\K9790.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408043-03 | I:\ACQUDATA\MSVOA7\DATA\071114\K9786.D\ | 7/11/14 12:22 |
| Duplicate Lab Control Sample | RQ1408043-04 | I:\ACQUDATA\MSVOA7\DATA\071114\K9787.D\ | 7/11/14 13:00 |
| 1406281018 200-SB-10 (16'-18') | R1405032-001 | I:\ACQUDATA\MSVOA7\DATA\071114\K9793.D\ | 7/11/14 16:45 |
| 1406281505 200-SB-10 (36'-38') | R1405032-004 | I:\ACQUDATA\MSVOA7\DATA\071114\K9794.D\ | 7/11/14 17:23 |
| 1406281200 200-SB-10 (26'-28') | R1405032-007 | I:\ACQUDATA\MSVOA7\DATA\071114\K9795.D\ | 7/11/14 18:00 |
| 1406301545 200-SB-09 | R1405032-010 | I:\ACQUDATA\MSVOA7\DATA\071114\K9796.D\ | 7/11/14 18:37 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405032
**Date Analyzed:** 7/11/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\071114\K9785.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 401474
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 47.7 | 0.7075 | 0.6753 | -4.6 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.3 | 0.3414 | 0.3296 | -3.4 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 53.8 | 0.4820 | 0.5190 | 7.7 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 52.5 | 0.4169 | 0.4373 | 4.9 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 47.8 | 0.4920 | 0.4704 | -4.4 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 49.7 | 0.8365 | 0.8308 | -0.7 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 44.4 | 0.7656 | 0.6801 | -11.2 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 986 | 0.08660 | 0.08536 | -1.4 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 38.6 | 0.6020 | 0.4651 | -22.7 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 51.9 | 1.440 | 1.495 | 3.8 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 50.1 | 0.4660 | 0.4670 | 0.2 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 49.7 | 0.2458 | 0.2445 | -0.5 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 50.0 | 0.9166 | 0.9170 | 0.0 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 47.1 | 1.049 | 0.9879 | -5.8 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 50.6 | 1.118 | 1.130 | 1.1 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 48.8 | 0.3859 | 0.3769 | -2.3 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 49.1 | 1.436 | 1.409 | -1.9 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 50.6 | 0.6951 | 0.7028 | 1.1 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 49.5 | 1.608 | 1.592 | -1.0 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 48.4 | 1.847 | 1.788 | -3.1 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 51.6 | 0.3262 | 0.3366 | 3.2 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 50.0 | 1.479 | 1.480 | 0.0 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 51.4 | 0.3311 | 0.3406 | 2.9 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 100 | 0.5809 | 0.5837 | 0.5 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 48.7 | 0.5852 | 0.5699 | -2.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 51.1 | 0.8761 | 0.8947 | 2.1 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 49.1 | 0.4853 | 0.4765 | -1.8 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 50.1 | 0.3338 | 0.3347 | 0.2 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 48.9 | 1.294 | 1.266 | -2.2 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405032
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405032
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405032
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405032
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.4833 | 07 | 50.000 | 0.4775 | 02 | 50.000 | 0.4893 | 04 | 50.000 | 0.4931 |
| 01 | 50.000 | 0.4940 | 03 | 50.000 | 0.4875 | 08 | 50.000 | 0.4756 | 05 | 50.000 | 0.4819 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 0.3361 | 06 | 50.000 | 0.3295 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |
| 04 | 50.000 | 0.3406 | 01 | 50.000 | 0.3368 | 03 | 50.000 | 0.3344 | 08 | 50.000 | 0.3299 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 | 50.000 | 1.289 | 03 | 50.000 | 1.291 | 01 | 50.000 | 1.307 | 04 | 50.000 | 1.306 |
| 02 | 50.000 | 1.305 | 07 | 50.000 | 1.289 | 06 | 50.000 | 1.276 | 05 | 50.000 | 1.291 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405032
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyte Name | Compound Type | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤ 20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤ 20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤ 20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤ 20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤ 20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤ 20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤ 20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤ 20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤ 20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤ 20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤ 20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤ 20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤ 20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤ 20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤ 20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤ 20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤ 20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤ 20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤ 20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤ 20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤ 20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤ 20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤ 20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤ 20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤ 20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤ 20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤ 20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤ 20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤ 20 | 1.294 | | |

Analysis: 8260 Soils
Date: 7/11-14
Instr. MS#7

Analyst: T Walton
Data Path: j:\acqudata\msvoa7\071114

Tune Method: S052914
Run Method: S052914
LIMS Run#: 401474

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | | | | | | | | K9778 | — | |
| ↓ | | | | | | | | | ↓ | — | |
| 6 | ↓ | | | | | | | | K9783 | — | |
| 1 | Tune | | | | | | | | 84 | Y | RQ1408043 |
| 2 | CCV | | | | | | | | 85 | Y | Acetone ↓ |
| 3 | LCS | | | | | | | | 86 | Y | $mecl_2$ ↑ |
| 4 | LCSD. | | | | | | | | 87 | Y | $mecl_2$ ↑ |
| 5 | MBlank | | | | | | | | 88 | N | |
| 6 | MBlank | | | | | | | | 89 | N | $MeCl_2$ ! |
| 7 | R1405269-003 | 1 | | [redacted] | | | | | 90 | Y | use ak 5035 Blank. |
| TW 7-11-14 1 | R1405137-003 | 1.05 | SN 50854 | [redacted] | 11813 | T2 | 2 | NA | 91 | Y | |
| 2 | -004 | 1.00 | 50881 | ↓ | ↓ | ↓ | 2 | ↓ | 92 | Y | |
| 3 | R1405032-001 | 0.93 | 50875 | | | | 1 | | 93 | Y | |
| 4 | -004 | 1.04 | 10131 | | | | 1 | | 94 | Y | |
| 5 | -007 | 0.73 | 10122 | | | | 1 | | 95 | Y | |
| 6 | -010 | 0.93 | 50909 | ↓ | ↓ | ↓ | 1 | ↓ | 96 | Y | |

BW 07/18/14

adjusted $MeCl_2$ ion Ratios to id peak correctly + saved as Tune TW 7-11-14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary HBO: 72046 5ul/50ml
Primary HSL: 72085 LCV
Primary TG: 72049
Primary FR+: 72371
Primary :

500 Secondary HBO: 71564 2ul/50ml
Secondary HSL: 72064 LCS/DLCS.
Secondary TG: 72056
200 Secondary FR+: 71581 5ul
Secondary :

Combined IS/Surr : 72076
Surrogate :
Internal Std :

# Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files

| | | | | | |
|---|---|---|---|---|---|
| 5 | =CZ377.D | 10 | =CZ378.D | 50 | =CZ379.D |
| 80 | =CZ380.D | 100 | =CZ381.D | 120 | =CZ382.D |

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichlorobenzen | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | | |
| 2) | TM | Pyridine | | | 1.368 | 1.349 | 1.412 | 1.432 | 1.390 | 2.38 |
| 3) | TM | N-Nitrosodimethylam | 0.635 | 0.802 | 0.714 | 0.776 | 0.801 | 0.776 | 0.753 | 7.95 |
| 4) | S | SURR1,2-FLUOROPHENO | 1.204 | 1.171 | 1.224 | 1.261 | 1.297 | 1.268 | 1.240 | 3.45 |
| 5) | TM | Benzaldehyde | | | 0.362 | 0.271 | 0.241 | 0.206 | 0.245 | 32.53 AVG |
| 6) | TM | Aniline | 2.071 | 1.992 | 1.969 | 1.813 | 1.897 | 1.863 | 1.921 | 4.83 |
| 7) | S | SURR2,PHENOL-D6 | 1.589 | 1.734 | 1.655 | 1.582 | 1.655 | 1.631 | 1.636 | 3.18 |
| 8) | TMC | Phenol | 1.822 | 1.734 | 1.579 | 1.728 | 1.642 | 1.708 | 1.676 | 6.11 |
| 9) | TM | bis(2-Clethyl)Ether | 1.321 | 1.151 | 1.269 | 1.278 | 1.167 | 1.205 | 1.214 | 6.43 |
| 10) | TM | 2-Chlorophenol | 1.315 | 1.468 | 1.402 | 1.351 | 1.388 | 1.377 | 1.375 | 3.80 |
| 11) | TM | 1,3-Diclbenzene | 1.628 | 1.630 | 1.483 | 1.470 | 1.493 | 1.472 | 1.514 | 5.38 |
| 12) | TMC | 1,4-Dichlorobenzene | 1.571 | 1.653 | 1.511 | 1.451 | 1.519 | 1.482 | 1.523 | 4.55 |
| 13) | TM | 1,2-Diclbenzene | 1.543 | 1.524 | 1.456 | 1.420 | 1.411 | 1.370 | 1.446 | 4.53 |
| 14) | TM | Benzyl Alcohol | 1.109 | 1.049 | 1.141 | 1.150 | 1.132 | 1.107 | 1.113 | 2.99 |
| 15) | TM | 2,2'-oxybis(1-Chlor | 1.404 | 1.338 | 1.271 | 1.271 | 1.240 | 1.221 | 1.280 | 5.38 |
| 16) | TM | 2-Methylphenol | 1.124 | 1.268 | 1.190 | 1.219 | 1.242 | 1.192 | 1.204 | 3.82 |
| 17) | TM | Acetophenone | 1.903 | 1.944 | 1.810 | 1.771 | 1.804 | 1.749 | 1.809 | 4.94 |
| 18) | TMP | N-Nitroso-Di-n-prop | 1.085 | 1.077 | 0.956 | 0.928 | 0.953 | 0.923 | 0.977 | 7.45 |
| 19) | TM | Hexachloroethane | 0.670 | 0.639 | 0.610 | 0.633 | 0.642 | 0.611 | 0.629 | 3.86 |
| 20) | TM | 3+4-Methylphenol | 1.310 | 1.309 | 1.229 | 1.288 | 1.267 | 1.279 | 1.275 | 2.47 |
| 21) | T | 1-Methyl-2-pyrrolid | | 0.860 | 0.866 | 0.859 | 0.921 | 0.827 | 0.865 | 3.54 |
| 22) | IR | d8-Naphthalene | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | | |
| 23) | S | SURR4,NITROBENZENE- | 0.397 | 0.454 | 0.421 | 0.418 | 0.414 | 0.418 | 0.413 | 6.27 |
| 24) | TM | Nitrobenzene | 0.393 | 0.408 | 0.379 | 0.369 | 0.362 | 0.358 | 0.373 | 5.74 |
| 25) | TM | Isophorone | 0.722 | 0.712 | 0.664 | 0.664 | 0.672 | 0.643 | 0.673 | 4.82 |
| 26) | TCM | 2-Nitrophenol | 0.197 | 0.204 | 0.192 | 0.199 | 0.207 | 0.208 | 0.201 | 2.81 |
| 27) | TM | Benzoic Acid | | 0.289 | 0.362 | 0.392 | 0.417 | 0.407 | 0.381 | 12.97 |
| 28) | TM | 2,4-Dimethylphenol | 0.424 | 0.392 | 0.362 | 0.372 | 0.366 | 0.358 | 0.375 | 6.61 |
| 29) | TM | bis(-2-Chloroethoxy | 0.428 | 0.395 | 0.379 | 0.379 | 0.390 | 0.378 | 0.389 | 4.84 |
| 30) | TCM | 2,4-Dichlorophenol | 0.723 | 0.724 | 0.645 | 0.619 | 0.647 | 0.623 | 0.658 | 7.06 |
| 31) | TM | 1,2,4-Trichlorobenz | 0.354 | 0.349 | 0.326 | 0.325 | 0.323 | 0.333 | 0.333 | 3.88 |
| 32) | TM | Naphthalene | 1.043 | 1.061 | 0.949 | 0.944 | 0.984 | 0.971 | 0.977 | 6.17 |
| 33) | TM | 4-Chloroaniline | 0.415 | 0.436 | 0.426 | 0.411 | 0.414 | 0.396 | 0.413 | 3.72 |
| 34) | TCM | Hexachlorobutadiene | 0.241 | 0.179 | 0.188 | 0.187 | 0.188 | 0.188 | 0.194 | 10.69 |
| 35) | TMC | 4-Chloro-3-methylph | 0.301 | 0.292 | 0.288 | 0.308 | 0.309 | 0.293 | 0.298 | 2.77 |
| 36) | TM | Caprolactam | | 0.104 | 0.100 | 0.111 | 0.111 | 0.109 | 0.107 | 4.15 |
| 37) | TM | 2-Methylnaphthalene | 0.758 | 0.731 | 0.696 | 0.675 | 0.688 | 0.671 | 0.696 | 5.40 |
| 38) | TM | 1-Methylnaphthalene | 0.677 | 0.705 | 0.627 | 0.632 | 0.638 | 0.613 | 0.643 | 5.44 |
| 39) | IR | d10-Acenaphthene | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | | |
| 40) | TPM | Hexachlorocyclopent | 0.095 | 0.140 | 0.234 | 0.256 | 0.260 | 0.287 | 0.222 | 33.59 OA |
| 41) | TCM | 2,4,6-Trichlorophen | 0.334 | 0.376 | 0.372 | 0.363 | 0.361 | 0.356 | 0.361 | 3.84 |

(#) = Out of Range ### Number of calibration levels exceeded format ###



~~88051~~

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files
5 =CZ377.D 10 =CZ378.D 50 =CZ379.D
80 =CZ380.D 100 =CZ381.D 120 =CZ382.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 42) | TM | 2,4,5-Trichlorophen | 0.349 | 0.410 | 0.379 | 0.395 | 0.372 | 0.390 | 0.381 | 5.17 | |
| 43) | S | SURR5,2-FLUOROBIPHE | 1.337 | 1.262 | 1.234 | 1.207 | 1.162 | 1.136 | 1.211 | 6.07 | |
| 44) | TM | 1,1'-Biphenyl | 1.438 | 1.473 | 1.382 | 1.341 | 1.306 | 1.282 | 1.352 | 6.22 | |
| 45) | TM | 2-Chloronaphthalene | 1.197 | 1.162 | 1.086 | 1.039 | 1.035 | 1.046 | 1.083 | 6.43 | |
| 46) | TM | 2-Nitroaniline | | | 0.313 | 0.314 | 0.314 | 0.315 | 0.311 | 2.21 | |
| 47) | TM | Acenaphthylene | 1.753 | 1.780 | 1.703 | 1.615 | 1.608 | 1.544 | 1.640 | 6.79 | |
| 48) | TM | Dimethyl phthalate | 1.375 | 1.316 | 1.211 | 1.186 | 1.123 | 1.127 | 1.199 | 9.43 | |
| 49) | TM | 2,6-Dinitrotoluene | 0.252 | 0.300 | 0.298 | 0.296 | 0.298 | 0.296 | 0.291 | 5.95 | |
| 50) | TMC | Acenaphthene | 1.063 | 1.113 | 1.056 | 1.038 | 1.027 | 0.987 | 1.037 | 4.48 | |
| 51) | TM | 3-Nitroaniline | | | 0.314 | 0.306 | 0.311 | 0.311 | 0.309 | 1.43 | |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.111 | 0.157 | 0.170 | 0.186 | 0.164 | 20.11 | LR |
| 53) | TM | Dibenzofuran | 1.742 | 1.622 | 1.550 | 1.466 | 1.473 | 1.422 | 1.516 | 8.93 | |
| 54) | TM | 2,4-Dinitrotoluene | 0.388 | 0.380 | 0.371 | 0.399 | 0.411 | 0.395 | 0.390 | 3.32 | |
| 55) | TMP | 4-Nitrophenol | | | 0.205 | 0.211 | 0.225 | 0.218 | 0.215 | 3.57 | |
| 56) | TM | Fluorene | 1.413 | 1.405 | 1.240 | 1.219 | 1.172 | 1.166 | 1.243 | 9.92 | |
| 57) | TM | 4-Chlorophenyl-phen | 0.666 | 0.669 | 0.606 | 0.595 | 0.596 | 0.586 | 0.610 | 7.00 | |
| 58) | TM | Diethylphthalate | 1.349 | 1.287 | 1.106 | 1.164 | 1.149 | 1.135 | 1.181 | 8.41 | |
| 59) | TM | 4-Nitroaniline | | | 0.287 | 0.317 | 0.320 | 0.336 | 0.317 | 5.83 | |
| 60) | S | SURR3,2,4,6-TRIBROM | 0.133 | 0.139 | 0.120 | 0.138 | 0.129 | 0.139 | 0.134 | 5.48 | |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-methyl | | | | | | | 0.000# | -1.00 | |
| 63) | TM | 4,6-Dinitro-2-methy | | | 0.151 | 0.169 | 0.173 | 0.164 | 0.164 | 5.12 | |
| 64) | TM | 1,2 Diphenylhydrazi | 0.841 | 0.849 | 0.792 | 0.743 | 0.731 | 0.698 | 0.756 | 10.20 | |
| 65) | TCM | N-Nitrosodiphenylam | 0.560 | 0.575 | 0.571 | 0.526 | 0.543 | 0.532 | 0.546 | 4.35 | |
| 66) | TM | 4-Bromophenyl-pheny | 0.222 | 0.218 | 0.212 | 0.199 | 0.209 | 0.204 | 0.208 | 4.60 | |
| 67) | T | 1-Phenyl-1(2,4-dime | | | | | | | 0.000# | -1.00 | |
| 68) | TM | Hexachlorobenzene | 0.226 | 0.217 | 0.211 | 0.210 | 0.215 | 0.211 | 0.214 | 2.75 | |
| 69) | TM | Atrazine | 0.069 | 0.095 | 0.089 | 0.095 | 0.095 | 0.089 | 0.088 | 10.33 | |
| 70) | TCM | Pentachlorophenol | | | 0.122 | 0.141 | 0.154 | 0.146 | 0.143 | 8.71 | |
| 71) | TM | Phenanthrene | 1.108 | 1.114 | 0.988 | 0.996 | 1.009 | 0.968 | 1.014 | 7.17 | |
| 72) | TM | Anthracene | 1.264 | 1.214 | 1.091 | 1.051 | 1.072 | 1.011 | 1.095 | 9.92 | |
| 73) | TM | Carbazole | 1.073 | 1.080 | 1.065 | 1.054 | 1.081 | 1.017 | 1.045 | 4.66 | |
| 74) | TM | Di-n-butylphthalate | 1.276 | 1.357 | 1.359 | 1.330 | 1.303 | 1.250 | 1.287 | 6.08 | |
| 75) | TCM | Fluoranthene | 1.146 | 1.179 | 1.208 | 1.204 | 1.223 | 1.150 | 1.169 | 4.40 | |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.561 | 0.526 | 0.487 | 0.492 | 0.503 | 8.41 | |
| 78) | TM | Pyrene | 1.380 | 1.403 | 1.327 | 1.272 | 1.244 | 1.234 | 1.295 | 5.88 | |
| 79) | S | SURR6,TERPHENYL-D14 | 0.897 | 0.920 | 0.855 | 0.850 | 0.851 | 0.854 | 0.870 | 3.15 | |
| 80) | TM | Butyl benzyl phthal | 0.719 | 0.681 | 0.664 | 0.652 | 0.660 | 0.670 | 0.671 | 3.55 | |
| 81) | TM | 3,3'-Dichlorobenzid | 0.430 | 0.444 | 0.443 | 0.414 | 0.412 | 0.398 | 0.422 | 4.02 | |
| 82) | TM | Benzo(a)anthracene | 1.277 | 1.313 | 1.218 | 1.217 | 1.215 | 1.214 | 1.239 | 3.19 | |
| 83) | TM | Chrysene | 1.271 | 1.253 | 1.148 | 1.153 | 1.156 | 1.137 | 1.177 | 5.05 | |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files
5 =CZ377.D 10 =CZ378.D 50 =CZ379.D
80 =CZ380.D 100 =CZ381.D 120 =CZ382.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 84) | TM | bis(2-Ethylhexyl)ph | 0.879 | 0.952 | 0.909 | 0.894 | 0.863 | 0.863 | 0.886 | 4.09 |
| 85) | IR | d12-Perylene | ---------- | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | |
| 86) | TCM | Di-n-octyl phthalat | 1.702 | 1.639 | 1.560 | 1.502 | 1.472 | 1.444 | 1.533 | 6.92 |
| 87) | TM | Benzo(b)Fluoranthen | 1.083 | 1.188 | 1.070 | 1.080 | 1.114 | 1.066 | 1.094 | 4.12 |
| 88) | TM | Benzo(k)fluoranthen | 1.284 | 1.207 | 1.108 | 1.123 | 1.108 | 1.077 | 1.140 | 6.75 |
| 89) | TCM | Benzo(a)pyrene | 1.182 | 1.194 | 1.066 | 1.081 | 1.106 | 1.081 | 1.112 | 4.78 |
| 90) | TM | Indeno(1,2,3-cd)Pyr | 1.132 | 0.800 | 0.934 | 0.951 | 0.965 | 0.953 | 0.958 | 10.10 |
| 91) | TM | Dibenz(a,h)anthrace | 0.961 | 0.868 | 0.944 | 0.946 | 0.954 | 0.947 | 0.937 | 3.35 |
| 92) | TM | Benzo(g,h,i)perylen | 0.946 | 0.829 | 0.907 | 0.875 | 0.908 | 0.869 | 0.887 | 4.19 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D  Vial: 6
Acq On : 9 Jul 2014 12:43 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.390 | 1.349 | 2.9 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.753 | 0.776 | -3.1 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.240 | 1.261 | -1.7 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.245 | 0.271 | -10.6 | 100 | 0.00 |
| 6 | TM | Aniline | 1.921 | 1.813 | 5.6 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.636 | 1.582 | 3.3 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.676 | 1.728 | -3.1 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.214 | 1.278 | -5.3 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.375 | 1.351 | 1.7 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.514 | 1.470 | 2.9 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.523 | 1.451 | 4.7 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.446 | 1.420 | 1.8 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.113 | 1.150 | -3.3 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.280 | 1.271 | 0.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.204 | 1.219 | -1.2 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.809 | 1.771 | 2.1 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.977 | 0.928 | 5.0 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.629 | 0.633 | -0.6 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.275 | 1.288 | -1.0 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.865 | 0.859 | 0.7 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.413 | 0.418 | -1.2 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.373 | 0.369 | 1.1 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.673 | 0.664 | 1.3 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.201 | 0.199 | 1.0 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.381 | 0.392 | -2.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.375 | 0.372 | 0.8 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.389 | 0.379 | 2.6 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.658 | 0.619 | 5.9 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.333 | 0.325 | 2.4 | 100 | 0.00 |
| 32 | TM | Naphthalene | 0.977 | 0.944 | 3.4 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.413 | 0.411 | 0.5 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.194 | 0.187 | 3.6 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.298 | 0.308 | -3.4 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.107 | 0.111 | -3.7 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.696 | 0.675 | 3.0 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.643 | 0.632 | 1.7 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D  Vial: 6
Acq On : 9 Jul 2014 12:43 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 0.222 | 0.256 | -15.3 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.361 | 0.363 | -0.6 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.381 | 0.395 | -3.7 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.211 | 1.207 | 0.3 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.352 | 1.341 | 0.8 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.083 | 1.039 | 4.1 | 100 | 0.00 |
| 46 | TM | 2-Nitroaniline | 0.311 | 0.314 | -1.0 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.640 | 1.615 | 1.5 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.199 | 1.186 | 1.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.291 | 0.296 | -1.7 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.037 | 1.038 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.309 | 0.306 | 1.0 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.164 | 0.157 | 4.3 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.516 | 1.466 | 3.3 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.390 | 0.399 | -2.3 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.215 | 0.211 | 1.9 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.243 | 1.219 | 1.9 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.610 | 0.595 | 2.5 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.181 | 1.164 | 1.4 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.317 | 0.0 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.134 | 0.138 | -3.0 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.164 | 0.169 | -3.0 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.756 | 0.743 | 1.7 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.546 | 0.526 | 3.7 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.208 | 0.199 | 4.3 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 68 | TM | Hexachlorobenzene | 0.214 | 0.210 | 1.9 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.088 | 0.095 | -8.0 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.143 | 0.141 | 1.4 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.014 | 0.996 | 1.8 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.095 | 1.051 | 4.0 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.045 | 1.054 | -0.9 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.287 | 1.330 | -3.3 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.169 | 1.204 | -3.0 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.503 | 0.526 | -4.6 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.295 | 1.272 | 1.8 | 100 | 0.00 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D  Vial: 6
Acq On : 9 Jul 2014 12:43 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 0.870 | 0.850 | 2.3 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.671 | 0.652 | 2.8 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.422 | 0.414 | 1.9 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.239 | 1.217 | 1.8 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.177 | 1.153 | 2.0 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.886 | 0.894 | -0.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 1.533 | 1.502 | 2.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.094 | 1.080 | 1.3 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.140 | 1.123 | 1.5 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.112 | 1.081 | 2.8 | 100 | 0.00 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 0.958 | 0.951 | 0.7 | 100 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 0.937 | 0.946 | -1.0 | 100 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 0.887 | 0.875 | 1.4 | 100 | 0.00 |

(#) = Out of Range  SPCC's out = 0  CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 212266 **Prep WorkFlow:** OrgExtS(14) **Status:** Prepped
**Team:** Semivoa GCMS/SGOLBERG **Prep Method:** EPA 3541 **Prep Date/Time:** 7/7/14 12:40 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1407691-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate | 1.0000 mL/72216 | |
| 2 | RQ1407691-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate | 1.0000 mL/71908; 1.0000 mL/72216; 1.0000 mL/72016 | |
| 3 | RQ1407691-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sulfate | 1.0000 mL/72016; 1.0000 mL/71908; 1.0000 mL/72216 | |
| 4 | R1404907-002RE | S1-14-6-2.0'-2.5' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | gray-brown silt with gravel | 1.0000 mL/72216 | filtered 7/10 II |
| 5 | R1404907-003RE | S1-14-6-0.0'-5.0' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | gray-brown silt with gravel | 1.0000 mL/72216 | filtered |
| 6 | R1404907-004RE | S1-14-8-2.0'-2.5' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | gray-brown silt with gravel | 1.0000 mL/72216 | filtered |
| 7 | R1404907-008RE | S1-14-QAQC-01-DUP | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | gray-brown silt with gravel | 1.0000 mL/72216 | filtered |
| 8 | R1405032-002 | 1406281021 200-SB-10 16'-18') | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | reddish-brown sand and gravel | 1.0000 mL/72216 | III 7/16 STV |
| 9 | RQ1407691-04 | R1405032-002 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | reddish-brown sand and gravel | 1.0000 mL/71908; 1.0000 mL/72216; 1.0000 mL/72016 | |
| 10 | RQ1407691-05 | R1405032-002 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | reddish-brown sand and gravel | 1.0000 mL/72216; 1.0000 mL/71908; 1.0000 mL/72016 | |
| 11 | R1405032-005 | 1406281508 200-SB-10 36'-38') | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | reddish-brown sand and gravel | 1.0000 mL/72216 | |
| 12 | R1405032-008 | 1406281203 200-SB-10 26'-28') | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | reddish-brown sand and gravel | 1.0000 mL/72216 | |
| 13 | R1405032-011 | 1406301548 200-SB-09 | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | reddish-brown sand and gravel | 1.0000 mL/72216 | |

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 71908 | Logbook Ref: | | Expires On: | 10/31/2014 | Lot #: | Lc02739 |
| Name: | OLM/SOM additionals Spike 100ppm | Inventory ID | 72016 | Logbook Ref: | | Expires On: | 09/01/2014 | | |
| Name: | 8270 Soil Surrogate 100-200ppm | Inventory ID | 72216 | Logbook Ref: | 8270 Soil Surrogate | Expires On: | 01/07/2015 | | |

## Preparation Materials

Eppendorf Pipette Repeater EXT #15 (67588) 2mL Graduated Vials (72060) 50:50 Dichloromethane:Acetone (72114)
Prepared Sodium Sulfate (72189)
Na2SO4

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
|---|---|---|---|---|---|
| Started: | 7/7/14 12:40 | Started: | 7/7/14 17:50 | Started: | 7/7/14 20:16 |
| Finished: | 7/7/14 17:30 | Finished: | 7/7/14 18:35 | Finished: | 7/7/14 20:16 |
| By: | SGOLBERG | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

# *Preparation Information Benchsheet*

**Prep Run#:** 212266
**Team:** Semivoa GCMS/SGOLBERG

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 7/7/14 12:40 PM

Comments:

Reviewed By: Meg Date: 7/8 Spike Witness: BALLGEIER Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

10 µL 4000 RPM 1STD to 1.0mL
#70461

5973-A



LOG BOOK #

7/9/14

| | | | | | |
|---|---|---|---|---|---|
| | | Tune | 50ng VFTPP Tune #706B | CZ3T4 | Y 10:03AM |
| | 1 | 100 | | 75 | — |
| | 2 | 13IC | | 76 | Ym |
| 72421 | 3 | SSTD 005 | 82700709.m | 77 | YS |
| 122 | 4 | 10 | | 78 | YS |
| 123 | 5 | 50 | | 79 | YS |
| 124 | 6 | 80 | | 80 | YS |
| 125 | 7 | 100 | | 81 | YS |
| 126 | 8 | 120 | | 82 | YS |
| 127 | 9 | 160 | | 83 | YS |
| 128 | 10 | TCV #1 | | 84 | YC |
| 129 | 11 | 2 | | 85 | YC |
| 67545 | 12 | 3 | | 86 | YC |
| | 13 | [redacted] | R Q1407691-01 13IC 82701CLL 7/7/14 SoiP | 87 | Ym |
| | 14 | | -02 ULL | 88 | YQ |
| | 15 | | -03 LSD | 89 | YQ |
| | 16 | 4907 | -002 Re-ex | 90 | Y Su# 4.5 ↓ |
| | 17 | | -003 | 91 | Y Su# 4.5 ↓ |
| | 18 | | -004 | 92 | Y Su# 3.45 ↓ |
| | 19 | | -008 | 93 | Y Su# 4 ↓ |
| | 20 | [redacted] | R 5032 -002 82701BEHP | 94 | Y |
| | 21 | | -002ms R67691-04 | 95 | YQ Su# 3.5 ↓ |
| | 22 | | -002msD -05 | 96 | YQ |
| | 23 | | -005 | 97 | Y |
| | 24 | | -008 | 98 | Y |
| | 25 | | -011 | 99 | Y |
| | 26 | [redacted] | R 4998 -012msD R67598-05 | 400 | Y |
| | 27 | | -013 CZ | 401 | Y 10:02pm |

Rm# 401079

[redacted]

July 31, 2014

Service Request No: R1405137

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 8, 2014. For your reference, these analyses have been assigned our service request number **R1405137**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



ADDRESS 1565 Jefferson Rd, Building 300, Suite 360, Rochester, NY 14623 PHONE 585-288-5380 | FAX 585-288-8475
ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental | www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Water/Soil | **Date Received:** | 07/08/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 07/01/14 and received on 07/08/14 at a cooler temperature of 1.6°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

**Inorganics**

Soil samples were analyzed for pH by method 9045D from SW-846.

Site specific QC was not requested on these samples.

No other analytical or QC issues were encountered.

**Volatile Organics**

Soil and water samples were analyzed for a site list of Volatile Organics by Method 5030/5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated. The 5035 vials were not frozen within 48 hours of collection. The client was notified and the samples analyzed.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable except Dichloromethane was outside limits high on the 07/11/14 LCS/LCSD and has been flagged with an "*". No data was affected.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination except for low level detections of Acetone and Dichloromethane on the 07/11/14 blank. All affected data has been flagged with a "B".

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil and water samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

Due to an instrument issue with the soil extractors, the samples could not be extracted within the 14 day holding time as noted by the "*". The client was notified and the samples were extracted as soon as the extractors were fixed.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination except for a low level detection on the 07/08/14 blank for Di-n-butylphthalate. All affected data has been flagged with a "B".

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405137

| Lab ID | Client ID |
|---|---|
| R1405137-001 | 1407011240 200-SB-11 |
| R1405137-002 | 1407011355 200-SB-11 |
| R1405137-003 | 1407011410 200-SB-11 8-10' |
| R1405137-004 | 1407011600 200-SB-11 8-10' |
| R1405137-005 | 1407011358 200-SB-11 |
| R1405137-006 | 1407011416 200-SB-11 8-10' |
| R1405137-007 | 1407011605 200-SB-11 8-10' |
| R1405137-008 | 1407011413 200-SB-11 8-10' |
| R1405137-009 | 1407011606 200-SB-11 8-10' |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/ 8/14 |
| | | **Date Analyzed:** | 7/10/14 12:16 |
| **Sample Name:** | 1407011240 200-SB-11 | **Units:** | µg/L |
| **Lab Code:** | R1405137-001 | **Basis:** | NA |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401015 |
| **Data File Name:** | I:\ACQUDATA\MSVOA12\DATA\071014\M7273.D\ | **Instrument Name:** | R-MS-12 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 85-122 | 7/10/14 12:16 | |
| Dibromofluoromethane | 105 | 89-119 | 7/10/14 12:16 | |
| Toluene-d8 | 96 | 87-121 | 7/10/14 12:16 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011240 200-SB-11 | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-001 | **Date Received:** | 7/8/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | KRUEST |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/ 8/14 |
| | | **Date Analyzed:** | 7/10/14 12:48 |
| **Sample Name:** | 1407011355 200-SB-11 | **Units:** | µg/L |
| **Lab Code:** | R1405137-002 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401015 |
| **Data File Name:** | I:\ACQUDATA\MSVOA12\DATA\071014\M7274.D\ | **Instrument Name:** | R-MS-12 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 85-122 | 7/10/14 12:48 | |
| Dibromofluoromethane | 105 | 89-119 | 7/10/14 12:48 | |
| Toluene-d8 | 98 | 87-121 | 7/10/14 12:48 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011355 200-SB-11 | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-002 | **Date Received:** | 7/8/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | KRUEST |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| **Sample Name:** | 1407011410 200-SB-11 8-10' | | |
| **Lab Code:** | R1405137-003 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.9** | | Percent | 1.0 | 1 | NA | 7/10/14 10:47 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| | | **Date Analyzed:** | 7/11/14 15:30 |
| **Sample Name:** | 1407011410 200-SB-11 8-10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405137-003 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.9 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9791.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.05 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.3 | 0.78 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.3 | 0.78 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.3 | 1.4 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.3 | 1.4 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.3 | 0.65 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.3 | 1.5 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.3 | 2.5 | |
| 67-63-0 | Isopropanol | ND | U | 110 | 30 | |
| 67-64-1 | Acetone | ND | U | 5.3 | 3.0 | |
| 71-43-2 | Benzene | ND | U | 5.3 | 0.31 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.3 | 0.65 | |
| 75-25-2 | Bromoform | ND | U | 5.3 | 0.99 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.3 | 0.31 | |
| 67-66-3 | Chloroform | ND | U | 5.3 | 1.4 | |
| 74-87-3 | Chloromethane | ND | U | 5.3 | 0.43 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.3 | 0.78 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.3 | 1.6 | |
| 75-09-2 | Dichloromethane | ND | U | 5.3 | 0.61 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.3 | 0.25 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.3 | 1.0 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.3 | 0.94 | |
| 108-88-3 | Toluene | ND | U | 5.3 | 1.1 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.3 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 11 | 1.2 | |
| 95-47-6 | o-Xylene | ND | U | 5.3 | 0.51 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.3 | 1.5 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 7/11/14 15:30 | |
| Dibromofluoromethane | 98 | 63-138 | 7/11/14 15:30 | |
| Toluene-d8 | 98 | 66-138 | 7/11/14 15:30 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137

**Sample Name:** 1407011410 200-SB-11 8-10'
**Lab Code:** R1405137-003
**Matrix:** Soil

**Date Collected:** 7/1/14
**Date Received:** 7/8/14

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8260C | | TWALTON |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| **Sample Name:** | 1407011600 200-SB-11 8-10' | | |
| **Lab Code:** | R1405137-004 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.8** | | Percent | 1.0 | 1 | NA | 7/10/14 10:47 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| | | **Date Analyzed:** | 7/11/14 16:08 |
| **Sample Name:** | 1407011600 200-SB-11 8-10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405137-004 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.8 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9792.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.1 | 0.75 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.1 | 0.75 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.1 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.1 | 1.4 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.1 | 0.63 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.1 | 1.5 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.1 | 2.4 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 29 | |
| 67-64-1 | Acetone | **3.9** | BJ | 5.1 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.1 | 0.30 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.1 | 0.63 | |
| 75-25-2 | Bromoform | ND | U | 5.1 | 0.96 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.1 | 0.30 | |
| 67-66-3 | Chloroform | ND | U | 5.1 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.1 | 0.41 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.1 | 0.75 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.1 | 1.6 | |
| 75-09-2 | Dichloromethane | ND | U | 5.1 | 0.59 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.1 | 0.24 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.1 | 0.97 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.1 | 0.90 | |
| 108-88-3 | Toluene | ND | U | 5.1 | 1.1 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.1 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.2 | |
| 95-47-6 | o-Xylene | ND | U | 5.1 | 0.50 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.1 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 7/11/14 16:08 | |
| Dibromofluoromethane | 99 | 63-138 | 7/11/14 16:08 | |
| Toluene-d8 | 98 | 66-138 | 7/11/14 16:08 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011600 200-SB-11 8-10' | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-004 | **Date Received:** | 7/8/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8260C | | TWALTON |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/ 8/14 |
| | | **Date Extracted:** | 7/8/14 |
| | | **Date Analyzed:** | 7/8/14 16:48 |
| **Sample Name:** | 1407011358 200-SB-11 | **Units:** | µg/L |
| **Lab Code:** | R1405137-005 | **Basis:** | NA |

### Low Level Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 400788 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 212477 |
| **Data File Name:** | I:\ACQUDATA\5973C\DATA\070814\BL390.D\ | **Instrument Name:** | R-MS-53 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | **0.94** | J | 4.7 | 0.65 | |
| 84-74-2 | Di-n-butyl Phthalate | **0.43** | BJ | 4.7 | 0.050 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 86 | 27-133 | 7/8/14 16:48 | |
| Nitrobenzene-d5 | 96 | 31-167 | 7/8/14 16:48 | |
| Terphenyl-d14 | 84 | 38-166 | 7/8/14 16:48 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011358 200-SB-11 | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-005 | **Date Received:** | 7/8/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8270D | DMURPHY | JWU |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| **Sample Name:** | 1407011416 200-SB-11 8-10' | | |
| **Lab Code:** | R1405137-006 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.76 | | pH Units | | 1 | NA | 7/14/14 13:20 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011416 200-SB-11 8-10' | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-006 | **Date Received:** | 7/8/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| **Sample Name:** | 1407011605 200-SB-11 8-10' | | |
| **Lab Code:** | R1405137-007 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.97 | | pH Units | | 1 | NA | 7/14/14 13:20 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011605 200-SB-11 8-10' | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-007 | **Date Received:** | 7/8/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| **Sample Name:** | 1407011413 200-SB-11 8-10' | | |
| **Lab Code:** | R1405137-008 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.9** | | Percent | 1.0 | 1 | NA | 7/10/14 10:47 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 14:04 |
| **Sample Name:** | 1407011413 200-SB-11 8-10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405137-008 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.9 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV210.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 44 | * |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 52 | * |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 63 | 47-126 | 7/23/14 14:04 | |
| Nitrobenzene-d5 | 56 | 39-136 | 7/23/14 14:04 | |
| p-Terphenyl-d14 | 58 | 35-152 | 7/23/14 14:04 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011413 200-SB-11 8-10' | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-008 | **Date Received:** | 7/8/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| **Sample Name:** | 1407011606 200-SB-11 8-10' | | |
| **Lab Code:** | R1405137-009 | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.8** | | Percent | 1.0 | 1 | NA | 7/10/14 10:47 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 1/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/ 8/14 |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 14:31 |
| **Sample Name:** | 1407011606 200-SB-11 8-10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405137-009 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.8 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV211.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | * |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 52 | * |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 86 | 47-126 | 7/23/14 14:31 | |
| Nitrobenzene-d5 | 73 | 39-136 | 7/23/14 14:31 | |
| p-Terphenyl-d14 | 77 | 35-152 | 7/23/14 14:31 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407011606 200-SB-11 8-10' | **Date Collected:** | 7/1/14 |
| **Lab Code:** | R1405137-009 | **Date Received:** | 7/8/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405137-MB | **Basis:** | As Received |

**General Chemistry Parameters**

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | ND | U | Percent | 1.0 | 1 | NA | 7/10/14 10:47 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/10/14 11:44 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1407896-04 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401015 |
| **Data File Name:** | I:\ACQUDATA\MSVOA12\DATA\071014\M7272.D\ | **Instrument Name:** | R-MS-12 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 85-122 | 7/10/14 11:44 | |
| Dibromofluoromethane | 104 | 89-119 | 7/10/14 11:44 | |
| Toluene-d8 | 100 | 87-121 | 7/10/14 11:44 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/11/14 14:52 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408043-05 | **Basis:** | Dry |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401474 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9790.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | **3.6** | J | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | **0.64** | J | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 7/11/14 14:52 | |
| Dibromofluoromethane | 101 | 63-138 | 7/11/14 14:52 | |
| Toluene-d8 | 100 | 66-138 | 7/11/14 14:52 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Extracted:** | 7/8/14 |
| | | **Date Analyzed:** | 7/8/14 14:06 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1407726-04 | **Basis:** | NA |

### Low Level Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 400788 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 212477 |
| **Data File Name:** | I:\ACQUDATA\5973C\DATA\070814\BL386.D\ | **Instrument Name:** | R-MS-53 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 5.0 | 0.65 | |
| 84-74-2 | Di-n-butyl Phthalate | **0.22** | J | 5.0 | 0.050 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 94 | 27-133 | 7/8/14 14:06 | |
| Nitrobenzene-d5 | 94 | 31-167 | 7/8/14 14:06 | |
| Terphenyl-d14 | 104 | 38-166 | 7/8/14 14:06 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 11:25 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408508-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV204.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 75 | 47-126 | 7/23/14 11:25 | |
| Nitrobenzene-d5 | 66 | 39-136 | 7/23/14 11:25 | |
| p-Terphenyl-d14 | 73 | 35-152 | 7/23/14 11:25 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405137
**Date Analyzed:** 7/10/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/L
**Basis:** NA

**Analysis Lot:** 401015

| Analyte Name | Lab Control Sample RQ1407896-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 20.4 | 20.0 | 102 | 71 - 123 |
| 1,1,2-Trichloroethane | 19.2 | 20.0 | 96 | 79 - 117 |
| 1,1,2-Trichlorotrifluoroethane | 20.6 | 20.0 | 103 | 64 - 136 |
| 1,1-Dichloroethene (1,1-DCE) | 20.8 | 20.0 | 104 | 74 - 135 |
| 1,2-Dichloroethane | 21.3 | 20.0 | 106 | 72 - 130 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 20.0 | 20.0 | 100 | 62 - 138 |
| 2-Butanone (MEK) | 19.8 | 20.0 | 99 | 66 - 129 |
| Isopropanol | 419 | 400 | 105 | 57 - 137 |
| Acetone | 18.4 | 20.0 | 92 | 51 - 146 |
| Benzene | 19.7 | 20.0 | 98 | 76 - 118 |
| Bromodichloromethane | 20.0 | 20.0 | 100 | 79 - 122 |
| Bromoform | 16.5 | 20.0 | 82 | 65 - 138 |
| Chlorobenzene | 19.0 | 20.0 | 95 | 80 - 121 |
| Chloroform | 20.9 | 20.0 | 105 | 76 - 120 |
| Chloromethane | 19.5 | 20.0 | 98 | 64 - 140 |
| Dibromochloromethane | 18.7 | 20.0 | 94 | 79 - 125 |
| Dichlorofluoromethane (CFC 21) | 16.7 | 20.0 | 84 | 79 - 144 |
| Dichloromethane | 17.8 | 20.0 | 89 | 73 - 122 |
| Ethylbenzene | 17.6 | 20.0 | 88 | 76 - 120 |
| Methyl tert-Butyl Ether | 20.9 | 20.0 | 105 | 73 - 131 |
| Tetrachloroethene (PCE) | 19.3 | 20.0 | 96 | 69 - 124 |
| Toluene | 19.2 | 20.0 | 96 | 77 - 120 |
| Trichloroethene (TCE) | 17.9 | 20.0 | 90 | 76 - 123 |
| m,p-Xylenes | 37.7 | 40.0 | 94 | 78 - 123 |
| o-Xylene | 19.0 | 20.0 | 95 | 77 - 131 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 24.2 | 20.0 | 121 | 65 - 143 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405137
**Date Analyzed:** 7/11/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 401474

| | Lab Control Sample RQ1408043-03 | | | | Duplicate Lab Control Sample RQ1408043-04 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | | **Result** | **Spike Amount** | **% Rec** | | **% Rec Limits** | **RPD** | **RPD Limit** |
| 1,1,1-Trichloroethane (TCA) | 19.4 | 20.0 | 97 | | 17.8 | 20.0 | 89 | | 64 - 127 | 9 | 30 |
| 1,1,2-Trichloroethane | 19.4 | 20.0 | 97 | | 19.9 | 20.0 | 99 | | 76 - 123 | 2 | 30 |
| 1,1,2-Trichlorotrifluoroethane | 21.3 | 20.0 | 106 | | 19.2 | 20.0 | 96 | | 59 - 146 | 10 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | 23.3 | 20.0 | 116 | | 22.3 | 20.0 | 112 | | 75 - 151 | 4 | 30 |
| 1,2-Dichloroethane | 19.8 | 20.0 | 99 | | 19.4 | 20.0 | 97 | | 66 - 123 | 2 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 20.2 | 20.0 | 101 | | 19.1 | 20.0 | 95 | | 61 - 138 | 6 | 30 |
| 2-Butanone (MEK) | 21.8 | 20.0 | 109 | | 20.9 | 20.0 | 105 | | 62 - 128 | 4 | 30 |
| Isopropanol | 380 | 400 | 95 | | 388 | 400 | 97 | | 62 - 142 | 2 | 30 |
| Acetone | 22.5 | 20.0 | 112 | | 21.5 | 20.0 | 107 | | 53 - 143 | 5 | 30 |
| Benzene | 20.5 | 20.0 | 103 | | 19.7 | 20.0 | 99 | | 74 - 123 | 4 | 30 |
| Bromodichloromethane | 20.5 | 20.0 | 102 | | 19.8 | 20.0 | 99 | | 77 - 127 | 3 | 30 |
| Bromoform | 19.6 | 20.0 | 98 | | 18.9 | 20.0 | 95 | | 65 - 133 | 3 | 30 |
| Chlorobenzene | 19.9 | 20.0 | 100 | | 19.7 | 20.0 | 98 | | 77 - 124 | 2 | 30 |
| Chloroform | 19.7 | 20.0 | 99 | | 18.9 | 20.0 | 94 | | 73 - 125 | 5 | 30 |
| Chloromethane | 21.8 | 20.0 | 109 | | 20.7 | 20.0 | 103 | | 56 - 154 | 6 | 30 |
| Dibromochloromethane | 19.3 | 20.0 | 97 | | 19.7 | 20.0 | 98 | | 77 - 124 | 1 | 30 |
| Dichlorofluoromethane (CFC 21) | 16.3 | 20.0 | 81 | | 15.9 | 20.0 | 80 | | 79 - 142 | 1 | 30 |
| Dichloromethane | 26.8 | 20.0 | 134 | * | 25.7 | 20.0 | 128 | * | 77 - 126 | 5 | 30 |
| Ethylbenzene | 18.0 | 20.0 | 90 | | 17.4 | 20.0 | 87 | | 73 - 123 | 3 | 30 |
| Methyl tert-Butyl Ether | 20.8 | 20.0 | 104 | | 21.0 | 20.0 | 105 | | 72 - 131 | <1 | 30 |
| Tetrachloroethene (PCE) | 20.2 | 20.0 | 101 | | 19.1 | 20.0 | 96 | | 65 - 133 | 5 | 30 |
| Toluene | 19.7 | 20.0 | 98 | | 19.2 | 20.0 | 96 | | 72 - 127 | 2 | 30 |
| Trichloroethene (TCE) | 20.2 | 20.0 | 101 | | 19.1 | 20.0 | 96 | | 72 - 129 | 5 | 30 |
| m,p-Xylenes | 39.5 | 40.0 | 99 | | 37.6 | 40.0 | 94 | | 77 - 125 | 5 | 30 |
| o-Xylene | 19.5 | 20.0 | 97 | | 18.9 | 20.0 | 94 | | 75 - 124 | 3 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.3 | 20.0 | 116 | | 22.3 | 20.0 | 112 | | 56 - 154 | 4 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405137
**Date Analyzed:** 7/ 8/14

**Lab Control Sample Summary**
**Low Level Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3510C

**Units:** µg/L
**Basis:** NA

**Extraction Lot:** 212477

| | Lab Control Sample RQ1407726-05 | | | Duplicate Lab Control Sample RQ1407726-06 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 6.00 | 6.00 | 100 | 5.66 | 6.00 | 94 | 45 - 156 | 6 | 30 |
| Di-n-butyl Phthalate | 7.53 | 6.00 | 126 | 7.19 | 6.00 | 120 | 59 - 152 | 5 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405137
**Date Analyzed:** 7/23/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 213008

| | Lab Control Sample RQ1408508-02 | | | Duplicate Lab Control Sample RQ1408508-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2710 | 3330 | 81 | 2940 | 3330 | 88 | 50 - 142 | 8 | 30 |
| Di-n-butyl Phthalate | 2620 | 3330 | 79 | 2650 | 3330 | 80 | 36 - 164 | 1 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

# WSTF CHAIN OF CUSTODY RECORD

Date 7-7-14



Laboratory / PO # ~~[illegible]~~ 14EC009B

Address shipping questions to:

Attn: ✓Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ~~(COC)~~ | Analytes / Method: VOC | SVOC | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407011240 | 200-SB-11 | 3 | A | X | | | | | | | | |
| 1407011355 | " | 3 | A | X | | | | | | | | |
| 1407011410 | " 8-10' | 3 | S | X | | | | | | | | |
| 1407011600 | " | 3 | S | X | | | | | | | | |
| 1407011358 | " | 2 | A | | X | | | | | | | |
| 1407011416 | " 8-10' | 1 | S | | ~~X~~ | X | | | | | | |
| 1407011605 | " | 1 | S | | ~~X~~ | X | | | | | | |
| 1407011413 | " 8-10' | 1 | S | | X | | | | | | | |
| 1407011606 | " | 1 | S | | X | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-7-14 / 1100HRS | [signature] | 7/8/14 0920 |
| | | | |
| | | | |

R1405137 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number 14-5137

Cooler received on 7/8/14 by: JS COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | Were Custody seals on outside of cooler? | Y N | | 5a | Perchlorate samples have required headspace? | Y N NA |
| 2 | Custody papers properly completed (ink, signed)? | Y N | | 5b | Did VOA vials, Alk,or Sulfide have sig* bubbles? | Y N NA |
| 3 | Did all bottles arrive in good condition (unbroken)? | Y N | | 6 | Where did the bottles originate? | ALS/ROC CLIENT |
| 4 | Circle: Wet Ice Dry Ice Gel packs present? | Y N | | 7 | Soil VOA received as: | Bulk Encore 5035set NA |

8. Temperature Readings Date: 7/8/14 Time: 0955 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 1.8 | | | | | | |
| Correction Factor (°C) | -0.2 | | | | | | |
| Corrected Temp (°C) | 1.6 | | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

**If out of Temperature, note packing/ice condition:** _____ Ice melted Poorly Packed Same Day Rule

**&Client Approval to Run Samples:** _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: Rm by JRJ on 7/8/14 at 0955
5035 samples placed in storage location: N-05 by JS on 7/8/14 at 0955

PC Secondary Review: JMJ 7/8/14

Cooler Breakdown: Date: 7/8/14 Time: 1912 by: JS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: other L

Other Comments:

PC Secondary Review: JMJ 7/25/14 *significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Analyzed:** | 7/10/14 11:44 |
| **Sample Matrix:** | Water | | |

## Method Blank Summary
## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Instrument ID:** | R-MS-12 |
| **Lab Code:** | RQ1407896-04 | **File ID:** | I:\ACQUDATA\MSVOA12\DATA\071014\M7272.D\ |
| **Analytical Method:** | 8260C | | |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1407896-03 | I:\ACQUDATA\MSVOA12\DATA\071014\M7270.D\ | 7/10/14 10:39 |
| 1407011240 200-SB-11 | R1405137-001 | I:\ACQUDATA\MSVOA12\DATA\071014\M7273.D\ | 7/10/14 12:16 |
| 1407011355 200-SB-11 | R1405137-002 | I:\ACQUDATA\MSVOA12\DATA\071014\M7274.D\ | 7/10/14 12:48 |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405137 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Analyzed:** | 7/11/14 14:52 |
| **Sample Matrix:** | Soil | | |

**Method Blank Summary**
**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Instrument ID:** | R-MS-07 |
| **Lab Code:** | RQ1408043-05 | **File ID:** | I:\ACQUDATA\MSVOA7\DATA\071114\K9790.D\ |
| **Analytical Method:** | 8260C | | |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408043-03 | I:\ACQUDATA\MSVOA7\DATA\071114\K9786.D\ | 7/11/14 12:22 |
| Duplicate Lab Control Sample | RQ1408043-04 | I:\ACQUDATA\MSVOA7\DATA\071114\K9787.D\ | 7/11/14 13:00 |
| 1407011410 200-SB-11 8-10' | R1405137-003 | I:\ACQUDATA\MSVOA7\DATA\071114\K9791.D\ | 7/11/14 15:30 |
| 1407011600 200-SB-11 8-10' | R1405137-004 | I:\ACQUDATA\MSVOA7\DATA\071114\K9792.D\ | 7/11/14 16:08 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Date Analyzed:** 7/10/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA12\DATA\071014\M7269.D\

**Calibration Date:** 6/13/14
**Calibration ID:** RC1400048
**Analysis Lot:** 401015
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 53.1 | 0.7425 | 0.7885 | 6.2 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.4 | 0.2285 | 0.2212 | -3.2 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 52.1 | 0.4199 | 0.4372 | 4.1 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 49.0 | 0.3927 | 0.3849 | -2.0 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 54.0 | 0.3640 | 0.3931 | 8.0 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 51.9 | 0.6622 | 0.6869 | 3.7 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 50.5 | 0.1412 | 0.1427 | 1.1 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 1050 | 0.01880 | 0.01967 | 4.6 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 44.1 | 0.09881 | 0.08714 | -11.8 | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 51.0 | 1.285 | 1.312 | 2.1 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 51.3 | 0.3973 | 0.4077 | 2.6 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 42.9 | 0.3115 | 0.2676 | -14.1 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 48.5 | 0.9545 | 0.9248 | -3.1 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 52.6 | 0.8431 | 0.8875 | 5.3 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 47.7 | 0.5810 | 0.5539 | -4.7 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 49.0 | 0.2867 | 0.2810 | -2.0 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 49.9 | 0.8818 | 0.8794 | -0.3 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 46.4 | 0.5147 | 0.4771 | -7.3 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 48.9 | 0.5238 | 0.5122 | -2.2 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 51.9 | 1.152 | 1.196 | 3.8 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 49.2 | 0.2709 | 0.2668 | -1.5 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 50.2 | 1.361 | 1.367 | 0.4 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 46.6 | 0.3273 | 0.3047 | -6.9 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 98.6 | 0.6427 | 0.6340 | -1.4 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 48.2 | 0.6461 | 0.6227 | -3.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 52.9 | 0.5809 | 0.6151 | 5.9 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 51.3 | 0.4652 | 0.4777 | 2.7 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 53.0 | 0.2865 | 0.3034 | 5.9 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 51.0 | 1.241 | 1.266 | 2.0 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Date Analyzed:** 7/11/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\071114\K9785.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 401474
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 47.7 | 0.7075 | 0.6753 | -4.6 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.3 | 0.3414 | 0.3296 | -3.4 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 53.8 | 0.4820 | 0.5190 | 7.7 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 52.5 | 0.4169 | 0.4373 | 4.9 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 47.8 | 0.4920 | 0.4704 | -4.4 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 49.7 | 0.8365 | 0.8308 | -0.7 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 44.4 | 0.7656 | 0.6801 | -11.2 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 986 | 0.08660 | 0.08536 | -1.4 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 38.6 | 0.6020 | 0.4651 | -22.7 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 51.9 | 1.440 | 1.495 | 3.8 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 50.1 | 0.4660 | 0.4670 | 0.2 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 49.7 | 0.2458 | 0.2445 | -0.5 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 50.0 | 0.9166 | 0.9170 | 0.0 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 47.1 | 1.049 | 0.9879 | -5.8 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 50.6 | 1.118 | 1.130 | 1.1 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 48.8 | 0.3859 | 0.3769 | -2.3 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 49.1 | 1.436 | 1.409 | -1.9 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 50.6 | 0.6951 | 0.7028 | 1.1 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 49.5 | 1.608 | 1.592 | -1.0 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 48.4 | 1.847 | 1.788 | -3.1 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 51.6 | 0.3262 | 0.3366 | 3.2 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 50.0 | 1.479 | 1.480 | 0.0 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 51.4 | 0.3311 | 0.3406 | 2.9 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 100 | 0.5809 | 0.5837 | 0.5 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 48.7 | 0.5852 | 0.5699 | -2.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 51.1 | 0.8761 | 0.8947 | 2.1 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 49.1 | 0.4853 | 0.4765 | -1.8 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 50.1 | 0.3338 | 0.3347 | 0.2 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 48.9 | 1.294 | 1.266 | -2.2 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.4833 | 07 | 50.000 | 0.4775 | 02 | 50.000 | 0.4893 | 04 | 50.000 | 0.4931 |
| 01 | 50.000 | 0.4940 | 03 | 50.000 | 0.4875 | 08 | 50.000 | 0.4756 | 05 | 50.000 | 0.4819 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 0.3361 | 06 | 50.000 | 0.3295 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |
| 04 | 50.000 | 0.3406 | 01 | 50.000 | 0.3368 | 03 | 50.000 | 0.3344 | 08 | 50.000 | 0.3299 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 | 50.000 | 1.289 | 03 | 50.000 | 1.291 | 01 | 50.000 | 1.307 | 04 | 50.000 | 1.306 |
| 02 | 50.000 | 1.305 | 07 | 50.000 | 1.289 | 06 | 50.000 | 1.276 | 05 | 50.000 | 1.291 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyte Name | Compound Type | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤20 | 1.294 | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\msvoa12\Data\061314\M6499.D | 6/13/14 14:37 | 02 | I:\ACQUDATA\msvoa12\Data\061314\M6500.D | 6/13/14 15:09 |
| 03 | I:\ACQUDATA\msvoa12\Data\061314\M6501.D | 6/13/14 15:42 | 04 | I:\ACQUDATA\msvoa12\Data\061314\M6502.D | 6/13/14 16:14 |
| 05 | I:\ACQUDATA\msvoa12\Data\061314\M6503.D | 6/13/14 16:46 | 06 | I:\ACQUDATA\msvoa12\Data\061314\M6504.D | 6/13/14 17:19 |
| 07 | I:\ACQUDATA\msvoa12\Data\061314\M6505.D | 6/13/14 17:51 | 08 | I:\ACQUDATA\msvoa12\Data\061314\M6506.D | 6/13/14 18:23 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.8400 | 02 | 1.000 | 0.7811 | 03 | 2.000 | 0.7033 | 04 | 5.000 | 0.7164 |
| 05 | 20.000 | 0.7341 | 06 | 50.000 | 0.7130 | 07 | 100.000 | 0.7383 | 08 | 200.000 | 0.7142 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2495 | 02 | 1.000 | 0.2274 | 03 | 2.000 | 0.2259 | 04 | 5.000 | 0.2146 |
| 05 | 20.000 | 0.2283 | 06 | 50.000 | 0.2282 | 07 | 100.000 | 0.2324 | 08 | 200.000 | 0.2219 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4232 | 02 | 1.000 | 0.4190 | 03 | 2.000 | 0.4185 | 04 | 5.000 | 0.4074 |
| 05 | 20.000 | 0.4226 | 06 | 50.000 | 0.4234 | 07 | 100.000 | 0.4310 | 08 | 200.000 | 0.4145 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5009 | 02 | 1.000 | 0.3821 | 03 | 2.000 | 0.3826 | 04 | 5.000 | 0.3610 |
| 05 | 20.000 | 0.3808 | 06 | 50.000 | 0.3670 | 07 | 100.000 | 0.3857 | 08 | 200.000 | 0.3818 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3818 | 02 | 1.000 | 0.3685 | 03 | 2.000 | 0.3686 | 04 | 5.000 | 0.3675 |
| 05 | 20.000 | 0.3660 | 06 | 50.000 | 0.3534 | 07 | 100.000 | 0.3616 | 08 | 200.000 | 0.3446 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.7197 | 02 | 1.000 | 0.6870 | 03 | 2.000 | 0.6695 | 04 | 5.000 | 0.6507 |
| 05 | 20.000 | 0.6188 | 06 | 50.000 | 0.6375 | 07 | 100.000 | 0.6621 | 08 | 200.000 | 0.6524 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 2.000 | 0.1170 | 04 | 5.000 | 0.1543 | 05 | 20.000 | 0.1497 | 06 | 50.000 | 0.1438 |
| 07 | 100.000 | 0.1408 | 08 | 200.000 | 0.1418 | | | | | | |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 20.000 | 0.01773 | 03 | 40.000 | 0.01797 | 04 | 100.000 | 0.01950 | 05 | 400.000 | 0.02033 |
| 06 | 1000.000 | 0.01938 | 07 | 2000.000 | 0.01891 | 08 | 4000.000 | 0.01777 | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 | 5.000 | 0.1005 | 05 | 20.000 | 0.09856 | 06 | 50.000 | 0.09745 | 07 | 100.000 | 0.09889 |
| 08 | 200.000 | 0.09867 | | | | | | | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.299 | 02 | 1.000 | 1.391 | 03 | 2.000 | 1.275 | 04 | 5.000 | 1.244 |
| 05 | 20.000 | 1.283 | 06 | 50.000 | 1.271 | 07 | 100.000 | 1.290 | 08 | 200.000 | 1.229 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4049 | 02 | 1.000 | 0.4235 | 03 | 2.000 | 0.3956 | 04 | 5.000 | 0.3912 |
| 05 | 20.000 | 0.3879 | 06 | 50.000 | 0.3921 | 07 | 100.000 | 0.3980 | 08 | 200.000 | 0.3850 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3326 | 02 | 1.000 | 0.2918 | 03 | 2.000 | 0.3115 | 04 | 5.000 | 0.2982 |
| 05 | 20.000 | 0.3071 | 06 | 50.000 | 0.3071 | 07 | 100.000 | 0.3194 | 08 | 200.000 | 0.3245 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.007 | 02 | 1.000 | 0.9796 | 03 | 2.000 | 0.9358 | 04 | 5.000 | 0.9386 |
| 05 | 20.000 | 0.9430 | 06 | 50.000 | 0.9445 | 07 | 100.000 | 0.9723 | 08 | 200.000 | 0.9149 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9668 | 02 | 1.000 | 0.8691 | 03 | 2.000 | 0.8379 | 04 | 5.000 | 0.8166 |
| 05 | 20.000 | 0.8347 | 06 | 50.000 | 0.8027 | 07 | 100.000 | 0.8201 | 08 | 200.000 | 0.7968 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5520 | 02 | 1.000 | 0.6137 | 03 | 2.000 | 0.5712 | 04 | 5.000 | 0.5457 |
| 05 | 20.000 | 0.6043 | 06 | 50.000 | 0.5781 | 07 | 100.000 | 0.5954 | 08 | 200.000 | 0.5879 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3049 | 02 | 1.000 | 0.2757 | 03 | 2.000 | 0.2533 | 04 | 5.000 | 0.2829 |
| 05 | 20.000 | 0.2905 | 06 | 50.000 | 0.2927 | 07 | 100.000 | 0.3011 | 08 | 200.000 | 0.2927 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9613 | 02 | 1.000 | 0.9717 | 03 | 2.000 | 0.9290 | 04 | 5.000 | 0.8554 |
| 05 | 20.000 | 0.8316 | 06 | 50.000 | 0.8384 | 07 | 100.000 | 0.8551 | 08 | 200.000 | 0.8118 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6919 | 02 | 1.000 | 0.5707 | 03 | 2.000 | 0.5025 | 04 | 5.000 | 0.4764 |
| 05 | 20.000 | 0.4732 | 06 | 50.000 | 0.4669 | 07 | 100.000 | 0.4734 | 08 | 200.000 | 0.4626 |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4995 | 02 | 1.000 | 0.5334 | 03 | 2.000 | 0.5167 | 04 | 5.000 | 0.5251 |
| 05 | 20.000 | 0.5183 | 06 | 50.000 | 0.5200 | 07 | 100.000 | 0.5484 | 08 | 200.000 | 0.5288 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.116 | 02 | 1.000 | 1.112 | 03 | 2.000 | 1.113 | 04 | 5.000 | 1.183 |
| 05 | 20.000 | 1.221 | 06 | 50.000 | 1.179 | 07 | 100.000 | 1.173 | 08 | 200.000 | 1.117 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2870 | 02 | 1.000 | 0.2674 | 03 | 2.000 | 0.2711 | 04 | 5.000 | 0.2539 |
| 05 | 20.000 | 0.2660 | 06 | 50.000 | 0.2658 | 07 | 100.000 | 0.2820 | 08 | 200.000 | 0.2739 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.407 | 02 | 1.000 | 1.409 | 03 | 2.000 | 1.384 | 04 | 5.000 | 1.363 |
| 05 | 20.000 | 1.366 | 06 | 50.000 | 1.349 | 07 | 100.000 | 1.368 | 08 | 200.000 | 1.242 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3248 | 02 | 1.000 | 0.3536 | 03 | 2.000 | 0.3395 | 04 | 5.000 | 0.3156 |
| 05 | 20.000 | 0.3214 | 06 | 50.000 | 0.3207 | 07 | 100.000 | 0.3281 | 08 | 200.000 | 0.3146 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6771 | 02 | 2.000 | 0.6179 | 03 | 4.000 | 0.6544 | 04 | 10.000 | 0.6366 |
| 05 | 40.000 | 0.6468 | 06 | 100.000 | 0.6410 | 07 | 200.000 | 0.6619 | 08 | 400.000 | 0.6063 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6651 | 02 | 1.000 | 0.6441 | 03 | 2.000 | 0.6407 | 04 | 5.000 | 0.6392 |
| 05 | 20.000 | 0.6310 | 06 | 50.000 | 0.6402 | 07 | 100.000 | 0.6681 | 08 | 200.000 | 0.6403 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5884 | 02 | 1.000 | 0.5671 | 03 | 2.000 | 0.5884 | 04 | 5.000 | 0.5918 |
| 05 | 20.000 | 0.5717 | 06 | 50.000 | 0.5819 | 07 | 100.000 | 0.5802 | 08 | 200.000 | 0.5779 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** I

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 50.000 | 0.4626 | 04 | 50.000 | 0.4618 | 06 | 50.000 | 0.4712 | 08 | 50.000 | 0.4740 |
| 01 | 50.000 | 0.4583 | 03 | 50.000 | 0.4568 | 05 | 50.000 | 0.4657 | 07 | 50.000 | 0.4715 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 50.000 | 0.2875 | 07 | 50.000 | 0.2869 | 04 | 50.000 | 0.2877 | 06 | 50.000 | 0.2870 |
| 08 | 50.000 | 0.2876 | 01 | 50.000 | 0.2858 | 03 | 50.000 | 0.2826 | 05 | 50.000 | 0.2866 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 1.233 | 03 | 50.000 | 1.231 | 01 | 50.000 | 1.240 | 08 | 50.000 | 1.251 |
| 06 | 50.000 | 1.244 | 04 | 50.000 | 1.238 | 02 | 50.000 | 1.239 | 07 | 50.000 | 1.252 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405137
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 6.2 | | ≤ 20 | 0.7425 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 4.4 | | ≤ 20 | 0.2285 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 1.7 | | ≤ 20 | 0.4199 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 11.3 | | ≤ 20 | 0.3927 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 3.1 | | ≤ 20 | 0.3640 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 4.7 | | ≤ 20 | 0.6622 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 9.2 | | ≤ 20 | 0.1412 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.4 | | ≤ 20 | 0.01880 | | |
| Acetone | TRG | Average RF | % RSD | 1.1 | | ≤ 20 | 0.09881 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 3.8 | | ≤ 20 | 1.285 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.1 | | ≤ 20 | 0.3973 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 4.3 | | ≤ 20 | 0.3115 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 3.1 | | ≤ 20 | 0.9545 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 6.5 | | ≤ 20 | 0.8431 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 4.1 | | ≤ 20 | 0.5810 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 5.7 | | ≤ 20 | 0.2867 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 7.1 | | ≤ 20 | 0.8818 | | |
| Dichloromethane | TRG | Average RF | % RSD | 15.5 | | ≤ 20 | 0.5147 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 2.7 | | ≤ 20 | 0.5238 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.7 | | ≤ 20 | 1.152 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 3.8 | | ≤ 20 | 0.2709 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 3.9 | | ≤ 20 | 1.361 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 4.0 | | ≤ 20 | 0.3273 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 3.6 | | ≤ 20 | 0.6427 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 2.0 | | ≤ 20 | 0.6461 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 1.5 | | ≤ 20 | 0.5809 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤ 20 | 0.4652 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 0.6 | | ≤ 20 | 0.2865 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.6 | | ≤ 20 | 1.241 | | |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low **Folder #:** R1405137 **Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 110413-3:50854 | | R1405137-003 | 39.99 | 35.22 | 5/14/2014 | J. Cushman | 4.77 | 1.05 | 7/1/2014 | Field | 7/11/2014 | T. Walton | |
| 110413-3:50873 | | R1405137-003 | 40.93 | 35.51 | 5/14/2014 | J. Cushman | 5.42 | 0.92 | 7/1/2014 | Field | 7/11/2014 | T. Walton | |
| 110413-3:50866 | | R1405137-004 | 40.74 | 35.60 | 5/14/2014 | J. Cushman | 5.14 | 0.97 | 7/1/2014 | Field | 7/11/2014 | T. Walton | |
| 110413-3:50881 | | R1405137-004 | 40.35 | 35.34 | 5/14/2014 | J. Cushman | 5.01 | 1.00 | 7/1/2014 | Field | 7/11/2014 | T. Walton | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium **Folder #:** R1405137 **Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10378 | | R1405137-003 | 41.66 | 36.31 | 4/28/2014 | J. Cushman | 5.35 | | 7/1/2014 | Field | 7/11/2014 | T. Walton | |
| 040714-3:10326 | | R1405137-004 | 41.57 | 36.35 | 4/28/2014 | J. Cushman | 5.22 | | 7/1/2014 | Field | 7/11/2014 | T. Walton | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

| | | |
|---|---|---|
| Analysis: 8260 waters | Analyst: K. Ruest | Tune Method: W061314 |
| Date: 7/10/14 | Data Path: j:\acqudata\msvoa 12\ 071014 | Run Method: ↓ |
| Instr. 12 | | LIMS Run#: 400880, 401015 (LL) |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BLK | | | | | | | | M7267 | | new 15/5L |
| 2 | TUNE (carbon 15/5L) | | RQ1407842-01 | Q7896-01 | | | | | M7268 | YT | (auto) 9:36 |
| 3 | CCV | | 02 | (LL) 02 | | | | | M7269 | YC | |
| 1 | LCS | | 03 | 03 | | | | | M7270 | Y(Q) | |
| 2 | VBLK | | — | — | | | | | M7271 | (N) | rpt c/o |
| 3 | ↓ | | ↓ 04 | ↓ 04 | | | | | M7272 | YB | |
| 1 | R1405137-001 | 1.0 | | [redacted] | 1513 | 3 | 1 | <2 | M7273 | Y | |
| 2 | ↓ 002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7274 | Y | |
| 3 | R1404997-024 | 500 | 1/500mls | [redacted] | 6642 | 4 | 1 | <2 | M7275 | (Y) | rpt 1000 |
| 4 | 025 | 5000 | ↓ → 5/50mls | | | | 1 | <2 | M7276 | Y | |
| 5 | 026 | 50 | 1/50mls | | | | 2 | <2 | M7277 | Y | |
| 6 | 005 | 25 | 2/50mls | | | | 2 | <2 | M7278 | Y | |
| 7 | 017 | 10 | 5/50mls | | | | 3 | <2 | M7279 | Y | |
| 8 | ↓ 024 | 1000 | 1/1000mls | ↓ | ↓ | ↓ | 2 | <2 | M7280 | (Y) | DL |
| 9 | BLK | | | | | | | — | M7281 | — | |
| 10 | R1405087-001 | 1.0 | | [redacted] | 9443 | 2 | 1 | <2 | M7282 | Y | |
| 11 | ↓ 002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7283 | Y | |
| 12 | R1404998-014 | 1.0 | | [redacted] | 6503 | 2 | 1 | <2 | M7284 | Y | |
| 13 | (LL) 010 ~~002~~ | 1.0 | | | | | 1 | <2 | M7285 | Y | |
| 14 | 004 | 1.0 | | | | | 1 | <2 | M7286 | Y | |
| 15 | 002 | 1.0 | | | | | 1 | <2 | M7287 | Y | |
| 16 | MS 002 | 1.0 | RQ1407842-05 | | | | 2 | <2 | M7288 | YQ | |
| 17 | MSD 002 | 1.0 | 06 | ↓ | ↓ | ↓ | 3 | <2 | M7289 | YQ | |
| 18 | BLK | | | | | | | — | M7290 | — | |

EOD
KR 7/10/14

All samples = 10 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary Ft : 72371
Primary OCL : 72130
Primary HBO : 72046 5ml → 50mls
Primary TB : 72049 = CCV
Primary HSL : 72085

200 Secondary Ft : 71581 - 5ml — 10.6ml
500 Secondary TB : 72050 (LL) — 4.2ml
Secondary HSL : 72064 50mls - 4.2ml = LCS
Secondary HBO : 71564 2ml
Secondary OCL : 72140

42ml vial = MS/D

Combined IS/Surr 500 : 72370
Surrogate :
Internal Std :

Analysis: 8260 Soils
Date: 7/11-14
Instr. MS#7

Analyst: T Walton
Data Path: j:\acqudata\msvoa7\071114

Tune Method: S052914
Run Method: S052914
LIMS Run#: 401474

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | | | | | | | | K9778 | — | |
| ↓ | | | | | | | | | ↓ | — | |
| 6 | ↓ | | | | | | | | K9783 | — | |
| 1 | Tune | | | | | | | | 84 | Y | RQ1408043 |
| 2 | CCV | | | | | | | | 85 | Y | Acetone ↓ |
| 3 | LCS | | | | | | | | 86 | Y | $MeCl_2$ ↑ |
| 4 | LCSD | | | | | | | | 87 | Y | $MeCl_2$ ↑ |
| 5 | MBlank | | | | | | | | 88 | N | |
| 6 | MBlank | | | | | | | | 89 | N | $MeCl_2$ ↓ |
| 7 | R1405269-003 | 1 | | [redacted] | | | | | 90 | Y | use alt 5035 Blank. |
| TW 7-11-14 1 | R1405137-003 | 1.05 | SN50854 | [redacted] | 11813 | T2 | 2 | NA | 91 | Y | |
| 2 | -004 | 1.00 | 50881 | ↓ | ↓ | ↓ | 2 | ↓ | 92 | Y | |
| 3 | R1405032-001 | 0.93 | 50875 | | | | 1 | | 93 | Y | |
| 4 | -004 | 1.04 | 10131 | | | | 1 | | 94 | Y | |
| 5 | -007 | 0.73 | 10122 | | | | 1 | | 95 | Y | |
| 6 | -010 | 0.93 | 50909 | ↓ | ↓ | ↓ | 1 | ↓ | 96 | Y | |

BW 07/18/14

adjusted $MeCl_2$ ion Ratios to id peak correctly + saved method TW 7-11-14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary HBO: 72046 5ul/5ml
Primary HSL: 72085 LCV
Primary TG: 72049
Primary FR+: 72371
Primary :

500 Secondary HBO: 71564 2ul/50ml
Secondary ASL: 72064
Secondary TG: 72050 LCS/DLCS.
200 Secondary FR+: 71581 5ul
Secondary :

Combined IS/Surr : 72076
Surrogate :
Internal Std :

Response Factor Report 5973C

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014
Response via : Initial Calibration

#53.63 R.R.

Calibration Files
0.1 =BK963.D 0.2 =BK964.D 0.5 =BK965.D 4.0=BK969 8.0=BK971
1.0 =BK966.D 2.0 =BK967.D 3.0 =BK968.D 5.0=BK970 10 = BK972

| | | Compound | 0.1 | 0.2 | 0.5 | 1.0 | 2.0 | 3.0 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichlorobenzen | ----------ISTD---------- | | | | | | | |
| 2) | T | 1,4'-Dioxane | | 0.718 | 0.635 | 0.571 | 0.554 | 0.556 | 0.581 | 10.10 |
| 3) | TM | Pyridine | | 0.939 | 1.063 | 1.117 | 1.203 | 1.231 | 1.200 | 11.35 |
| 4) | TM | N-Nitrosodimeth | 0.806 | 0.829 | 0.841 | 0.749 | 0.795 | 0.806 | 0.810 | 3.65 |
| 5) | S | SURR1,2-FLUOROP | 1.365 | 1.144 | 1.150 | 1.277 | 1.287 | 1.330 | 1.308 | 7.37 |
| 6) | TM | Benzaldehyde | | 0.457 | 0.411 | 0.383 | 0.398 | 0.397 | 0.405 | 5.39 |
| 7) | TM | Aniline | | | | | | | 0.000# | -1.00 |
| 8) | S | SURR2,PHENOL-D6 | 1.329 | 1.378 | 1.337 | 1.393 | 1.435 | 1.497 | 1.459 | 6.79 |
| 9) | TMC | Phenol | 1.306 | 1.389 | 1.458 | 1.441 | 1.472 | 1.542 | 1.491 | 6.67 |
| 10) | TM | bis(2-Clethyl)E | 1.233 | 1.265 | 1.269 | 1.253 | 1.283 | 1.305 | 1.290 | 2.98 |
| 11) | TM | 2-Chlorophenol | 1.218 | 1.189 | 1.241 | 1.254 | 1.314 | 1.361 | 1.321 | 7.06 |
| 12) | TM | 1,3-Diclbenzene | 1.562 | 1.462 | 1.569 | 1.508 | 1.534 | 1.588 | 1.561 | 3.16 |
| 13) | TMC | 1,4-Dichloroben | 1.598 | 1.526 | 1.573 | 1.575 | 1.582 | 1.602 | 1.612 | 3.36 |
| 14) | TM | 1,2-Diclbenzene | 1.395 | 1.476 | 1.527 | 1.461 | 1.470 | 1.519 | 1.504 | 3.61 |
| 15) | TM | Benzyl Alcohol | 0.830 | 0.846 | 0.930 | 0.900 | 0.899 | 0.905 | 0.882 | 4.09 |
| 16) | TM | 2,2'-oxybis(1-C | 1.699 | 1.518 | 1.524 | 1.540 | 1.477 | 1.519 | 1.536 | 4.10 |
| 17) | TM | 2-Methylphenol | 1.122 | 1.100 | 1.206 | 1.121 | 1.160 | 1.194 | 1.216 | 7.77 |
| 18) | TM | Acetophenone | 1.678 | 1.572 | 1.628 | 1.656 | 1.687 | 1.712 | 1.700 | 4.29 |
| 19) | TMP | N-Nitroso-Di-n- | 0.783 | 0.808 | 0.861 | 0.859 | 0.857 | 0.836 | 0.851 | 4.00 |
| 20) | TM | Hexachloroethan | 0.531 | 0.549 | 0.586 | 0.554 | 0.564 | 0.560 | 0.564 | 3.09 |
| 21) | TM | 3+4-Methylpheno | 1.097 | 1.066 | 1.144 | 1.136 | 1.170 | 1.222 | 1.189 | 6.58 |
| 22) | T | 1-Methyl-2-pyrr | | 0.588 | 0.676 | 0.717 | 0.695 | 0.780 | 0.748 | 11.32 |
| 23) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | |
| 24) | S | SURR4,NITROBENZ | 0.329 | 0.325 | 0.321 | 0.329 | 0.326 | 0.345 | 0.338 | 4.04 |
| 25) | TM | Nitrobenzene | 0.273 | 0.307 | 0.297 | 0.319 | 0.324 | 0.328 | 0.321 | 7.21 |
| 26) | TM | Isophorone | 0.623 | 0.611 | 0.626 | 0.634 | 0.642 | 0.668 | 0.654 | 4.71 |
| 27) | TCM | 2-Nitrophenol | | 0.134 | 0.160 | 0.172 | 0.215 | 0.202 | 0.175 | 13.24 |
| 28) | TM | Benzoic Acid | | | | | | | 0.000# | -1.00 |
| 29) | TM | 2,4-Dimethylphe | 0.328 | 0.299 | 0.327 | 0.314 | 0.314 | 0.322 | 0.321 | 3.19 |
| 30) | TM | bis(-2-Chloroet | 0.405 | 0.367 | 0.362 | 0.367 | 0.363 | 0.371 | 0.375 | 3.49 |
| 31) | TCM | 2,4-Dichlorophe | 0.199 | 0.226 | 0.235 | 0.247 | 0.252 | 0.259 | 0.252 | 10.32 |
| 32) | TM | 1,2,4-Trichloro | 0.312 | 0.319 | 0.306 | 0.319 | 0.317 | 0.325 | 0.321 | 2.57 |
| 33) | TM | Naphthalene | 1.050 | 1.083 | 1.098 | 1.082 | 1.070 | 1.089 | 1.101 | 2.98 |
| 34) | TM | 4-Chloroaniline | | | | | | | 0.000# | -1.00 |
| 35) | TCM | Hexachlorobutad | 0.157 | 0.152 | 0.171 | 0.163 | 0.158 | 0.162 | 0.162 | 3.44 |
| 36) | TMC | 4-Chloro-3-meth | 0.240 | 0.204 | 0.233 | 0.262 | 0.257 | 0.265 | 0.258 | 9.99 |
| 37) | TM | Caprolactam | | 0.064 | 0.071 | 0.078 | 0.083 | 0.086 | 0.079 | 9.40 |
| 38) | TM | 2-Methylnaphtha | 0.663 | 0.647 | 0.668 | 0.664 | 0.678 | 0.686 | 0.686 | 4.06 |
| 39) | TM | 1-Methylnaphtha | 0.637 | 0.573 | 0.638 | 0.661 | 0.636 | 0.663 | 0.654 | 5.51 |
| 40) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | |
| 41) | TPM | Hexachlorocyclo | 0.263 | 0.254 | 0.295 | 0.297 | 0.299 | 0.294 | 0.297 | 7.58 |
| 42) | TCM | 2,4,6-Trichloro | 0.247 | 0.258 | 0.279 | 0.287 | 0.298 | 0.306 | 0.300 | 10.71 |
| 43) | TM | 2,4,5-Trichloro | 0.241 | 0.249 | 0.295 | 0.286 | 0.323 | 0.325 | 0.313 | 13.94 |
| 44) | S | SURR5,2-FLUOROB | 1.372 | 1.370 | 1.337 | 1.355 | 1.381 | 1.342 | 1.387 | 2.85 |
| 45) | TM | 1,1'-Biphenyl | 1.434 | 1.436 | 1.485 | 1.431 | 1.451 | 1.404 | 1.463 | 2.83 |
| 46) | TM | 2-Chloronaphtha | 1.138 | 1.123 | 1.105 | 1.103 | 1.120 | 1.094 | 1.132 | 2.75 |
| 47) | TM | 2-Nitroaniline | | 0.158 | 0.196 | 0.213 | 0.230 | 0.217 | 0.202 | 11.26 |
| 48) | TM | Acenaphthylene | 1.760 | 1.760 | 1.815 | 1.856 | 1.907 | 1.863 | 1.909 | 6.11 |
| 49) | TM | Dimethyl phthal | 1.032 | 1.085 | 1.110 | 1.111 | 1.204 | 1.170 | 1.183 | 8.03 |
| 50) | TM | 2,6-Dinitrotolu | | | 0.154 | 0.174 | 0.196 | 0.219 | 0.217 | 17.69 |
| 51) | TMC | Acenaphthene | 1.118 | 1.118 | 1.173 | 1.134 | 1.154 | 1.127 | 1.166 | 3.86 |
| 52) | TM | 3-Nitroaniline | | | | | | | 0.000# | -1.00 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973C

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014
Response via : Initial Calibration

Calibration Files
0.1 =BK963.D 0.2 =BK964.D 0.5 =BK965.D
1.0 =BK966.D 2.0 =BK967.D 3.0 =BK968.D

| | | Compound | 0.1 | 0.2 | 0.5 | 1.0 | 2.0 | 3.0 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 53) | TPM | 2,4-Dinitrophen | | | | 0.011 | 0.026 | 0.043 | 0.055 | 55.31 | R.R. |
| 54) | TM | Dibenzofuran | 1.412 | 1.566 | 1.528 | 1.545 | 1.591 | 1.509 | 1.562 | 4.40 | |
| 55) | TM | 2,4-Dinitrotolu | | | | 0.187 | 0.213 | 0.242 | 0.256 | 17.14 | |
| 56) | TMP | 4-Nitrophenol | | | | 0.092 | 0.130 | 0.114 | 0.131 | 17.27 | |
| 57) | TM | Fluorene | 1.107 | 1.174 | 1.192 | 1.213 | 1.224 | 1.221 | 1.223 | 4.65 | |
| 58) | TM | 4-Chlorophenyl- | 0.515 | 0.495 | 0.517 | 0.525 | 0.532 | 0.523 | 0.530 | 3.70 | |
| 59) | TM | Diethylphthalat | 1.239 | 0.988 | 1.085 | 1.181 | 1.217 | 1.176 | 1.199 | 8.20 | |
| 60) | TM | 4-Nitroaniline | | | | | | | 0.000# | -1.00 | |
| 61) | S | SURR3,2,4,6-TRI | | 0.087 | 0.108 | 0.119 | 0.127 | 0.128 | 0.124 | 13.60 | |
| 62) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 63) | TM | 4,6-Dinitro-2-m | | | | 0.044 | 0.054 | 0.070 | 0.076 | 27.37 | R.R. |
| 64) | TM | 1,2 Diphenylhyd | 0.721 | 0.765 | 0.778 | 0.800 | 0.777 | 0.788 | 0.793 | 4.48 | |
| 65) | TCM | N-Nitrosodiphen | 0.483 | 0.522 | 0.515 | 0.528 | 0.487 | 0.431 | 0.447 | 15.77 | |
| 66) | TM | 4-Bromophenyl-p | 0.168 | 0.192 | 0.173 | 0.194 | 0.183 | 0.194 | 0.190 | 6.34 | |
| 67) | TM | Hexachlorobenze | 0.193 | 0.217 | 0.201 | 0.198 | 0.198 | 0.213 | 0.213 | 7.00 | |
| 68) | TM | Atrazine | 0.066 | 0.071 | 0.085 | 0.084 | 0.072 | 0.070 | 0.070 | 15.60 | |
| 69) | TCM | Pentachlorophen | | | 0.068 | 0.078 | 0.089 | 0.090 | 0.090 | 13.65 | |
| 70) | TM | Phenanthrene | 1.100 | 1.057 | 1.025 | 1.093 | 1.062 | 1.067 | 1.098 | 4.13 | |
| 71) | TM | Anthracene | 1.110 | 1.067 | 1.090 | 1.158 | 1.119 | 1.168 | 1.161 | 5.47 | |
| 72) | TM | Carbazole | | | | | | | 0.000# | -1.00 | |
| 73) | TM | Di-n-butylphtha | 1.300 | 1.140 | 1.145 | 1.210 | 1.220 | 1.241 | 1.260 | 6.67 | |
| 74) | TCM | Fluoranthene | 1.052 | 1.037 | 1.034 | 1.045 | 1.030 | 1.055 | 1.057 | 2.70 | |
| 75) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 76) | TM | Benzidine | | | 0.073 | 0.079 | 0.075 | 0.081 | 0.074 | 17.72 | |
| 77) | TM | Pyrene | 1.040 | 1.018 | 1.179 | 1.234 | 1.271 | 1.271 | 1.239 | 10.24 | |
| 78) | S | SURR6,TERPHENYL | 0.682 | 0.763 | 0.771 | 0.795 | 0.799 | 0.835 | 0.810 | 7.62 | |
| 79) | TM | Butyl benzyl ph | 0.850 | 0.656 | 0.694 | 0.690 | 0.675 | 0.681 | 0.694 | 8.19 | |
| 80) | TM | 3,3'-Dichlorobe | | | | 0.208 | 0.186 | 0.165 | 0.159 | 20.96 | Avg. |
| 81) | TM | Benzo(a)anthrac | 1.178 | 1.122 | 1.145 | 1.156 | 1.157 | 1.178 | 1.174 | 2.95 | |
| 82) | TM | Chrysene | 1.158 | 1.109 | 1.112 | 1.134 | 1.113 | 1.142 | 1.138 | 2.19 | |
| 83) | TM | bis(2-Ethylhexy | 1.013 | 1.039 | 0.999 | 0.986 | 0.936 | 0.954 | 0.961 | 5.15 | |
| 84) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 85) | TCM | Di-n-octyl phth | 1.789 | 1.496 | 1.739 | 1.743 | 1.891 | 1.860 | 1.791 | 7.32 | |
| 86) | TM | Benzo(b)Fluoran | 1.191 | 1.144 | 1.157 | 1.195 | 1.146 | 1.160 | 1.203 | 4.68 | |
| 87) | TM | Benzo(k)fluoran | 1.121 | 0.973 | 1.164 | 1.140 | 1.252 | 1.241 | 1.172 | 7.13 | |
| 88) | TCM | Benzo(a)pyrene | 1.125 | 1.080 | 1.148 | 1.138 | 1.213 | 1.212 | 1.199 | 6.02 | |
| 89) | TM | Indeno(1,2,3-cd | 1.358 | 1.329 | 1.370 | 1.380 | 1.460 | 1.499 | 1.480 | 7.74 | |
| 90) | TM | Dibenz(a,h)anth | 1.156 | 1.007 | 1.166 | 1.180 | 1.245 | 1.284 | 1.261 | 10.65 | |
| 91) | TM | Benzo(g,h,i)per | 1.064 | 1.041 | 1.119 | 1.117 | 1.170 | 1.189 | 1.179 | 7.82 | |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Data File : I:\ACQUDATA\5973C\DATA\060314\BK968.D Vial: 9
Acq On : 3 Jun 2014 10:12 pm Operator: J.Wu
Sample : SSTD030 Inst : 5973C
Misc : 3.0 PPM STD 8270LL/625LL Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | T | 1,4'-Dioxane | 0.581 | 0.556 | 4.3 | 100 | 0.00 |
| 3 | TM | Pyridine | 1.200 | 1.231 | -2.6 | 100 | 0.00 |
| 4 | TM | N-Nitrosodimethylamine | 0.810 | 0.806 | 0.5 | 100 | 0.00 |
| 5 | S | SURR1,2-FLUOROPHENOL | 1.308 | 1.330 | -1.7 | 100 | 0.00 |
| 6 | TM | Benzaldehyde | 0.405 | 0.397 | 2.0 | 100 | 0.00 |
| 7 | TM | Aniline | 0.000 | 0.000# | 0.0 | 0# | -6.89# |
| 8 | S | SURR2,PHENOL-D6 | 1.459 | 1.497 | -2.6 | 100 | 0.00 |
| 9 | TMC | Phenol | 1.491 | 1.542 | -3.4 | 100 | 0.00 |
| 10 | TM | bis(2-Clethyl)Ether | 1.290 | 1.305 | -1.2 | 100 | 0.00 |
| 11 | TM | 2-Chlorophenol | 1.321 | 1.361 | -3.0 | 100 | 0.00 |
| 12 | TM | 1,3-Diclbenzene | 1.561 | 1.588 | -1.7 | 100 | 0.00 |
| 13 | TMC | 1,4-Dichlorobenzene | 1.612 | 1.602 | 0.6 | 100 | 0.00 |
| 14 | TM | 1,2-Diclbenzene | 1.504 | 1.519 | -1.0 | 100 | 0.00 |
| 15 | TM | Benzyl Alcohol | 0.882 | 0.905 | -2.6 | 100 | 0.00 |
| 16 | TM | 2,2'-oxybis(1-Chloropropane | 1.536 | 1.519 | 1.1 | 100 | 0.00 |
| 17 | TM | 2-Methylphenol | 1.216 | 1.194 | 1.8 | 100 | 0.00 |
| 18 | TM | Acetophenone | 1.700 | 1.712 | -0.7 | 100 | 0.00 |
| 19 | TMP | N-Nitroso-Di-n-propylamine | 0.851 | 0.836 | 1.8 | 100 | 0.00 |
| 20 | TM | Hexachloroethane | 0.564 | 0.560 | 0.7 | 100 | 0.00 |
| 21 | TM | 3+4-Methylphenol | 1.189 | 1.222 | -2.8 | 100 | 0.00 |
| 22 | T | 1-Methyl-2-pyrrolidinone | 0.748 | 0.780 | -4.3 | 100 | 0.00 |
| 23 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 24 | S | SURR4,NITROBENZENE-D5 | 0.338 | 0.345 | -2.1 | 100 | 0.00 |
| 25 | TM | Nitrobenzene | 0.321 | 0.328 | -2.2 | 100 | 0.00 |
| 26 | TM | Isophorone | 0.654 | 0.668 | -2.1 | 100 | 0.00 |
| 27 | TCM | 2-Nitrophenol | 0.175 | 0.202 | -15.4 | 100 | 0.00 |
| 28 | TM | Benzoic Acid | 0.000 | 0.037# | 0.0 | 0# | 0.00 |
| 29 | TM | 2,4-Dimethylphenol | 0.321 | 0.322 | -0.3 | 100 | 0.00 |
| 30 | TM | bis(-2-Chloroethoxy)Methane | 0.375 | 0.371 | 1.1 | 100 | 0.00 |
| 31 | TCM | 2,4-Dichlorophenol | 0.252 | 0.259 | -2.8 | 100 | 0.00 |
| 32 | TM | 1,2,4-Trichlorobenzene | 0.321 | 0.325 | -1.2 | 100 | 0.00 |
| 33 | TM | Naphthalene | 1.101 | 1.089 | 1.1 | 100 | 0.00 |
| 34 | TM | 4-Chloroaniline | 0.000 | 0.000# | 0.0 | 0# | -8.04# |
| 35 | TCM | Hexachlorobutadiene | 0.162 | 0.162 | 0.0 | 100 | 0.00 |
| 36 | TMC | 4-Chloro-3-methylphenol | 0.258 | 0.265 | -2.7 | 100 | 0.00 |
| 37 | TM | Caprolactam | 0.079 | 0.086 | -8.9 | 100 | 0.00 |
| 38 | TM | 2-Methylnaphthalene | 0.686 | 0.686 | 0.0 | 100 | 0.00 |
| 39 | TM | 1-Methylnaphthalene | 0.654 | 0.663 | -1.4 | 100 | 0.00 |
| 40 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 41 | TPM | Hexachlorocyclopentadiene | 0.297 | 0.294 | 1.0 | 100 | 0.00 |
| 42 | TCM | 2,4,6-Trichlorophenol | 0.300 | 0.306 | -2.0 | 100 | 0.00 |
| 43 | TM | 2,4,5-Trichlorophenol | 0.313 | 0.325 | -3.8 | 100 | 0.00 |
| 44 | S | SURR5,2-FLUOROBIPHENYL | 1.387 | 1.342 | 3.2 | 100 | 0.00 |
| 45 | TM | 1,1'-Biphenyl | 1.463 | 1.404 | 4.0 | 100 | 0.00 |
| 46 | TM | 2-Chloronaphthalene | 1.132 | 1.094 | 3.4 | 100 | 0.00 |
| 47 | TM | 2-Nitroaniline | 0.202 | 0.217 | -7.4 | 100 | 0.00 |
| 48 | TM | Acenaphthylene | 1.909 | 1.863 | 2.4 | 100 | 0.00 |
| 49 | TM | Dimethyl phthalate | 1.183 | 1.170 | 1.1 | 100 | 0.00 |
| 50 | TM | 2,6-Dinitrotoluene | 0.217 | 0.219 | -0.9 | 100 | 0.00 |

(#) = Out of Range

Data File : I:\ACQUDATA\5973C\DATA\060314\BK968.D Vial: 9
Acq On : 3 Jun 2014 10:12 pm Operator: J.Wu
Sample : SSTD030 Inst : 5973C
Misc : 3.0 PPM STD 8270LL/625LL Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 51 | TMC | Acenaphthene | 1.166 | 1.127 | 3.3 | 100 | 0.00 |
| 52 | TM | 3-Nitroaniline | 0.000 | 0.000# | 0.0 | 0# | -9.02# |
| 53 | TPM | 2,4-Dinitrophenol | 0.055 | 0.043# | 21.8# | 100 | 0.00 |
| 54 | TM | Dibenzofuran | 1.562 | 1.509 | 3.4 | 100 | 0.00 |
| 55 | TM | 2,4-Dinitrotoluene | 0.256 | 0.242 | 5.5 | 100 | 0.00 |
| 56 | TMP | 4-Nitrophenol | 0.131 | 0.114 | 13.0 | 100 | 0.00 |
| 57 | TM | Fluorene | 1.223 | 1.221 | 0.2 | 100 | 0.00 |
| 58 | TM | 4-Chlorophenyl-phenylether | 0.530 | 0.523 | 1.3 | 100 | 0.00 |
| 59 | TM | Diethylphthalate | 1.199 | 1.176 | 1.9 | 100 | 0.00 |
| 60 | TM | 4-Nitroaniline | 0.000 | 0.000# | 0.0 | 0# | -9.81# |
| 61 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.124 | 0.128 | -3.2 | 100 | 0.00 |
| 62 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.076 | 0.070 | 7.9 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.793 | 0.788 | 0.6 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.447 | 0.431 | 3.6 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.190 | 0.194 | -2.1 | 100 | 0.00 |
| 67 | TM | Hexachlorobenzene | 0.213 | 0.213 | 0.0 | 100 | 0.00 |
| 68 | TM | Atrazine | 0.070 | 0.070 | 0.0 | 100 | 0.00 |
| 69 | TCM | Pentachlorophenol | 0.090 | 0.090 | 0.0 | 100 | 0.00 |
| 70 | TM | Phenanthrene | 1.098 | 1.067 | 2.8 | 100 | 0.00 |
| 71 | TM | Anthracene | 1.161 | 1.168 | -0.6 | 100 | 0.00 |
| 72 | TM | Carbazole | 0.000 | 0.000# | 0.0 | 0# | -10.42# |
| 73 | TM | Di-n-butylphthalate | 1.260 | 1.241 | 1.5 | 100 | 0.00 |
| 74 | TCM | Fluoranthene | 1.057 | 1.055 | 0.2 | 100 | 0.00 |
| 75 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 76 | TM | Benzidine | 0.074 | 0.081 | -9.5 | 100 | 0.00 |
| 77 | TM | Pyrene | 1.239 | 1.271 | -2.6 | 100 | 0.00 |
| 78 | S | SURR6,TERPHENYL-D14 | 0.810 | 0.835 | -3.1 | 100 | 0.00 |
| 79 | TM | Butyl benzyl phthalate | 0.694 | 0.681 | 1.9 | 100 | 0.00 |
| 80 | TM | 3,3'-Dichlorobenzidine | 0.159 | 0.165 | -3.8 | 100 | 0.00 |
| 81 | TM | Benzo(a)anthracene | 1.174 | 1.178 | -0.3 | 100 | 0.00 |
| 82 | TM | Chrysene | 1.138 | 1.142 | -0.4 | 100 | 0.00 |
| 83 | TM | bis(2-Ethylhexyl)phthalate | 0.961 | 0.954 | 0.7 | 100 | 0.00 |
| 84 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 85 | TCM | Di-n-octyl phthalate | 1.791 | 1.860 | -3.9 | 100 | 0.00 |
| 86 | TM | Benzo(b)Fluoranthene | 1.203 | 1.160 | 3.6 | 100 | 0.00 |
| 87 | TM | Benzo(k)fluoranthene | 1.172 | 1.241 | -5.9 | 100 | 0.00 |
| 88 | TCM | Benzo(a)pyrene | 1.199 | 1.212 | -1.1 | 100 | 0.00 |
| 89 | TM | Indeno(1,2,3-cd)Pyrene | 1.480 | 1.499 | -1.3 | 100 | 0.00 |
| 90 | TM | Dibenz(a,h)anthracene | 1.261 | 1.284 | -1.8 | 100 | 0.00 |
| 91 | TM | Benzo(g,h,i)perylene | 1.179 | 1.189 | -0.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 1 CCC's out = 0

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973C\DATA\070814\BL385.D Vial: 2
Acq On : 8 Jul 2014 11:38 am Operator: J.Wu
Sample : CCV Inst : 5973C
Misc : 3.0 PPM STD 8270.LL/625.LL Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014 # 53, 63 Q.R.
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 74 | -0.03 |
| 2 | T | 1,4'-Dioxane | 0.581 | 0.502 | 13.6 | 67 | -0.05 |
| 3 | TM | Pyridine | 1.200 | 1.036 | 13.7 | 63 | -0.05 |
| 4 | TM | N-Nitrosodimethylamine | 0.810 | 0.624 | N.T. 23.0# | 58 | -0.05 |
| 5 | S | SURR1,2-FLUOROPHENOL | 1.308 | 1.330 | -1.7 | 75 | -0.02 |
| 6 | TM | Benzaldehyde | 0.405 | 0.409 | -1.0 | 77 | -0.03 |
| 7 | TM | Aniline | 0.000 | 1.082 | 0.0 | 0# | -0.03 |
| 8 | S | SURR2,PHENOL-D6 | 1.459 | 1.343 | 8.0 | 67 | 0.00 |
| 9 | TMC | Phenol | 1.491 | 1.408 | 5.6 | 68 | -0.01 |
| 10 | TM | bis(2-Clethyl)Ether | 1.290 | 1.082 | 16.1 | 62 | -0.03 |
| 11 | TM | 2-Chlorophenol | 1.321 | 1.421 | -7.6 | 78 | -0.02 |
| 12 | TM | 1,3-Diclbenzene | 1.561 | 1.757 | -12.6 | 82 | -0.03 |
| 13 | TMC | 1,4-Dichlorobenzene | 1.612 | 1.897 | -17.7 | 88 | -0.03 |
| 14 | TM | 1,2-Diclbenzene | 1.504 | 1.732 | -15.2 | 85 | -0.03 |
| 15 | TM | Benzyl Alcohol | 0.882 | 0.911 | -3.3 | 75 | -0.02 |
| 16 | TM | 2,2'-oxybis(1-Chloropropane | 1.536 | 1.207 | N.T. 21.4# | 59 | -0.03 |
| 17 | TM | 2-Methylphenol | 1.216 | 1.311 | -7.8 | 82 | -0.01 |
| 18 | TM | Acetophenone | 1.700 | 1.882 | -10.7 | 82 | -0.03 |
| 19 | TMP | N-Nitroso-Di-n-propylamine | 0.851 | 0.838 | 1.5 | 75 | -0.03 |
| 20 | TM | Hexachloroethane | 0.564 | 0.678 | N.T. -20.2# | 90 | -0.03 |
| 21 | TM | 3+4-Methylphenol | 1.189 | 1.304 | -9.7 | 79 | -0.02 |
| 22 | T | 1-Methyl-2-pyrrolidinone | 0.748 | 0.720 | 3.7 | 69 | -0.04 |
| 23 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 78 | -0.03 |
| 24 | S | SURR4,NITROBENZENE-D5 | 0.338 | 0.378 | -11.8 | 85 | -0.03 |
| 25 | TM | Nitrobenzene | 0.321 | 0.347 | -8.1 | 82 | -0.03 |
| 26 | TM | Isophorone | 0.654 | 0.641 | 2.0 | 75 | -0.03 |
| 27 | TCM | 2-Nitrophenol | 0.175 | 0.195 | -11.4 | 75 | -0.03 |
| 28 | TM | Benzoic Acid | 0.000 | 0.085 | 0.0 | 0# | 0.00 |
| 29 | TM | 2,4-Dimethylphenol | 0.321 | 0.366 | -14.0 | 89 | -0.01 |
| 30 | TM | bis(-2-Chloroethoxy)Methane | 0.375 | 0.301 | 19.7 | 63 | -0.03 |
| 31 | TCM | 2,4-Dichlorophenol | 0.252 | 0.284 | -12.7 | 86 | 0.00 |
| 32 | TM | 1,2,4-Trichlorobenzene | 0.321 | 0.352 | -9.7 | 85 | -0.03 |
| 33 | TM | Naphthalene | 1.101 | 1.087 | 1.3 | 78 | -0.03 |
| 34 | TM | 4-Chloroaniline | 0.000 | 0.154 | 0.0 | 0# | -0.03 |
| 35 | TCM | Hexachlorobutadiene | 0.162 | 0.218 | N.T. -34.6# | 105 | -0.03 |
| 36 | TMC | 4-Chloro-3-methylphenol | 0.258 | 0.303 | -17.4 | 89 | 0.00 |
| 37 | TM | Caprolactam | 0.079 | 0.080 | -1.3 | 72 | -0.03 |
| 38 | TM | 2-Methylnaphthalene | 0.686 | 0.754 | -9.9 | 86 | -0.02 |
| 39 | TM | 1-Methylnaphthalene | 0.654 | 0.698 | -6.7 | 82 | -0.02 |
| 40 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 82 | -0.02 |
| 41 | TPM | Hexachlorocyclopentadiene | 0.297 | 0.244 | 17.8 | 69 | -0.03 |
| 42 | TCM | 2,4,6-Trichlorophenol | 0.300 | 0.338 | -12.7 | 91 | -0.01 |
| 43 | TM | 2,4,5-Trichlorophenol | 0.313 | 0.354 | -13.1 | 90 | 0.00 |
| 44 | S | SURR5,2-FLUOROBIPHENYL | 1.387 | 1.462 | -5.4 | 90 | -0.03 |
| 45 | TM | 1,1'-Biphenyl | 1.463 | 1.526 | -4.3 | 89 | -0.02 |
| 46 | TM | 2-Chloronaphthalene | 1.132 | 1.164 | -2.8 | 88 | -0.02 |
| 47 | TM | 2-Nitroaniline | 0.202 | 0.259 | N.T. -28.2# | 98 | -0.02 |
| 48 | TM | Acenaphthylene | 1.909 | 1.954 | -2.4 | 86 | -0.02 |

(#) = Out of Range

J.J

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973C\DATA\070814\BL385.D Vial: 2
Acq On : 8 Jul 2014 11:38 am Operator: J.Wu
Sample : CCV Inst : 5973C
Misc : 3.0 PPM STD 8270.LL/625.LL Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 49 | TM | Dimethyl phthalate | 1.183 | 1.360 | -15.0 | 96 | -0.03 |
| 50 | TM | 2,6-Dinitrotoluene | 0.217 | 0.272 | NT -25.3# | 102 | -0.02 |
| 51 | TMC | Acenaphthene | 1.166 | 1.231 | -5.6 | 90 | -0.02 |
| 52 | TM | 3-Nitroaniline | 0.000 | 0.297 | 0.0 | 0# | -0.04 |
| 53 | TPM | 2,4-Dinitrophenol | 0.055 | 0.068 | Q.R. -23.6# | 130 | -0.02 |
| 54 | TM | Dibenzofuran | 1.562 | 1.674 | -7.2 | 91 | -0.02 |
| 55 | TM | 2,4-Dinitrotoluene | 0.256 | 0.364 | NT -42.2# | 124 | -0.02 |
| 56 | TMP | 4-Nitrophenol | 0.131 | 0.139 | -6.1 | 101 | 0.02 |
| 57 | TM | Fluorene | 1.223 | 1.349 | -10.3 | 91 | -0.03 |
| 58 | TM | 4-Chlorophenyl-phenylether | 0.530 | 0.600 | -13.2 | 94 | -0.02 |
| 59 | TM | Diethylphthalate | 1.199 | 1.454 | NT -21.3# | 102 | -0.03 |
| 60 | TM | 4-Nitroaniline | 0.000 | 0.143 | 0.0 | 0# | -0.04 |
| 61 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.124 | 0.165 | -33.1# | 106 | -0.02 |
| 62 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 94 | -0.02 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.076 | 0.092 | Q.R. -21.1# | 124 | -0.02 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.793 | 0.762 | 3.9 | 91 | -0.02 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.447 | 0.403 | 9.8 | 88 | -0.02 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.190 | 0.220 | -15.8 | 107 | -0.02 |
| 67 | TM | Hexachlorobenzene | 0.213 | 0.234 | -9.9 | 104 | -0.03 |
| 68 | TM | Atrazine | 0.070 | 0.074 | -5.7 | 99 | -0.02 |
| 69 | TCM | Pentachlorophenol | 0.090 | 0.079 | 12.2 | 83 | -0.02 |
| 70 | TM | Phenanthrene | 1.098 | 1.123 | -2.3 | 99 | -0.03 |
| 71 | TM | Anthracene | 1.161 | 1.161 | 0.0 | 94 | -0.02 |
| 72 | TM | Carbazole | 0.000 | 0.049# | 0.0 | 0# | -0.03 |
| 73 | TM | Di-n-butylphthalate | 1.260 | 1.355 | -7.5 | 103 | -0.03 |
| 74 | TCM | Fluoranthene | 1.057 | 1.137 | -7.6 | 102 | -0.03 |
| 75 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 103 | -0.04 |
| 76 | TM | Benzidine | 0.074 | 0.033# | NT 55.4# | 42# | -0.02 |
| 77 | TM | Pyrene | 1.239 | 1.278 | -3.1 | 103 | -0.03 |
| 78 | S | SURR6,TERPHENYL-D14 | 0.810 | 0.911 | -12.5 | 112 | -0.03 |
| 79 | TM | Butyl benzyl phthalate | 0.694 | 0.696 | -0.3 | 105 | -0.04 |
| 80 | TM | 3,3'-Dichlorobenzidine | 0.159 | 0.143 | 10.1 | 89 | -0.04 |
| 81 | TM | Benzo(a)anthracene | 1.174 | 1.210 | -3.1 | 105 | -0.04 |
| 82 | TM | Chrysene | 1.138 | 1.151 | -1.1 | 103 | -0.04 |
| 83 | TM | bis(2-Ethylhexyl)phthalate | 0.961 | 0.902 | 6.1 | 97 | -0.04 |
| 84 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 108 | -0.05 |
| 85 | TCM | Di-n-octyl phthalate | 1.791 | 1.753 | 2.1 | 101 | -0.05 |
| 86 | TM | Benzo(b)Fluoranthene | 1.203 | 1.216 | -1.1 | 113 | -0.05 |
| 87 | TM | Benzo(k)fluoranthene | 1.172 | 1.217 | -3.8 | 106 | -0.05 |
| 88 | TCM | Benzo(a)pyrene | 1.199 | 1.235 | -3.0 | 110 | -0.05 |
| 89 | TM | Indeno(1,2,3-cd)Pyrene | 1.480 | 1.486 | -0.4 | 107 | -0.07 |
| 90 | TM | Dibenz(a,h)anthracene | 1.261 | 1.282 | -1.7 | 107 | -0.07 |
| 91 | TM | Benzo(g,h,i)perylene | 1.179 | 1.225 | -3.9 | 111 | -0.07 |

(#) = Out of Range SPCC's out = 0 CCC's out = 1

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973C\DATA\070814\BL385.D Vial: 2
Acq On : 8 Jul 2014 11:38 am Operator: J.Wu
Sample : CCV Inst : 5973C
Misc : 3.0 PPM STD 8270.LL/625.LL Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014
Response via : Multiple Level Calibration

#53.63 R.R.

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 74 | -0.03 |
| 2 | T | 1,4'-Dioxane | 3.000 | 2.590 | 13.7 | 67 | -0.05 |
| 3 | TM | Pyridine | 3.000 | 2.591 | 13.6 | 63 | -0.05 |
| 4 | TM | N-Nitrosodimethylamine | 3.000 | 2.309 | 23.0# | 58 | -0.05 |
| 5 | S | SURR1,2-FLUOROPHENOL | 3.000 | 3.050 | -1.7 | 75 | -0.02 |
| 6 | TM | Benzaldehyde | 3.000 | 3.030 | -1.0 | 77 | -0.03 |
| 7 | TM | Aniline | 3.000 | 0.000 | 100.0# | 0 | -0.03 |
| 8 | S | SURR2,PHENOL-D6 | 3.000 | 2.760 | 8.0 | 67 | 0.00 |
| 9 | TMC | Phenol | 3.000 | 2.832 | 5.6 | 68 | -0.01 |
| 10 | TM | bis(2-Clethyl)Ether | 3.000 | 2.516 | 16.1 | 62 | -0.03 |
| 11 | TM | 2-Chlorophenol | 3.000 | 3.228 | -7.6 | 78 | -0.02 |
| 12 | TM | 1,3-Diclbenzene | 3.000 | 3.377 | -12.6 | 82 | -0.03 |
| 13 | TMC | 1,4-Dichlorobenzene | 3.000 | 3.530 | -17.7 | 88 | -0.03 |
| 14 | TM | 1,2-Diclbenzene | 3.000 | 3.455 | -15.2 | 85 | -0.03 |
| 15 | TM | Benzyl Alcohol | 3.000 | 3.097 | -3.2 | 75 | -0.02 |
| 16 | TM | 2,2'-oxybis(1-Chloropropane | 3.000 | 2.358 | 21.4# | 59 | -0.03 |
| 17 | TM | 2-Methylphenol | 3.000 | 3.235 | -7.8 | 82 | -0.01 |
| 18 | TM | Acetophenone | 3.000 | 3.322 | -10.7 | 82 | -0.03 |
| 19 | TMP | N-Nitroso-Di-n-propylamine | 3.000 | 2.953 | 1.6 | 75 | -0.03 |
| 20 | TM | Hexachloroethane | 3.000 | 3.607 | -20.2# | 90 | -0.03 |
| 21 | TM | 3+4-Methylphenol | 3.000 | 3.289 | -9.6 | 79 | -0.02 |
| 22 | T | 1-Methyl-2-pyrrolidinone | 3.000 | 2.885 | 3.8 | 69 | -0.04 |
| 23 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 78 | -0.03 |
| 24 | S | SURR4,NITROBENZENE-D5 | 3.000 | 3.353 | -11.8 | 85 | -0.03 |
| 25 | TM | Nitrobenzene | 3.000 | 3.238 | -7.9 | 82 | -0.03 |
| 26 | TM | Isophorone | 3.000 | 2.936 | 2.1 | 75 | -0.03 |
| 27 | TCM | 2-Nitrophenol | 3.000 | 3.330 | -11.0 | 75 | -0.03 |
| 28 | TM | Benzoic Acid | 3.000 | 0.000 | 100.0# | 0 | 0.00 |
| 29 | TM | 2,4-Dimethylphenol | 3.000 | 3.426 | -14.2 | 89 | -0.01 |
| 30 | TM | bis(-2-Chloroethoxy)Methane | 3.000 | 2.411 | 19.6 | 63 | -0.03 |
| 31 | TCM | 2,4-Dichlorophenol | 3.000 | 3.374 | -12.5 | 86 | 0.00 |
| 32 | TM | 1,2,4-Trichlorobenzene | 3.000 | 3.297 | -9.9 | 85 | -0.03 |
| 33 | TM | Naphthalene | 3.000 | 2.963 | 1.2 | 78 | -0.03 |
| 34 | TM | 4-Chloroaniline | 3.000 | 0.000 | 100.0# | 0 | -0.03 |
| 35 | TCM | Hexachlorobutadiene | 3.000 | 4.041 | -34.7# | 105 | -0.03 |
| 36 | TMC | 4-Chloro-3-methylphenol | 3.000 | 3.521 | -17.4 | 89 | 0.00 |
| 37 | TM | Caprolactam | 3.000 | 3.020 | -0.7 | 72 | -0.03 |
| 38 | TM | 2-Methylnaphthalene | 3.000 | 3.296 | -9.9 | 86 | -0.02 |
| 39 | TM | 1-Methylnaphthalene | 3.000 | 3.199 | -6.6 | 82 | -0.02 |
| 40 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 82 | -0.02 |
| 41 | TPM | Hexachlorocyclopentadiene | 3.000 | 2.472 | 17.6 | 69 | -0.03 |
| 42 | TCM | 2,4,6-Trichlorophenol | 3.000 | 3.383 | -12.8 | 91 | -0.01 |
| 43 | TM | 2,4,5-Trichlorophenol | 3.000 | 3.390 | -13.0 | 90 | 0.00 |
| 44 | S | SURR5,2-FLUOROBIPHENYL | 3.000 | 3.163 | -5.4 | 90 | -0.03 |
| 45 | TM | 1,1'-Biphenyl | 3.000 | 3.128 | -4.3 | 89 | -0.02 |
| 46 | TM | 2-Chloronaphthalene | 3.000 | 3.086 | -2.9 | 88 | -0.02 |
| 47 | TM | 2-Nitroaniline | 3.000 | 3.855 | -28.5# | 98 | -0.02 |
| 48 | TM | Acenaphthylene | 3.000 | 3.071 | -2.4 | 86 | -0.02 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973C\DATA\070814\BL385.D Vial: 2
Acq On : 8 Jul 2014 11:38 am Operator: J.Wu
Sample : CCV Inst : 5973C
Misc : 3.0 PPM STD 8270.LL/625.LL Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973C\METHODS\LVI0603F.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Wed Jun 04 10:05:02 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 49 | TM | Dimethyl phthalate | 3.000 | 3.449 | -15.0 | 96 | -0.03 |
| 50 | TM | 2,6-Dinitrotoluene | 3.000 | 3.758 | -25.3# | 102 | -0.02 |
| 51 | TMC | Acenaphthene | 3.000 | 3.167 | -5.6 | 90 | -0.02 |
| 52 | TM | 3-Nitroaniline | 3.000 | 0.000 | 100.0# | 0 | -0.04 |
| 53 | TPM | 2,4-Dinitrophenol | 3.000 | 3.861 | -28.7# | 130 | -0.02 |
| 54 | TM | Dibenzofuran | 3.000 | 3.216 | -7.2 | 91 | -0.02 |
| 55 | TM | 2,4-Dinitrotoluene | 3.000 | 4.271 | -42.4# | 124 | -0.02 |
| 56 | TMP | 4-Nitrophenol | 3.000 | 3.192 | -6.4 | 101 | 0.02 |
| 57 | TM | Fluorene | 3.000 | 3.308 | -10.3 | 91 | -0.03 |
| 58 | TM | 4-Chlorophenyl-phenylether | 3.000 | 3.399 | -13.3 | 94 | -0.02 |
| 59 | TM | Diethylphthalate | 3.000 | 3.638 | -21.3# | 102 | -0.03 |
| 60 | TM | 4-Nitroaniline | 3.000 | 0.000 | 100.0# | 0 | -0.04 |
| 61 | S | SURR3,2,4,6-TRIBROMOPHENOL | 3.000 | 3.993 | -33.1# | 106 | -0.02 |
| 62 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 94 | -0.02 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 3.000 | 3.685 | -22.8# | 124 | -0.02 |
| 64 | TM | 1,2 Diphenylhydrazine | 3.000 | 2.885 | 3.8 | 91 | -0.02 |
| 65 | TCM | N-Nitrosodiphenylamine | 3.000 | 2.700 | 10.0 | 88 | -0.02 |
| 66 | TM | 4-Bromophenyl-phenylether | 3.000 | 3.466 | -15.5 | 107 | -0.02 |
| 67 | TM | Hexachlorobenzene | 3.000 | 3.294 | -9.8 | 104 | -0.03 |
| 68 | TM | Atrazine | 3.000 | 3.165 | -5.5 | 99 | -0.02 |
| 69 | TCM | Pentachlorophenol | 3.000 | 2.623 | 12.6 | 83 | -0.02 |
| 70 | TM | Phenanthrene | 3.000 | 3.069 | -2.3 | 99 | -0.03 |
| 71 | TM | Anthracene | 3.000 | 3.000 | 0.0 | 94 | -0.02 |
| 72 | TM | Carbazole | 3.000 | 0.000 | 100.0# | 0 | -0.03 |
| 73 | TM | Di-n-butylphthalate | 3.000 | 3.226 | -7.5 | 103 | -0.03 |
| 74 | TCM | Fluoranthene | 3.000 | 3.228 | -7.6 | 102 | -0.03 |
| 75 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 103 | -0.04 |
| 76 | TM | Benzidine | 3.000 | 1.336 | 55.5# | 42 | -0.02 |
| 77 | TM | Pyrene | 3.000 | 3.092 | -3.1 | 103 | -0.03 |
| 78 | S | SURR6,TERPHENYL-D14 | 3.000 | 3.374 | -12.5 | 112 | -0.03 |
| 79 | TM | Butyl benzyl phthalate | 3.000 | 3.006 | -0.2 | 105 | -0.04 |
| 80 | TM | 3,3'-Dichlorobenzidine | 3.000 | 2.707 | 9.8 | 89 | -0.04 |
| 81 | TM | Benzo(a)anthracene | 3.000 | 3.090 | -3.0 | 105 | -0.04 |
| 82 | TM | Chrysene | 3.000 | 3.036 | -1.2 | 103 | -0.04 |
| 83 | TM | bis(2-Ethylhexyl)phthalate | 3.000 | 2.813 | 6.2 | 97 | -0.04 |
| 84 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 108 | -0.05 |
| 85 | TCM | Di-n-octyl phthalate | 3.000 | 2.936 | 2.1 | 101 | -0.05 |
| 86 | TM | Benzo(b)Fluoranthene | 3.000 | 3.033 | -1.1 | 113 | -0.05 |
| 87 | TM | Benzo(k)fluoranthene | 3.000 | 3.115 | -3.8 | 106 | -0.05 |
| 88 | TCM | Benzo(a)pyrene | 3.000 | 3.090 | -3.0 | 110 | -0.05 |
| 89 | TM | Indeno(1,2,3-cd)Pyrene | 3.000 | 3.013 | -0.4 | 107 | -0.07 |
| 90 | TM | Dibenz(a,h)anthracene | 3.000 | 3.049 | -1.6 | 107 | -0.07 |
| 91 | TM | Benzo(g,h,i)perylene | 3.000 | 3.116 | -3.9 | 111 | -0.07 |

(#) = Out of Range SPCC's out = 0 CCC's out = 1

# *Preparation Information Benchsheet*

**Prep Run#:** 212477
**Team:** Semivoa GCMS/DMURPHY

**Prep WorkFlow:** OrgExtLLAq(7)
**Prep Method:** EPA 3510C

**Status:** Prepped
**Prep Date/Time:** 7/8/14 06:46 AM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1407726-01 | MB | | 1000mL | 625/SVO LL | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71800 | |
| 2 | RQ1407726-02 | LCS | | 1000mL | 625/SVO LL | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71800; 1.5000 mL/71166 | |
| 3 | RQ1407726-03 | DLCS | | 1000mL | 625/SVO LL | 6 | x | x | 1.00mL | clear-colorless | 1.5000 mL/71166; 1.0000 mL/71800 | |
| 4 | R1405115-002[redacted] | 001 | .05 | 1060mL | 625/SVO LL phenols | 7 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71800 | II 7/14 |
| 5 | R1405141-001 [redacted] | 2014002591 W01B-GRAB-WA-070714 | .11 | 1000mL | 625/SVO LL phenols + | 8 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71800 | II 7/15 |
| 6 | RQ1407726-04 | MB | | 1000mL | 8270D/SVO LL | 8 | | x | 1.00mL | clear-colorless | 1.0000 mL/71800 | |
| 7 | RQ1407726-05 | LCS | | 1000mL | 8270D/SVO LL | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71166; 1.0000 mL/71800 | |
| 8 | RQ1407726-06 | DLCS | | 1000mL | 8270D/SVO LL | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71800; 1.0000 mL/71166 | |
| 9 | R1405137-005[redacted] | 1407011358 200-SB-11 | .02 | 1060mL | 8270D/SVO LL (11981) | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71800 | II 7/21/14 Sty. |

## Spiking Solutions

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Name: | 8270 LVI LCS Spike 4ppm | Inventory ID | 71166 | Logbook Ref: | | Expires On: | 10/31/2014 |
| Name: | 8270 LVI Surrogate 2/4 ug/mL | Inventory ID | 71800 | Logbook Ref: | | Expires On: | 12/17/2014 |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #14 (61350) | 2mL Graduated Vials | (72060) | Sulfuric Acid, 50% H2SO4 | (70312) |
| Dichloromethane (Methylene Chloride) 99.9% MeCl2 | canister (72057) | Sodium Hydroxide 50% NaOH | (66000) | Prepared Sodium Sulfate Na2SO4 | (72189) |

## Preparation Steps

| | | | | | |
|---|---|---|---|---|---|
| Step: | Extraction | Step: | Concentration | Step: | Final Volume |
| Started: | 7/8/14 06:46 | Started: | 7/8/14 12:30 | Started: | 7/8/14 14:20 |
| Finished: | 7/8/14 13:28 | Finished: | 7/8/14 13:50 | Finished: | 7/8/14 14:20 |
| By: | DMURPHY | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: Megan Peel Date: 7/9/14 Spike Witness: LPRUNOSKE Date:

| | | | |
|---|---|---|---|
| Analysis: 625.LL | Analyst: TW | Run Method: LV182207.m / DFTPPD.m | |
| Date: 7/8/14 | Instr. 5973C | Quant Method: LV10603F.m / DFTPPD.m | |
| | | LIMS Run#: | 400788 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| | BLK | | | | BL 382 | — |
| | Tunecheck | 25 ppm DFTPP (72043) | | DFTPPm | BL 383 | YT 10:42 |
| 1 | CCV | 3.0 ppm | | LV10603F.m | BL 384 | NO |
| 2 | CCV | 3.0 ppm | | LV10603F.m | BL 385 | YC |
| 3 | RQ 1407726-01 BLK | [redacted] | 625 LL phenols | 7/8/14 water | BL 386 | YM (R5137 82202LL) |
| 4 | -02 LCS | | | | 387 | YQ (R5115 > 625.LL) |
| 5 | -03 LCSD | | | | 388 | YQ (R5141) |
| 6 | R1405115-002 | | | | BL 389 | Y |
| 7 | R1405137-005 | [redacted] | 82202LL | 7/8/14 water | BL 390 | Y 9:48pm |
| 8 | R1405141-001 | [redacted] | 625.LL phenols+ | 7/8/14 water | BL 391 | Y 8:47am |
| 9 | chul | | | | BL 394 | — |
| 10 | clean | | | | BL 396 | — |

TW.

BL385

| | |
|---|---|
| 7.08 | 56827 |
| 8.00 | 220845 |
| 9.34 | 129227 |
| 10.52 | 214144 |
| 13.14 | 196501 |
| 15.70 | 211774 |

All samples = 1.0 mL + 10 uL Combined IS/Surr.: 72072

Primary : _____ exp: Secondary : _____ exp:

Primary: _____ exp: Secondary : _____ exp:

Runlog GCEXT r1 12/5/12

Response Factor Report 5973D

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M
Title : 8270 BNA ANALYSIS
Last Update : Wed Jul 02 10:45:14 2014
Response Via : Initial Calibration

Calibration Files
5 =AV019.D 10 =AV020.D 50 =AV021.D 80 =AV022.D 100 =AV023.D 120 =AV024.D 160 =AV025.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | | |
| 2) | TM | Pyridine | | 1.313 | 1.336 | 1.325 | 1.339 | 1.325 | 1.328 | | 0.79 | |
| 3) | TM | N-Nitrosodimet... | 0.562 | 0.626 | 0.701 | 0.702 | 0.688 | 0.739 | 0.714 | 0.676 | 9.00 | |
| 4) | S | SURR1,2-FLUORO... | 1.111 | 1.124 | 1.180 | 1.192 | 1.190 | 1.211 | 1.227 | 1.177 | 3.67 | |
| 5) | TM | Benzaldehyde | | 0.365 | 0.335 | 0.290 | 0.249 | 0.152 | 0.278 | | 29.94 | AVG |
| 6) | TM | Aniline | 2.025 | 2.073 | 2.049 | 2.024 | 2.043 | 2.133 | 2.040 | 2.055 | 1.85 | |
| 7) | S | SURR2,PHENOL-D6 | 1.357 | 1.418 | 1.590 | 1.570 | 1.542 | 1.636 | 1.595 | 1.530 | 6.71 | |
| 8) | TMC | Phenol | 1.486 | 1.478 | 1.592 | 1.619 | 1.597 | 1.646 | 1.629 | 1.578 | 4.33 | |
| 9) | TM | bis(2-Clethyl)... | 1.160 | 1.156 | 1.182 | 1.188 | 1.071 | 1.125 | 1.138 | 1.146 | 3.45 | |
| 10) | TM | 2-Chlorophenol | 1.284 | 1.300 | 1.374 | 1.376 | 1.348 | 1.418 | 1.400 | 1.357 | 3.66 | |
| 11) | TM | 1,3-Diclbenzene | 1.604 | 1.610 | 1.579 | 1.583 | 1.559 | 1.563 | 1.567 | 1.581 | 1.26 | |
| 12) | TMC | 1,4-Dichlorobe... | 1.732 | 1.623 | 1.646 | 1.620 | 1.603 | 1.641 | 1.632 | 1.642 | 2.55 | |
| 13) | TM | 1,2-Diclbenzene | 1.641 | 1.535 | 1.529 | 1.519 | 1.507 | 1.543 | 1.525 | 1.543 | 2.92 | |
| 14) | TM | Benzyl Alcohol | 0.916 | 0.856 | 0.999 | 1.008 | 1.021 | 1.063 | 1.026 | 0.984 | 7.33 | |
| 15) | TM | 2,2'-oxybis(1-... | 1.663 | 1.681 | 1.648 | 1.622 | 1.626 | 1.665 | 1.647 | 1.650 | 1.29 | |
| 16) | TM | 2-Methylphenol | 1.099 | 1.184 | 1.257 | 1.230 | 1.246 | 1.298 | 1.272 | 1.226 | 5.44 | |
| 17) | TM | Acetophenone | 1.847 | 1.781 | 1.777 | 1.780 | 1.770 | 1.836 | 1.795 | 1.798 | 1.72 | |
| 18) | TMP | N-Nitroso-Di-n... | 0.896 | 0.918 | 0.937 | 0.931 | 0.903 | 0.958 | 0.964 | 0.929 | 2.77 | |
| 19) | TM | Hexachloroethane | 0.526 | 0.601 | 0.604 | 0.611 | 0.601 | 0.603 | 0.607 | 0.593 | 5.03 | |
| 20) | TM | 3+4-Methylphenol | 1.199 | 1.193 | 1.304 | 1.307 | 1.286 | 1.375 | 1.343 | 1.287 | 5.31 | |
| 21) | T | 1-Methyl-2-pyr... | | 0.870 | 0.921 | 0.891 | 0.885 | 0.939 | 0.867 | 0.896 | 3.21 | |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.240 | 0.320 | 0.328 | 0.334 | 0.346 | 0.363 | 0.317 | 0.321 | 12.17 | |
| 24) | TM | Nitrobenzene | 0.252 | 0.280 | 0.291 | 0.316 | 0.316 | 0.331 | 0.331 | 0.302 | 9.75 | |
| 25) | TM | Isophorone | 0.580 | 0.597 | 0.592 | 0.606 | 0.614 | 0.640 | 0.623 | 0.607 | 3.31 | |
| 26) | TCM | 2-Nitrophenol | 0.120 | 0.126 | 0.141 | 0.156 | 0.161 | 0.174 | 0.178 | 0.151 | 14.96 | |
| 27) | TM | Benzoic Acid | | 0.144 | 0.225 | 0.269 | 0.284 | 0.314 | 0.317 | 0.259 | 25.32 | CA |
| 28) | TM | 2,4-Dimethylph... | 0.276 | 0.331 | 0.312 | 0.327 | 0.326 | 0.339 | 0.336 | 0.321 | 6.77 | |
| 29) | TM | bis(-2-Chloroe... | 0.373 | 0.369 | 0.356 | 0.362 | 0.370 | 0.373 | 0.368 | 0.367 | 1.65 | |
| 30) | TCM | 2,4-Dichloroph... | 0.261 | 0.261 | 0.291 | 0.306 | 0.306 | 0.323 | 0.322 | 0.296 | 8.82 | |
| 31) | TM | 1,2,4-Trichlor... | 0.374 | 0.356 | 0.349 | 0.354 | 0.359 | 0.364 | 0.364 | 0.360 | 2.35 | |
| 32) | TM | Naphthalene | 1.046 | 1.072 | 1.011 | 1.038 | 1.047 | 1.067 | 1.062 | 1.049 | 1.98 | |
| 33) | TM | 4-Chloroaniline | 0.382 | 0.403 | 0.416 | 0.428 | 0.431 | 0.445 | 0.430 | 0.419 | 5.01 | |
| 34) | TCM | Hexachlorobuta... | 0.206 | 0.205 | 0.205 | 0.207 | 0.200 | 0.208 | 0.212 | 0.206 | 1.72 | |
| 35) | TMC | 4-Chloro-3-met... | 0.223 | 0.245 | 0.258 | 0.264 | 0.271 | 0.284 | 0.279 | 0.260 | 8.09 | |
| 36) | TM | Caprolactam | | 0.087 | 0.086 | 0.087 | 0.089 | 0.096 | 0.076 | 0.087 | 7.06 | |
| 37) | TM | 2-Methylnaphth... | 0.715 | 0.727 | 0.707 | 0.711 | 0.717 | 0.751 | 0.760 | 0.727 | 2.85 | |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.641 | 0.665 | 0.660 | 0.659 | 0.668 | 0.693 | 0.689 | 0.668 | 2.68 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.314 | 0.321 | 0.368 | 0.408 | 0.415 | 0.412 | 0.452 | 0.384 | 13.47 |
| 41) | TCM | 2,4,6-Trichlor... | 0.287 | 0.338 | 0.362 | 0.379 | 0.395 | 0.403 | 0.414 | 0.368 | 11.95 |
| 42) | TM | 2,4,5-Trichlor... | 0.337 | 0.361 | 0.382 | 0.421 | 0.394 | 0.406 | 0.412 | 0.388 | 7.71 |
| 43) | S | SURR5,2-FLUORO... | 1.233 | 1.279 | 1.280 | 1.304 | 1.310 | 1.287 | 1.359 | 1.293 | 2.96 |
| 44) | TM | 1,1'-Biphenyl | 1.382 | 1.411 | 1.414 | 1.470 | 1.437 | 1.433 | 1.507 | 1.436 | 2.87 |
| 45) | TM | 2-Chloronaphth... | 1.107 | 1.079 | 1.091 | 1.137 | 1.130 | 1.113 | 1.168 | 1.118 | 2.67 |
| 46) | TM | 2-Nitroaniline | | | 0.238 | 0.260 | 0.258 | 0.266 | 0.272 | 0.259 | 5.07 |
| 47) | TM | Acenaphthylene | 1.608 | 1.678 | 1.778 | 1.838 | 1.822 | 1.824 | 1.894 | 1.778 | 5.63 |
| 48) | TM | Dimethyl phtha... | 1.182 | 1.218 | 1.199 | 1.174 | 1.149 | 1.145 | 1.144 | 1.173 | 2.46 |
| 49) | TM | 2,6-Dinitrotol... | 0.171 | 0.173 | 0.211 | 0.226 | 0.234 | 0.234 | 0.242 | 0.213 | 13.99 |
| 50) | TMC | Acenaphthene | 1.184 | 1.161 | 1.153 | 1.179 | 1.178 | 1.181 | 1.213 | 1.178 | 1.62 |
| 51) | TM | 3-Nitroaniline | | | 0.239 | 0.272 | 0.270 | 0.284 | 0.291 | 0.271 | 7.29 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.087 | 0.116 | 0.124 | 0.136 | 0.155 | 0.124 | 20.33 |
| 53) | TM | Dibenzofuran | 1.703 | 1.671 | 1.641 | 1.665 | 1.674 | 1.681 | 1.691 | 1.675 | 1.18 |
| 54) | TM | 2,4-Dinitrotol... | 0.189 | 0.213 | 0.252 | 0.286 | 0.308 | 0.312 | 0.334 | 0.271 | 19.99 |
| 55) | TMP | 4-Nitrophenol | | | 0.166 | 0.195 | 0.197 | 0.200 | 0.212 | 0.194 | 8.73 |
| 56) | TM | Fluorene | 1.354 | 1.320 | 1.307 | 1.327 | 1.310 | 1.322 | 1.300 | 1.320 | 1.35 |
| 57) | TM | 4-Chlorophenyl... | 0.668 | 0.648 | 0.654 | 0.673 | 0.661 | 0.664 | 0.657 | 0.661 | 1.29 |
| 58) | TM | Diethylphthalate | 1.149 | 1.080 | 1.035 | 1.102 | 1.101 | 1.132 | 1.177 | 1.111 | 4.23 |
| 59) | TM | 4-Nitroaniline | | | 0.268 | 0.310 | 0.322 | 0.339 | 0.345 | 0.317 | 9.59 |
| 60) | S | SURR3,2,4,6-TR... | 0.163 | 0.144 | 0.163 | 0.177 | 0.192 | 0.204 | 0.208 | 0.179 | 13.27 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.096 | 0.111 | 0.118 | 0.119 | 0.131 | 0.115 | 11.28 |
| 64) | TM | 1,2 Diphenylhy... | 0.720 | 0.735 | 0.792 | 0.723 | 0.707 | 0.689 | 0.677 | 0.720 | 5.15 |
| 65) | TCM | N-Nitrosodiphe... | 0.543 | 0.540 | 0.534 | 0.511 | 0.518 | 0.524 | 0.543 | 0.530 | 2.47 |
| 66) | TM | 4-Bromophenyl-... | 0.241 | 0.249 | 0.249 | 0.234 | 0.232 | 0.227 | 0.236 | 0.238 | 3.51 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.255 | 0.268 | 0.278 | 0.260 | 0.260 | 0.260 | 0.269 | 0.264 | 2.97 |
| 69) | TM | Atrazine | 0.069 | 0.058 | 0.084 | 0.085 | 0.089 | 0.089 | 0.089 | 0.081 | 15.01 |
| 70) | TCM | Pentachlorophenol | | | 0.121 | 0.134 | 0.149 | 0.153 | 0.164 | 0.144 | 11.74 |
| 71) | TM | Phenanthrene | 1.078 | 1.088 | 1.055 | 1.064 | 1.090 | 1.107 | 1.142 | 1.089 | 2.66 |
| 72) | TM | Anthracene | 1.061 | 1.109 | 1.121 | 1.124 | 1.176 | 1.178 | 1.215 | 1.141 | 4.54 |
| 73) | TM | Carbazole | 0.976 | 0.943 | 1.081 | 1.080 | 1.092 | 1.112 | 1.111 | 1.056 | 6.45 |
| 74) | TM | Di-n-butylphth... | 0.898 | 0.940 | 1.214 | 1.252 | 1.288 | 1.274 | 1.331 | 1.171 | 15.04 |
| 75) | TCM | Fluoranthene | 1.060 | 1.047 | 1.312 | 1.331 | 1.341 | 1.354 | 1.374 | 1.260 | 11.30 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.480 | 0.472 | 0.476 | 0.474 | 0.428 | 0.466 | 4.64 |
| 78) | TM | Pyrene | 1.028 | 1.059 | 1.139 | 1.117 | 1.164 | 1.228 | 1.200 | 1.134 | 6.38 |
| 79) | S | SURR6,TERPHENY... | 0.825 | 0.832 | 0.797 | 0.802 | 0.846 | 0.882 | 0.876 | 0.837 | 3.98 |
| 80) | TM | Butyl benzyl p... | 0.361 | 0.402 | 0.454 | 0.471 | 0.498 | 0.494 | 0.508 | 0.455 | 12.06 |
| 81) | TM | 3,3'-Dichlorob... | 0.311 | 0.311 | 0.353 | 0.341 | 0.367 | 0.374 | 0.380 | 0.348 | 8.17 |
| 82) | TM | Benzo(a)anthra... | 1.090 | 1.073 | 1.113 | 1.124 | 1.148 | 1.166 | 1.139 | 1.122 | 2.90 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.185 | 1.167 | 1.121 | 1.116 | 1.142 | 1.159 | 1.151 | 1.149 | 2.15 |
| 84) | TM | bis(2-Ethylhex... | 0.465 | 0.514 | 0.575 | 0.626 | 0.630 | 0.602 | 0.644 | 0.580 | 11.55 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.629 | 0.653 | 0.845 | 0.981 | 1.044 | 1.021 | 1.129 | 0.900 | 21.86 |
| 87) | TM | Benzo(b)Fluora... | 1.015 | 0.994 | 1.026 | 1.047 | 1.081 | 1.103 | 1.155 | 1.060 | 5.32 |
| 88) | TM | Benzo(k)fluora... | 1.149 | 1.006 | 1.143 | 1.156 | 1.177 | 1.190 | 1.212 | 1.148 | 5.82 |
| 89) | TCM | Benzo(a)pyrene | 0.865 | 0.887 | 1.037 | 1.056 | 1.082 | 1.099 | 1.145 | 1.024 | 10.47 |
| 90) | TM | Indeno(1,2,3-c... | 0.723 | 0.685 | 0.940 | 0.921 | 0.967 | 0.930 | 0.970 | 0.876 | 13.66 |
| 91) | TM | Dibenz(a,h)ant... | 0.885 | 0.730 | 0.979 | 1.010 | 1.023 | 1.012 | 1.047 | 0.955 | 11.74 |
| 92) | TM | Benzo(g,h,i)pe... | 0.855 | 0.757 | 0.955 | 0.948 | 0.954 | 0.956 | 0.963 | 0.913 | 8.57 |

(#) = Out of Range

0070

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.336 | -0.6 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.702 | -3.8 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.192 | -1.3 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.335 | -20.5# | 100 | 0.00 |
| 6 | TM | Aniline | 2.055 | 2.024 | 1.5 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.570 | -2.6 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.619 | -2.6 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.188 | -3.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.376 | -1.4 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.583 | -0.1 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.620 | 1.3 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.519 | 1.6 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.008 | -2.4 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.622 | 1.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.230 | -0.3 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.780 | 1.0 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.931 | -0.2 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.611 | -3.0 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.307 | -1.6 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.891 | 0.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.334 | -4.0 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.316 | -4.6 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.607 | 0.606 | 0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.269 | -3.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.327 | -1.9 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.362 | 1.4 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.354 | 1.7 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.038 | 1.0 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.207 | -0.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.264 | -1.5 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.087 | 0.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.711 | 2.2 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.659 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.408 | -6.2 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.379 | -3.0 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.421 | -8.5 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.304 | -0.9 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.470 | -2.4 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.137 | -1.7 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.260 | -0.4 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.838 | -3.4 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.174 | -0.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.226 | -6.1 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.178 | 1.179 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.272 | -0.4 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.116 | 6.5 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.665 | 0.6 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.286 | -5.5 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.195 | -0.5 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.327 | -0.5 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.673 | -1.8 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.111 | 1.102 | 0.8 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.310 | 2.2 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.177 | 1.1 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.111 | 3.5 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.723 | -0.4 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.511 | 3.6 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 0# | -10.86# |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.260 | 1.5 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.081 | 0.085 | -4.9 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.134 | 6.9 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.089 | 1.064 | 2.3 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.141 | 1.124 | 1.5 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.056 | 1.080 | -2.3 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.252 | -6.9 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.260 | 1.331 | -5.6 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.466 | 0.472 | -1.3 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.134 | 1.117 | 1.5 | 100 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.802 | 4.2 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.471 | -3.5 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.341 | 2.0 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.124 | -0.2 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.149 | 1.116 | 2.9 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.626 | -7.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.981 | -9.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.047 | 1.2 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.156 | -0.7 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.056 | -3.1 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.921 | -5.1 | 100 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.010 | -5.8 | 100 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.948 | -3.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

QA: #27.86

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

LR: #52

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.408 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.752 | -11.2 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.247 | -5.9 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 0.278 | 0.221 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 2.055 | 1.862 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.627 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.686 | -6.8 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.245 | -8.6 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.427 | -5.2 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.644 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.684 | -2.6 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.575 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.045 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.779 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.284 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.868 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.969 | -4.3 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.625 | -5.4 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.343 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.902 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.325 | -1.2 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.336 | -11.3 | 127 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.627 | -3.3 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.240 | 7.3 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.339 | -5.6 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.374 | -1.9 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.360 | 0.0 | 121 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.063 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.422 | -0.7 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.211 | -2.4 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.268 | -3.1 | 121 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.088 | -1.1 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.734 | -1.0 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.677 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.405 | -5.5 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.395 | -7.3 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.415 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.379 | -6.7 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.542 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.196 | -7.0 | 121 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.290 | -12.0 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.862 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.223 | -4.3 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.256 | -20.2# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 1.178 | 1.204 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.290 | -7.0 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.117 | 5.6 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.722 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.333 | -22.9# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.199 | -2.6 | 118 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.394 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.691 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 1.111 | 1.109 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.340 | -7.3 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.180 | -0.6 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.112 | 2.6 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.762 | -5.8 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.521 | 1.7 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.236 | 0.8 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 34# | -0.05 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.263 | 0.4 | 116 | -0.01 |
| 69 | TM | Atrazine | 0.081 | 0.080 | 1.2 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.151 | -4.9 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.106 | -1.6 | 119 | -0.02 |
| 72 | TM | Anthracene | 1.141 | 1.174 | -2.9 | 120 | -0.02 |
| 73 | TM | Carbazole | 1.056 | 1.125 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.272 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 1.260 | 1.370 | -8.7 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 0.466 | 0.000# | 100.0# | 0# | -8.49# |
| 78 | TM | Pyrene | 1.134 | 1.179 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.821 | 1.9 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.466 | -2.4 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.362 | -4.0 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.149 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 1.149 | 1.146 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.612 | -5.5 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.968 | -7.6 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.112 | -4.9 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.186 | -3.3 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.096 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.943 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.030 | -7.9 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.974 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 84.824 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 89.052 | -11.3 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 84.775 | -6.0 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 80.000 | 63.567 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 80.000 | 72.481 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 85.077 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 85.487 | -6.9 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.948 | -8.7 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 80.000 | 84.098 | -5.1 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.219 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.010 | -2.5 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 81.688 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 84.996 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 86.253 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 83.784 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 83.088 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 83.387 | -4.2 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 84.254 | -5.3 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 83.495 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 80.541 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 80.916 | -1.1 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 88.830 | -11.0 | 127 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 82.545 | -3.2 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 82.780 | -3.5 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 74.094 | 7.4 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 84.597 | -5.7 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 81.468 | -1.8 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 82.696 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 79.895 | 0.1 | 121 | -0.01 |
| 32 | TM | Naphthalene | 80.000 | 81.075 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 80.432 | -0.5 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 81.777 | -2.2 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 82.201 | -2.8 | 121 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 81.529 | -1.9 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 80.735 | -0.9 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 81.067 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 84.219 | -5.3 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 85.772 | -7.2 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 85.598 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 85.309 | -6.6 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 85.881 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 85.605 | -7.0 | 121 | 0.00 |

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 89.493 | -11.9 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 83.794 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 83.372 | -4.2 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 96.290 | -20.4# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 80.000 | 81.754 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 85.411 | -6.8 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 79.250 | 0.9 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 82.219 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 98.456 | -23.1# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 81.977 | -2.5 | 118 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 84.490 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 83.618 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 80.000 | 79.879 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 85.915 | -7.4 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 80.584 | -0.7 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 77.596 | 3.0 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 84.596 | -5.7 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.584 | 1.8 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 79.450 | 0.7 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 34 | -0.05 |
| 68 | TM | Hexachlorobenzene | 80.000 | 79.571 | 0.5 | 116 | -0.01 |
| 69 | TM | Atrazine | 80.000 | 79.759 | 0.3 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 83.825 | -4.8 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 81.231 | -1.5 | 119 | -0.02 |
| 72 | TM | Anthracene | 80.000 | 82.380 | -3.0 | 120 | -0.02 |
| 73 | TM | Carbazole | 80.000 | 85.215 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 86.916 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 80.000 | 87.005 | -8.8 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 80.000 | 0.000 | ~~100.0#~~ | ~~0~~ | ~~-8.49#~~ |
| 78 | TM | Pyrene | 80.000 | 83.180 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 78.437 | 2.0 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 81.862 | -2.3 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 83.271 | -4.1 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 81.905 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 80.000 | 79.800 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 84.519 | -5.6 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 80.152 | -0.2 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 83.879 | -4.8 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 82.713 | -3.4 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 85.570 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 86.083 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 80.000 | 86.279 | -7.8 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 80.000 | 85.375 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 213008 **Prep WorkFlow:** OrgExtS(14) **Status:** Prepped
**Team:** Semivoa GCMS/SGOLBERG **Prep Method:** EPA 3541 **Prep Date/Time:** 7/22/14 2 :00 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408508-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216 | |
| 2 | RQ1408508-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 3 | RQ1408508-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 4 | R1405137-008 [redacted] | 1407011413 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/21 ☑ 5+V. |
| 5 | R1405137-009 [redacted] | 1407011606 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light brown silt/gravel | 1.0000 mL/72216 | 5+V. |
| 6 | R1405347-002 [redacted] | 1407091138 200-SB-18 88'/90' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/25 ☑ |
| 7 | R1405421-004 [redacted] | 1407111416 200-SB-15 8'/10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/29 ☑ |
| 8 | RQ1408508-04 | R1405421-004 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 9 | RQ1408508-05 | R1405421-004 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 10 | R1405541-002 [redacted] | 1407161203 200-SB-15 98/100' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 8/1 ☑ |

## Spiking Solutions

Name: 8270 LCS Mix1: 100 ug/mL Inventory ID 71908 Logbook Ref: Expires On: 10/31/2014 Lot #: Lc02739

Name: 8270 Soil Surrogate 100-200ppm Inventory ID 72216 Logbook Ref: 8270 Soil Surrogate Expires On: 01/07/2015

## Preparation Materials

Eppendorf Pipette Repeater EXT #15 (67588) 50:50 Dichloromethane:Acetone (72668) Prepared Sodium Sulfate Na2SO4 (72600)

Sand Reagent Grade SVOA (72239)

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
|---|---|---|---|---|---|
| Started: | 7/22/14 14:00 | Started: | 7/22/14 18:00 | Started: | 7/23/14 10:56 |
| Finished: | 7/22/14 17:00 | Finished: | 7/22/14 18:30 | Finished: | 7/23/14 10:56 |
| By: | ~~MPEDRO~~ SGolberg | By: | ~~MPEDRO~~ S.Golberg | By: | ~~MPEDRO~~ SGolberg |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: [signature] Date: 7/23/14 Spike Witness: MPEDRO Date:

| | | |
|---|---|---|
| Analysis: 8270/625 | Analyst: ZM | Run Method: 8270010D.m |
| Date: 7/23/14 | Instr. 5973-D | Quant Method: 8270010D.m Beg 0616D.m |
| | | LIMS Run#: 403293 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| 1 | Tune 50ng | DFTPP | Tune-D.m | AV201 | ~~N~~T | 10:00AM 0613 |
| 2 | CCV 80 ppm | 8270010D.m. | | 02 | Y | |
| 3 | CCV 80 PPB | Beg 0616D.m | | AV203 | Y | |
| 4 | [redacted] R6116085 08-01 B/N | 7/22/14 Soxh 8270BEHP | | 04 | Y | |
| 5 | —02 MS | | | 05 | Y | |
| 6 | —03 MSD | | | 06 | Y | |
| 7 | [redacted] R6 8515-01 B/N | 7/22 8270TCL W | | 07 | Y | |
| 8 | —02 MS | | | 08 | Y | |
| 9 | —03 MSD | | | 09 | Y | |
| 10 | [redacted] R 5137-008 | 8270BEHP Soil | | 10 | Y | |
| 11 | —009 | | | 11 | Y | |
| 12 | [redacted] R 5347-002 | | | 12 | Y | |
| 13 | [redacted] R 5421-004 | | | 13 | Y | |
| 14 | —004MS | R6855-04 | | 14 | Y | |
| 15 | —004MSD | —05 | | 15 | Y | |
| 16 | [redacted] R 5541-002 | | | 16 | Y | |
| 17 | [redacted] R 5562-001 | 8270TCL W | | 17 | Y | |
| 18 | —002 | | | 18 | Y | |
| 19 | [redacted] 5586-003 | 8270BEHP | | 19 | Y | |
| 20 | [redacted] R 5590-002 | 625 PPL | | 20 | Y | 6:27 pm. |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary: exp: Secondary: exp:

Primary: exp: Secondary: exp:

Runlog GCEXT r1 12/5/12

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Extracted:** | 8/19/14 |
| | | **Date Analyzed:** | 8/20/14 14:59 |
| **Sample Name:** | 1408121322 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-001 | **Basis:** | Dry |
| | | **Percent Solids:** | 99.0 |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 407781 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215750 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\082014\AV650.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | **74** | J | 330 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | 330 | U | 330 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 67 | 47-126 | 8/20/14 14:59 | |
| Nitrobenzene-d5 | 58 | 39-136 | 8/20/14 14:59 | |
| p-Terphenyl-d14 | 70 | 35-152 | 8/20/14 14:59 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Extracted:** | 8/19/14 |
| | | **Date Analyzed:** | 8/20/14 16:18 |
| **Sample Name:** | 1408121323 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-002 | **Basis:** | Dry |
| | | **Percent Solids:** | 99.1 |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 407781 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215750 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\082014\AV653.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | 330 | U | 330 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | 330 | U | 330 | 52 | |

| Surrogate Name | %Rec | | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|---|
| 2-Fluorobiphenyl | 44 | * | 47-126 | 8/20/14 16:18 | |
| Nitrobenzene-d5 | 40 | | 39-136 | 8/20/14 16:18 | |
| p-Terphenyl-d14 | 45 | | 35-152 | 8/20/14 16:18 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Extracted:** | 8/22/14 |
| | | **Date Analyzed:** | 8/25/14 14:44 |
| **Sample Name:** | 1408121323 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-002 | **Basis:** | Dry |
| **Run Type:** | Reanalysis | **Percent Solids:** | 99.1 |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 408453 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 216264 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\082054\AV674.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | **61** | J | 330 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | 330 | U | 330 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 64 | 47-126 | 8/25/14 14:44 | |
| Nitrobenzene-d5 | 55 | 39-136 | 8/25/14 14:44 | |
| p-Terphenyl-d14 | 66 | 35-152 | 8/25/14 14:44 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Extracted:** | 8/19/14 |
| | | **Date Analyzed:** | 8/20/14 16:44 |
| **Sample Name:** | 1408121402 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-003 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.0 |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 407781 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215750 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\082014\AV654.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | 340 | U | 340 | 45 | |
| 84-74-2 | Di-n-butyl Phthalate | 340 | U | 340 | 53 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 64 | 47-126 | 8/20/14 16:44 | |
| Nitrobenzene-d5 | 56 | 39-136 | 8/20/14 16:44 | |
| p-Terphenyl-d14 | 71 | 35-152 | 8/20/14 16:44 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Extracted:** | 8/19/14 |
| | | **Date Analyzed:** | 8/20/14 18:01 |
| **Sample Name:** | 1408121403 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-004 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.1 |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 407781 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215750 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\082014\AV657.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | 340 | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | 340 | U | 340 | 53 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 63 | 47-126 | 8/20/14 18:01 | |
| Nitrobenzene-d5 | 53 | 39-136 | 8/20/14 18:01 | |
| p-Terphenyl-d14 | 70 | 35-152 | 8/20/14 18:01 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Analyzed:** | 8/25/14 17:50 |
| **Sample Name:** | 1408121310 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-005 | **Basis:** | Dry |
| | | **Percent Solids:** | 99.0 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 408274 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\082514\W0558.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.05 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | 5.3 | U | 5.3 | 0.78 | |
| 79-00-5 | 1,1,2-Trichloroethane | 5.3 | U | 5.3 | 0.78 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 5.3 | U | 5.3 | 1.4 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | 5.3 | U | 5.3 | 1.4 | |
| 107-06-2 | 1,2-Dichloroethane | 5.3 | U | 5.3 | 0.65 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 5.3 | U | 5.3 | 1.5 | |
| 78-93-3 | 2-Butanone (MEK) | 5.3 | U | 5.3 | 2.5 | |
| 67-63-0 | Isopropanol | 110 | U | 110 | 30 | |
| 67-64-1 | Acetone | **6.2** | | 5.3 | 3.0 | |
| 71-43-2 | Benzene | 5.3 | U | 5.3 | 0.31 | |
| 75-27-4 | Bromodichloromethane | 5.3 | U | 5.3 | 0.65 | |
| 75-25-2 | Bromoform | 5.3 | U | 5.3 | 0.99 | |
| 108-90-7 | Chlorobenzene | 5.3 | U | 5.3 | 0.31 | |
| 67-66-3 | Chloroform | 5.3 | U | 5.3 | 1.4 | |
| 74-87-3 | Chloromethane | 5.3 | U | 5.3 | 0.43 | |
| 124-48-1 | Dibromochloromethane | 5.3 | U | 5.3 | 0.78 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | 5.3 | U | 5.3 | 1.6 | |
| 75-09-2 | Dichloromethane | 5.3 | U | 5.3 | 0.61 | |
| 100-41-4 | Ethylbenzene | 5.3 | U | 5.3 | 0.25 | |
| 1634-04-4 | Methyl tert-Butyl Ether | 5.3 | U | 5.3 | 1.0 | |
| 127-18-4 | Tetrachloroethene (PCE) | 5.3 | U | 5.3 | 0.94 | |
| 108-88-3 | Toluene | **1.3** | J | 5.3 | 1.1 | |
| 79-01-6 | Trichloroethene (TCE) | 5.3 | U | 5.3 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | 11 | U | 11 | 1.2 | |
| 95-47-6 | o-Xylene | 5.3 | U | 5.3 | 0.51 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 5.3 | U | 5.3 | 1.5 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 51-136 | 8/25/14 17:50 | |
| Dibromofluoromethane | 98 | 63-138 | 8/25/14 17:50 | |
| Toluene-d8 | 98 | 66-138 | 8/25/14 17:50 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Analyzed:** | 8/25/14 18:29 |
| **Sample Name:** | 1408121311 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-006 | **Basis:** | Dry |
| | | **Percent Solids:** | 99.0 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 408274 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\082514\W0559.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.19 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | 6.0 | U | 6.0 | 0.88 | |
| 79-00-5 | 1,1,2-Trichloroethane | 6.0 | U | 6.0 | 0.88 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 6.0 | U | 6.0 | 1.5 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | 6.0 | U | 6.0 | 1.6 | |
| 107-06-2 | 1,2-Dichloroethane | 6.0 | U | 6.0 | 0.74 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 6.0 | U | 6.0 | 1.7 | |
| 78-93-3 | 2-Butanone (MEK) | 6.0 | U | 6.0 | 2.8 | |
| 67-63-0 | Isopropanol | 120 | U | 120 | 34 | |
| 67-64-1 | Acetone | 6.0 | U | 6.0 | 3.4 | |
| 71-43-2 | Benzene | 6.0 | U | 6.0 | 0.35 | |
| 75-27-4 | Bromodichloromethane | 6.0 | U | 6.0 | 0.74 | |
| 75-25-2 | Bromoform | 6.0 | U | 6.0 | 1.2 | |
| 108-90-7 | Chlorobenzene | 6.0 | U | 6.0 | 0.35 | |
| 67-66-3 | Chloroform | 6.0 | U | 6.0 | 1.6 | |
| 74-87-3 | Chloromethane | 6.0 | U | 6.0 | 0.49 | |
| 124-48-1 | Dibromochloromethane | 6.0 | U | 6.0 | 0.88 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | 6.0 | U | 6.0 | 1.9 | |
| 75-09-2 | Dichloromethane | 6.0 | U | 6.0 | 0.69 | |
| 100-41-4 | Ethylbenzene | 6.0 | U | 6.0 | 0.28 | |
| 1634-04-4 | Methyl tert-Butyl Ether | 6.0 | U | 6.0 | 1.2 | |
| 127-18-4 | Tetrachloroethene (PCE) | 6.0 | U | 6.0 | 1.1 | |
| 108-88-3 | Toluene | **1.3** | J | 6.0 | 1.3 | |
| 79-01-6 | Trichloroethene (TCE) | 6.0 | U | 6.0 | 1.3 | |
| 179601-23-1 | m,p-Xylenes | 12 | U | 12 | 1.4 | |
| 95-47-6 | o-Xylene | 6.0 | U | 6.0 | 0.58 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 6.0 | U | 6.0 | 1.7 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 51-136 | 8/25/14 18:29 | |
| Dibromofluoromethane | 98 | 63-138 | 8/25/14 18:29 | |
| Toluene-d8 | 99 | 66-138 | 8/25/14 18:29 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Analyzed:** | 8/25/14 19:07 |
| **Sample Name:** | 1408121350 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-007 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.9 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 408274 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\082514\W0560.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.01 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | 5.2 | U | 5.2 | 0.76 | |
| 79-00-5 | 1,1,2-Trichloroethane | 5.2 | U | 5.2 | 0.76 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 5.2 | U | 5.2 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | 5.2 | U | 5.2 | 1.4 | |
| 107-06-2 | 1,2-Dichloroethane | 5.2 | U | 5.2 | 0.63 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 5.2 | U | 5.2 | 1.5 | |
| 78-93-3 | 2-Butanone (MEK) | 5.2 | U | 5.2 | 2.4 | |
| 67-63-0 | Isopropanol | 100 | U | 100 | 29 | |
| 67-64-1 | Acetone | 5.2 | U | 5.2 | 2.9 | |
| 71-43-2 | Benzene | 5.2 | U | 5.2 | 0.30 | |
| 75-27-4 | Bromodichloromethane | 5.2 | U | 5.2 | 0.63 | |
| 75-25-2 | Bromoform | 5.2 | U | 5.2 | 0.96 | |
| 108-90-7 | Chlorobenzene | 5.2 | U | 5.2 | 0.30 | |
| 67-66-3 | Chloroform | 5.2 | U | 5.2 | 1.3 | |
| 74-87-3 | Chloromethane | 5.2 | U | 5.2 | 0.42 | |
| 124-48-1 | Dibromochloromethane | 5.2 | U | 5.2 | 0.76 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | 5.2 | U | 5.2 | 1.6 | |
| 75-09-2 | Dichloromethane | 5.2 | U | 5.2 | 0.59 | |
| 100-41-4 | Ethylbenzene | 5.2 | U | 5.2 | 0.24 | |
| 1634-04-4 | Methyl tert-Butyl Ether | 5.2 | U | 5.2 | 0.97 | |
| 127-18-4 | Tetrachloroethene (PCE) | 5.2 | U | 5.2 | 0.91 | |
| 108-88-3 | Toluene | **1.6** | J | 5.2 | 1.1 | |
| 79-01-6 | Trichloroethene (TCE) | 5.2 | U | 5.2 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | 10 | U | 10 | 1.2 | |
| 95-47-6 | o-Xylene | 5.2 | U | 5.2 | 0.50 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 5.2 | U | 5.2 | 1.5 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 8/25/14 19:07 | |
| Dibromofluoromethane | 98 | 63-138 | 8/25/14 19:07 | |
| Toluene-d8 | 99 | 66-138 | 8/25/14 19:07 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 8/12/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 8/14/14 |
| | | **Date Analyzed:** | 8/25/14 19:46 |
| **Sample Name:** | 1408121351 IDW 200-SB-14 | **Units:** | µg/Kg |
| **Lab Code:** | R1406307-008 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.4 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 408274 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\082514\W0561.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.27 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | 6.5 | U | 6.5 | 0.96 | |
| 79-00-5 | 1,1,2-Trichloroethane | 6.5 | U | 6.5 | 0.96 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 6.5 | U | 6.5 | 1.7 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | 6.5 | U | 6.5 | 1.7 | |
| 107-06-2 | 1,2-Dichloroethane | 6.5 | U | 6.5 | 0.80 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 6.5 | U | 6.5 | 1.9 | |
| 78-93-3 | 2-Butanone (MEK) | 6.5 | U | 6.5 | 3.0 | |
| 67-63-0 | Isopropanol | 130 | U | 130 | 37 | |
| 67-64-1 | Acetone | 6.5 | U | 6.5 | 3.7 | |
| 71-43-2 | Benzene | 6.5 | U | 6.5 | 0.38 | |
| 75-27-4 | Bromodichloromethane | 6.5 | U | 6.5 | 0.80 | |
| 75-25-2 | Bromoform | 6.5 | U | 6.5 | 1.3 | |
| 108-90-7 | Chlorobenzene | 6.5 | U | 6.5 | 0.38 | |
| 67-66-3 | Chloroform | 6.5 | U | 6.5 | 1.7 | |
| 74-87-3 | Chloromethane | 6.5 | U | 6.5 | 0.53 | |
| 124-48-1 | Dibromochloromethane | 6.5 | U | 6.5 | 0.96 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | 6.5 | U | 6.5 | 2.0 | |
| 75-09-2 | Dichloromethane | 6.5 | U | 6.5 | 0.75 | |
| 100-41-4 | Ethylbenzene | 6.5 | U | 6.5 | 0.30 | |
| 1634-04-4 | Methyl tert-Butyl Ether | 6.5 | U | 6.5 | 1.3 | |
| 127-18-4 | Tetrachloroethene (PCE) | 6.5 | U | 6.5 | 1.2 | |
| 108-88-3 | Toluene | **1.7** | J | 6.5 | 1.4 | |
| 79-01-6 | Trichloroethene (TCE) | 6.5 | U | 6.5 | 1.4 | |
| 179601-23-1 | m,p-Xylenes | 13 | U | 13 | 1.5 | |
| 95-47-6 | o-Xylene | 6.5 | U | 6.5 | 0.63 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 6.5 | U | 6.5 | 1.8 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 103 | 51-136 | 8/25/14 19:46 | |
| Dibromofluoromethane | 96 | 63-138 | 8/25/14 19:46 | |
| Toluene-d8 | 100 | 66-138 | 8/25/14 19:46 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 8/19/14 |
| | | **Date Analyzed:** | 8/19/14 14:51 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1409754-01 | **Basis:** | Dry |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 407368 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 215750 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\081914\AV615.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | 330 | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | 330 | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 61 | 47-126 | 8/19/14 14:51 | |
| Nitrobenzene-d5 | 51 | 39-136 | 8/19/14 14:51 | |
| p-Terphenyl-d14 | 74 | 35-152 | 8/19/14 14:51 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 8/22/14 |
| | | **Date Analyzed:** | 8/25/14 13:26 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1409921-01 | **Basis:** | Dry |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 408453 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 216264 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\082054\AV671.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | 330 | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | 330 | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 66 | 47-126 | 8/25/14 13:26 | |
| Nitrobenzene-d5 | 55 | 39-136 | 8/25/14 13:26 | |
| p-Terphenyl-d14 | 74 | 35-152 | 8/25/14 13:26 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1406307 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 8/25/14 15:12 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1410120-04 | **Basis:** | Dry |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 408274 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\082514\W0554.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | 5.0 | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | 5.0 | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | 5.0 | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | 5.0 | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | 5.0 | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 5.0 | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | 5.0 | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | 100 | U | 100 | 28 | |
| 67-64-1 | Acetone | 5.0 | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | 5.0 | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | 5.0 | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | 5.0 | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | 5.0 | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | 5.0 | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | 5.0 | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | 5.0 | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | 5.0 | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | **1.3** | J | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | 5.0 | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | 5.0 | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | 5.0 | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | 5.0 | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | 5.0 | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | 10 | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | 5.0 | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 5.0 | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 103 | 51-136 | 8/25/14 15:12 | |
| Dibromofluoromethane | 93 | 63-138 | 8/25/14 15:12 | |
| Toluene-d8 | 99 | 66-138 | 8/25/14 15:12 | |

July 31, 2014

Service Request No: R1405421

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 15, 2014. For your reference, these analyses have been assigned our service request number **R1405421**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



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## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Water/Soil | **Date Received:** | 07/15/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 07/11/14 and received on 07/15/14 at a cooler temperature of 2.8°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

**Inorganics**

Soil samples were analyzed for pH by method 9045D from SW-846.

Site specific QC was requested on 1407111422 200-SB-15 8/10' but due to a laboratory error, was not performed.

No other analytical or QC issues were encountered.

**Volatile Organics**

Soil and water samples were analyzed for a site list of Volatile Organics by Method 5030/5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated. The 5035 vials were not frozen within 48 hours of collection. The client was notified and the samples analyzed.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable except Acetone was outside limits high on the 07/18/14 LCS/LCSD and has been flagged with an "*". No data was affected.

Site specific QC was performed on 1407111410 200-SB-15 8/10' as requested. All MS/MSD recoveries were acceptable. All RPD's were within limits except Acetone and Chloromethane and have been flagged with an "*".

The Method Blanks associated with these samples were free of contamination except for low level detection Dichloromethane on the 07/17/14 blank. All affected data has been flagged with a "B".

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil and water samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable.

Site specific QC was performed on 1407111416 200-SB-15 8-10 as requested. All MS/MSD recoveries and RPD's were acceptable.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405421

| Lab ID | Client ID |
|---|---|
| R1405421-001 | 1407111300 200-SB-15 |
| R1405421-002 | 1407111340 200-SB-15 |
| R1405421-003 | 1407111343 200-SB-15 |
| R1405421-004 | 1407111416 200-SB-15 8'/10' |
| R1405421-005 | 1407111410 200-SB-15 8'/10' |
| R1405421-006 | 1407111422 200-SB-15 8'/10' |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/15/14 |
| | | **Date Analyzed:** | 7/18/14 20:29 |
| **Sample Name:** | 1407111300 200-SB-15 | **Units:** | µg/L |
| **Lab Code:** | R1405421-001 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 402460 |
| **Data File Name:** | I:\ACQUDATA\msvoa12\Data\071814\M7497.D\ | **Instrument Name:** | R-MS-12 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 102 | 85-122 | 7/18/14 20:29 | |
| Dibromofluoromethane | 105 | 89-119 | 7/18/14 20:29 | |
| Toluene-d8 | 100 | 87-121 | 7/18/14 20:29 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407111300 200-SB-15 | **Date Collected:** | 7/11/14 |
| **Lab Code:** | R1405421-001 | **Date Received:** | 7/15/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | KRUEST |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/15/14 |
| | | **Date Analyzed:** | 7/18/14 21:01 |
| **Sample Name:** | 1407111340 200-SB-15 | **Units:** | µg/L |
| **Lab Code:** | R1405421-002 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 402460 |
| **Data File Name:** | I:\ACQUDATA\msvoa12\Data\071814\M7498.D\ | **Instrument Name:** | R-MS-12 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 85-122 | 7/18/14 21:01 | |
| Dibromofluoromethane | 106 | 89-119 | 7/18/14 21:01 | |
| Toluene-d8 | 100 | 87-121 | 7/18/14 21:01 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407111340 200-SB-15 | **Date Collected:** | 7/11/14 |
| **Lab Code:** | R1405421-002 | **Date Received:** | 7/15/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | KRUEST |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/15/14 |
| | | **Date Extracted:** | 7/16/14 |
| | | **Date Analyzed:** | 7/18/14 20:24 |
| **Sample Name:** | 1407111343 200-SB-15 | **Units:** | µg/L |
| **Lab Code:** | R1405421-003 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 402731 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 213099 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\071814\CZ427.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | **1.8** | J | 9.4 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 9.4 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 84 | 39-119 | 7/18/14 20:24 | |
| Nitrobenzene-d5 | 70 | 37-117 | 7/18/14 20:24 | |
| p-Terphenyl-d14 | 97 | 40-133 | 7/18/14 20:24 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407111343 200-SB-15 | **Date Collected:** | 7/11/14 |
| **Lab Code:** | R1405421-003 | **Date Received:** | 7/15/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8270D | DMURPHY | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/15/14 |
| **Sample Name:** | 1407111416 200-SB-15 8'/10' | | |
| **Lab Code:** | R1405421-004 | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **94.1** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/15/14 |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 15:24 |
| **Sample Name:** | 1407111416 200-SB-15 8'/10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405421-004 | **Basis:** | Dry |
| | | **Percent Solids:** | 94.1 |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV213.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 350 | 46 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 350 | 54 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 70 | 47-126 | 7/23/14 15:24 | |
| Nitrobenzene-d5 | 65 | 39-136 | 7/23/14 15:24 | |
| p-Terphenyl-d14 | 69 | 35-152 | 7/23/14 15:24 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407111416 200-SB-15 8'/10' | **Date Collected:** | 7/11/14 |
| **Lab Code:** | R1405421-004 | **Date Received:** | 7/15/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/15/14 |
| **Sample Name:** | 1407111410 200-SB-15 8'/10' | | |
| **Lab Code:** | R1405421-005 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **94.1** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/15/14 |
| | | **Date Analyzed:** | 7/17/14 12:37 |
| **Sample Name:** | 1407111410 200-SB-15 8'/10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405421-005 | **Basis:** | Dry |
| | | **Percent Solids:** | 94.1 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 402249 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071714\K9851.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.08 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.7 | 0.84 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.7 | 0.84 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.7 | 1.5 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.7 | 1.5 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.7 | 0.71 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.7 | 1.6 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.7 | 2.7 | |
| 67-63-0 | Isopropanol | ND | U | 110 | 33 | |
| 67-64-1 | Acetone | **5.3** | J | 5.7 | 3.3 | |
| 71-43-2 | Benzene | ND | U | 5.7 | 0.34 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.7 | 0.71 | |
| 75-25-2 | Bromoform | ND | U | 5.7 | 1.1 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.7 | 0.34 | |
| 67-66-3 | Chloroform | ND | U | 5.7 | 1.5 | |
| 74-87-3 | Chloromethane | ND | U | 5.7 | 0.46 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.7 | 0.84 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.7 | 1.8 | |
| 75-09-2 | Dichloromethane | ND | U | 5.7 | 0.66 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.7 | 0.27 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.7 | 1.1 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.7 | 1.1 | |
| 108-88-3 | Toluene | **3.4** | J | 5.7 | 1.2 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.7 | 1.2 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 11 | 1.3 | |
| 95-47-6 | o-Xylene | ND | U | 5.7 | 0.56 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.7 | 1.6 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 51-136 | 7/17/14 12:37 | |
| Dibromofluoromethane | 96 | 63-138 | 7/17/14 12:37 | |
| Toluene-d8 | 100 | 66-138 | 7/17/14 12:37 | |

**ALS ENVIRONMENTAL**

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407111410 200-SB-15 8'/10' | **Date Collected:** | 7/11/14 |
| **Lab Code:** | R1405421-005 | **Date Received:** | 7/15/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/15/14 |
| **Sample Name:** | 1407111422 200-SB-15 8'/10' | | |
| **Lab Code:** | R1405421-006 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.45 | | pH Units | | 1 | NA | 7/16/14 20:55 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407111422 200-SB-15 8'/10' | **Date Collected:** | 7/11/14 |
| **Lab Code:** | R1405421-006 | **Date Received:** | 7/15/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405421-MB | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **1.0** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/17/14 11:59 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408324-04 | **Basis:** | Dry |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 402249 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071714\K9850.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | **0.57** | **J** | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 51-136 | 7/17/14 11:59 | |
| Dibromofluoromethane | 99 | 63-138 | 7/17/14 11:59 | |
| Toluene-d8 | 100 | 66-138 | 7/17/14 11:59 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/18/14 15:40 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1408389-04 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 402460 |
| **Data File Name:** | I:\ACQUDATA\msvoa12\Data\071814\M7488.D\ | **Instrument Name:** | R-MS-12 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 85-122 | 7/18/14 15:40 | |
| Dibromofluoromethane | 106 | 89-119 | 7/18/14 15:40 | |
| Toluene-d8 | 99 | 87-121 | 7/18/14 15:40 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/24/14 11:49 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408665-04 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403347 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072414\K9965.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 7/24/14 11:49 | |
| Dibromofluoromethane | 97 | 63-138 | 7/24/14 11:49 | |
| Toluene-d8 | 99 | 66-138 | 7/24/14 11:49 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Extracted:** | 7/16/14 |
| | | **Date Analyzed:** | 7/18/14 18:38 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1408203-01 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 402731 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 213099 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\071814\CZ423.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 10 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 10 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 78 | 39-119 | 7/18/14 18:38 | |
| Nitrobenzene-d5 | 62 | 37-117 | 7/18/14 18:38 | |
| p-Terphenyl-d14 | 89 | 40-133 | 7/18/14 18:38 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 11:25 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408508-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV204.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 75 | 47-126 | 7/23/14 11:25 | |
| Nitrobenzene-d5 | 66 | 39-136 | 7/23/14 11:25 | |
| p-Terphenyl-d14 | 73 | 35-152 | 7/23/14 11:25 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/11/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/15/14 |
| | | **Date Analyzed:** | 7/23/14 |

**Replicate Sample Summary**
**General Chemistry Parameters**

**Sample Name:** 1407111416 200-SB-15 8'/10'
**Lab Code:** R1405421-004

**Units:** Percent
**Basis:** As Received

| Analyte Name | Method | MRL | Sample Result | 1407111416 200-SB-15 8'/10'DUP Duplicate Sample R1405421-004DUP Result | Average | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | 1.0 | 94.1 | 94.3 | 94.2 | <1 | 20 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405421
**Date Collected:** 7/11/14
**Date Received:** 7/15/14
**Date Analyzed:** 7/24/14 - 7/24/14

### Matrix Spike Summary
### Volatile Organic Compounds by GC/MS

**Sample Name:** 1407111410 200-SB-15 8'/10'
**Lab Code:** R1405421-005

**Units:** µg/Kg
**Basis:** Dry

**Analytical Method:** 8260C

| Analyte Name | Sample Result | 1407111410 200-SB-15 8'/10'MS Matrix Spike RQ1408324-05 Result | Spike Amount | % Rec | 1407111410 200-SB-15 8'/10'DMS Duplicate Matrix Spike RQ1408324-06 Result | Spike Amount | % Rec | % Rec Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | ND | 31.7 | 38.0 | 84 | 49.8 | 50.5 | 99 | 37 - 142 | 16 | 30 |
| 1,1,2-Trichloroethane | ND | 30.2 | 38.0 | 79 | 47.0 | 50.5 | 93 | 35 - 144 | 16 | 30 |
| 1,1,2-Trichlorotrifluoroethane | ND | 35.5 | 38.0 | 93 | 56.6 | 50.5 | 112 | 31 - 139 | 19 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | ND | 33.8 | 38.0 | 89 | 59.4 | 50.5 | 118 | 47 - 155 | 28 | 30 |
| 1,2-Dichloroethane | ND | 25.8 | 38.0 | 68 | 44.5 | 50.5 | 88 | 37 - 142 | 26 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC | ND | 36.6 | 38.0 | 96 | 51.5 | 50.5 | 102 | 46 - 159 | 6 | 30 |
| 2-Butanone (MEK) | ND | 35.3 | 38.0 | 93 | 53.1 | 50.5 | 105 | 29 - 166 | 12 | 30 |
| Isopropanol | ND | 791 | 760 | 104 | 1010 | 1010 | 100 | 10 - 158 | 4 | 30 |
| Acetone | 5.0 | 35.2 | 38.0 | 79 | 61.4 | 50.5 | 112 | 21 - 197 | 35 * | 30 |
| Benzene | ND | 30.8 | 38.0 | 81 | 50.9 | 50.5 | 101 | 33 - 144 | 22 | 30 |
| Bromodichloromethane | ND | 30.8 | 38.0 | 81 | 47.3 | 50.5 | 94 | 35 - 144 | 15 | 30 |
| Bromoform | ND | 30.7 | 38.0 | 81 | 49.0 | 50.5 | 97 | 16 - 157 | 18 | 30 |
| Chlorobenzene | ND | 31.4 | 38.0 | 83 | 50.6 | 50.5 | 100 | 17 - 151 | 19 | 30 |
| Chloroform | ND | 29.1 | 38.0 | 77 | 44.5 | 50.5 | 88 | 43 - 145 | 13 | 30 |
| Chloromethane | ND | 21.2 | 38.0 | 56 | 50.2 | 50.5 | 99 | 11 - 162 | 55 * | 30 |
| Dibromochloromethane | ND | 30.0 | 38.0 | 79 | 46.9 | 50.5 | 93 | 23 - 154 | 16 | 30 |
| Dichlorofluoromethane (CFC 21) | ND | 27.4 | 38.0 | 72 | 42.5 | 50.5 | 84 | 45 - 158 | 15 | 30 |
| Dichloromethane | ND | 28.5 | 38.0 | 75 | 47.4 | 50.5 | 94 | 42 - 135 | 22 | 30 |
| Ethylbenzene | ND | 30.9 | 38.0 | 81 | 49.0 | 50.5 | 97 | 13 - 159 | 18 | 30 |
| Methyl tert-Butyl Ether | ND | 28.5 | 38.0 | 75 | 46.3 | 50.5 | 92 | 48 - 131 | 20 | 30 |
| Tetrachloroethene (PCE) | ND | 33.3 | 38.0 | 88 | 56.5 | 50.5 | 112 | 19 - 159 | 24 | 30 |
| Toluene | 3.2 | 34.1 | 38.0 | 81 | 53.8 | 50.5 | 100 | 22 - 148 | 21 | 30 |
| Trichloroethene (TCE) | ND | 31.9 | 38.0 | 84 | 53.1 | 50.5 | 105 | 11 - 167 | 22 | 30 |
| m,p-Xylenes | ND | 66.4 | 76.0 | 87 | 105 | 101 | 103 | 10 - 160 | 17 | 30 |
| o-Xylene | ND | 31.5 | 38.0 | 83 | 50.3 | 50.5 | 100 | 10 - 160 | 19 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | ND | 39.2 | 38.0 | 103 | 57.9 | 50.5 | 115 | 45 - 151 | 11 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405421
**Date Collected:** 7/11/14
**Date Received:** 7/15/14
**Date Analyzed:** 7/23/14

**Matrix Spike Summary**
**Semivolatile Organic Compounds by GC/MS**

**Sample Name:** 1407111416 200-SB-15 8'/10'
**Lab Code:** R1405421-004

**Units:** µg/Kg
**Basis:** Dry

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

| | | 1407111416 200-SB-15 8'/10'MS Matrix Spike RQ1408508-04 | | | 1407111416 200-SB-15 8'/10'DMS Duplicate Matrix Spike RQ1408508-05 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Sample Result** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | ND | 2110 | 3540 | 60 | 2720 | 3540 | 77 | 13 - 164 | 25 | 30 |
| Di-n-butyl Phthalate | ND | 2030 | 3540 | 57 | 2590 | 3540 | 73 | 14 - 174 | 24 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not applicable.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405421
**Date Analyzed:** 7/17/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 402249

| Analyte Name | Lab Control Sample RQ1408324-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 17.3 | 20.0 | 86 | 64 - 127 |
| 1,1,2-Trichloroethane | 19.0 | 20.0 | 95 | 76 - 123 |
| 1,1,2-Trichlorotrifluoroethane | 19.0 | 20.0 | 95 | 59 - 146 |
| 1,1-Dichloroethene (1,1-DCE) | 21.6 | 20.0 | 108 | 75 - 151 |
| 1,2-Dichloroethane | 18.7 | 20.0 | 93 | 66 - 123 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.6 | 20.0 | 108 | 61 - 138 |
| 2-Butanone (MEK) | 19.0 | 20.0 | 95 | 62 - 128 |
| Isopropanol | 355 | 400 | 89 | 62 - 142 |
| Acetone | 20.1 | 20.0 | 100 | 53 - 143 |
| Benzene | 19.4 | 20.0 | 97 | 74 - 123 |
| Bromodichloromethane | 19.0 | 20.0 | 95 | 77 - 127 |
| Bromoform | 19.3 | 20.0 | 97 | 65 - 133 |
| Chlorobenzene | 19.0 | 20.0 | 95 | 77 - 124 |
| Chloroform | 18.4 | 20.0 | 92 | 73 - 125 |
| Chloromethane | 19.6 | 20.0 | 98 | 56 - 154 |
| Dibromochloromethane | 19.4 | 20.0 | 97 | 77 - 124 |
| Dichlorofluoromethane (CFC 21) | 17.3 | 20.0 | 87 | 79 - 142 |
| Dichloromethane | 21.4 | 20.0 | 107 | 77 - 126 |
| Ethylbenzene | 17.3 | 20.0 | 86 | 73 - 123 |
| Methyl tert-Butyl Ether | 19.4 | 20.0 | 97 | 72 - 131 |
| Tetrachloroethene (PCE) | 18.8 | 20.0 | 94 | 65 - 133 |
| Toluene | 18.7 | 20.0 | 94 | 72 - 127 |
| Trichloroethene (TCE) | 18.8 | 20.0 | 94 | 72 - 129 |
| m,p-Xylenes | 37.3 | 40.0 | 93 | 77 - 125 |
| o-Xylene | 18.5 | 20.0 | 93 | 75 - 124 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 24.6 | 20.0 | 123 | 56 - 154 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405421
**Date Analyzed:** 7/18/14

## Lab Control Sample Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**Units:** µg/L
**Basis:** NA

**Analysis Lot:** 402460

**Lab Control Sample**
RQ1408389-03

| Analyte Name | Result | Spike Amount | % Rec | | % Rec Limits |
|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 23.6 | 20.0 | 118 | | 71 - 123 |
| 1,1,2-Trichloroethane | 20.4 | 20.0 | 102 | | 79 - 117 |
| 1,1,2-Trichlorotrifluoroethane | 22.0 | 20.0 | 110 | | 64 - 136 |
| 1,1-Dichloroethene (1,1-DCE) | 21.8 | 20.0 | 109 | | 74 - 135 |
| 1,2-Dichloroethane | 24.9 | 20.0 | 124 | | 72 - 130 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 19.6 | 20.0 | 98 | | 62 - 138 |
| 2-Butanone (MEK) | 24.1 | 20.0 | 121 | | 66 - 129 |
| Isopropanol | 406 | 400 | 102 | | 57 - 137 |
| Acetone | 29.3 | 20.0 | 147 | * | 51 - 146 |
| Benzene | 21.6 | 20.0 | 108 | | 76 - 118 |
| Bromodichloromethane | 23.2 | 20.0 | 116 | | 79 - 122 |
| Bromoform | 19.9 | 20.0 | 99 | | 65 - 138 |
| Chlorobenzene | 21.1 | 20.0 | 106 | | 80 - 121 |
| Chloroform | 23.1 | 20.0 | 115 | | 76 - 120 |
| Chloromethane | 19.7 | 20.0 | 98 | | 64 - 140 |
| Dibromochloromethane | 21.4 | 20.0 | 107 | | 79 - 125 |
| Dichlorofluoromethane (CFC 21) | 17.0 | 20.0 | 85 | | 79 - 144 |
| Dichloromethane | 19.7 | 20.0 | 99 | | 73 - 122 |
| Ethylbenzene | 19.5 | 20.0 | 97 | | 76 - 120 |
| Methyl tert-Butyl Ether | 22.0 | 20.0 | 110 | | 73 - 131 |
| Tetrachloroethene (PCE) | 22.8 | 20.0 | 114 | | 69 - 124 |
| Toluene | 21.6 | 20.0 | 108 | | 77 - 120 |
| Trichloroethene (TCE) | 21.0 | 20.0 | 105 | | 76 - 123 |
| m,p-Xylenes | 42.5 | 40.0 | 106 | | 78 - 123 |
| o-Xylene | 20.3 | 20.0 | 101 | | 77 - 131 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.5 | 20.0 | 117 | | 65 - 143 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405421
**Date Analyzed:** 7/24/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 403347

| Analyte Name | Lab Control Sample RQ1408665-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 18.7 | 20.0 | 93 | 64 - 127 |
| 1,1,2-Trichloroethane | 20.2 | 20.0 | 101 | 76 - 123 |
| 1,1,2-Trichlorotrifluoroethane | 20.2 | 20.0 | 101 | 59 - 146 |
| 1,1-Dichloroethene (1,1-DCE) | 23.2 | 20.0 | 116 | 75 - 151 |
| 1,2-Dichloroethane | 19.0 | 20.0 | 95 | 66 - 123 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.3 | 20.0 | 107 | 61 - 138 |
| 2-Butanone (MEK) | 21.8 | 20.0 | 109 | 62 - 128 |
| Isopropanol | 520 | 400 | 130 | 62 - 142 |
| Acetone | 17.6 | 20.0 | 88 | 53 - 143 |
| Benzene | 20.4 | 20.0 | 102 | 74 - 123 |
| Bromodichloromethane | 19.4 | 20.0 | 97 | 77 - 127 |
| Bromoform | 20.3 | 20.0 | 102 | 65 - 133 |
| Chlorobenzene | 19.6 | 20.0 | 98 | 77 - 124 |
| Chloroform | 19.0 | 20.0 | 95 | 73 - 125 |
| Chloromethane | 20.5 | 20.0 | 103 | 56 - 154 |
| Dibromochloromethane | 19.6 | 20.0 | 98 | 77 - 124 |
| Dichlorofluoromethane (CFC 21) | 17.6 | 20.0 | 88 | 79 - 142 |
| Dichloromethane | 20.5 | 20.0 | 102 | 77 - 126 |
| Ethylbenzene | 17.4 | 20.0 | 87 | 73 - 123 |
| Methyl tert-Butyl Ether | 20.8 | 20.0 | 104 | 72 - 131 |
| Tetrachloroethene (PCE) | 19.6 | 20.0 | 98 | 65 - 133 |
| Toluene | 19.4 | 20.0 | 97 | 72 - 127 |
| Trichloroethene (TCE) | 19.8 | 20.0 | 99 | 72 - 129 |
| m,p-Xylenes | 37.5 | 40.0 | 94 | 77 - 125 |
| o-Xylene | 18.7 | 20.0 | 93 | 75 - 124 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 24.4 | 20.0 | 122 | 56 - 154 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405421
**Date Analyzed:** 7/18/14

### Lab Control Sample Summary
### Semivolatile Organic Compounds by GC/MS

**Analytical Method:** 8270D
**Prep Method:** EPA 3510C

**Units:** µg/L
**Basis:** NA

**Extraction Lot:** 213099

| | Lab Control Sample RQ1408203-02 | | | Duplicate Lab Control Sample RQ1408203-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 98.0 | 100 | 98 | 93.8 | 100 | 94 | 62 - 124 | 4 | 30 |
| Di-n-butyl Phthalate | 98.6 | 100 | 99 | 96.8 | 100 | 97 | 57 - 139 | 2 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405421
**Date Analyzed:** 7/23/14

## Lab Control Sample Summary
## Semivolatile Organic Compounds by GC/MS

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 213008

| | Lab Control Sample RQ1408508-02 | | | Duplicate Lab Control Sample RQ1408508-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2710 | 3330 | 81 | 2940 | 3330 | 88 | 50 - 142 | 8 | 30 |
| Di-n-butyl Phthalate | 2620 | 3330 | 79 | 2650 | 3330 | 80 | 36 - 164 | 1 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

# WSTF CHAIN OF CUSTODY RECORD

Date 7-14-14



Laboratory / PO # [redacted] 14EC009B

Address shipping questions to:

Attn: ✓Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Method / Analytes | VOC | SVOC | pH | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407111300 | 200-SB-15 | 3 | A | | X | | | | | | | (Bubbles) |
| 1407111340 | " | 3 | A | | X | | | | | | | |
| 1407111343 | " | 2 | A | | | X | | | | | | |
| 1407111416 | " 8/10' | 1 | S | | | X | | | | | | |
| 1407111417 | " " | 1 | S | | | X | | | | | | * Matrix Spike for #1407111416 |
| 1407111410 | " " | 3 | S | | X | | | | | | | |
| 1407111411 | " " | 3 | S | | X | | | | | | | * Matrix Spike for #1407111410 |
| 1407111422 | " " | 1 | S | | | | X | | | | | |
| 1407111423 | " " | 1 | S | | | | X | | | | | * Matrix Spike for #1407111422 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| John Minnick | 7-14-14 / 1100 HRS. | Sergio Tafoya | 7/15/14 1050 |
| | | | |
| | | | |

R1405421 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number A14-5421.

Cooler received on 7/15/14 by: [illegible]

COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were **Custody seals** on outside of cooler? | Y N | 5a | **Perchlorate** samples have required headspace? | Y N NA |
| 2 | **Custody papers** properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk,or Sulfide have sig* **bubbles**? | Y N NA |
| 3 | Did all bottles arrive in good **condition** (unbroken)? | Y N | 6 | Where did the bottles originate? | ALS/ROC CLIENT |
| 4 | Circle: **Wet Ice** **Dry Ice** **Gel packs** present? | Y N | 7 | Soil VOA received as: Bulk Encore 5035set | NA |

8. Temperature Readings Date: 7/15/14 Time: 1057 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 2.8 | | | | | | |
| Correction Factor (°C) | – | | | | | | |
| Corrected Temp (°C) | 2.8 | | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

**If out of Temperature, note packing/ice condition:** _____ Ice melted Poorly Packed Same Day Rule

**&Client Approval to Run Samples:** _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by [illegible] on 7/15/14 at 1100
5035 samples placed in storage location: F-05 by [illegible] on 7/15/14 at 1100

PC Secondary Review: JMS 7/15/14

Cooler Breakdown: Date: 7/15/14 Time: 1352 by: JMS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: dkt

Other Comments:

PC Secondary Review: JMS 7/30/14 *significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405421
**Date Analyzed:** 7/17/14 11:59

## Method Blank Summary
## Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408324-04
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\071714\K9850.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408324-03 | I:\ACQUDATA\MSVOA7\DATA\071714\K9847.D\ | 7/17/14 09:59 |
| 1407111410 200-SB-15 8'/10' | R1405421-005 | I:\ACQUDATA\MSVOA7\DATA\071714\K9851.D\ | 7/17/14 12:37 |
| 1407111410 200-SB-15 8'/10'DMS | RQ1408324-06 | I:\ACQUDATA\MSVOA7\DATA\071714\K9862.D\ | 7/17/14 19:38 |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405421 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Analyzed:** | 7/18/14 15:40 |
| **Sample Matrix:** | Water | | |

**Method Blank Summary**
**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Instrument ID:** | R-MS-12 |
| **Lab Code:** | RQ1408389-04 | **File ID:** | I:\ACQUDATA\msvoa12\Data\071814\M7488.D\ |
| **Analytical Method:** | 8260C | | |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408389-03 | I:\ACQUDATA\msvoa12\Data\071814\M7486.D\ | 7/18/14 14:35 |
| 1407111300 200-SB-15 | R1405421-001 | I:\ACQUDATA\msvoa12\Data\071814\M7497.D\ | 7/18/14 20:29 |
| 1407111340 200-SB-15 | R1405421-002 | I:\ACQUDATA\msvoa12\Data\071814\M7498.D\ | 7/18/14 21:01 |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405421
**Date Analyzed:** 7/24/14 11:49

## Method Blank Summary
## Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408665-04
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\072414\K9965.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408665-03 | I:\ACQUDATA\MSVOA7\DATA\072414\K9963.D\ | 7/24/14 10:30 |
| 1407111410 200-SB-15 8'/10'MS | RQ1408324-05 | I:\ACQUDATA\MSVOA7\DATA\072414\K9976.D\ | 7/24/14 18:54 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Date Analyzed:** 7/17/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\071714\K9846.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 402249
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 42.6 | 0.7075 | 0.6024 | -14.9 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 47.7 | 0.3414 | 0.3254 | -4.7 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 44.4 | 0.4820 | 0.4282 | -11.2 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 46.2 | 0.4169 | 0.3851 | -7.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 45.2 | 0.4920 | 0.4452 | -9.5 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 50.3 | 0.8365 | 0.8406 | 0.5 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 41.2 | 0.7656 | 0.6313 | -17.5 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 924 | 0.08660 | 0.07999 | -7.6 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 34.6 | 0.6020 | 0.4161 | -30.9 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 47.6 | 1.440 | 1.372 | -4.7 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 46.7 | 0.4660 | 0.4356 | -6.5 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 50.4 | 0.2458 | 0.2476 | 0.7 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 48.0 | 0.9166 | 0.8791 | -4.1 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 43.2 | 1.049 | 0.9068 | -13.5 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 45.5 | 1.118 | 1.018 | -8.9 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 47.9 | 0.3859 | 0.3700 | -4.1 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 48.1 | 1.436 | 1.381 | -3.8 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 47.3 | 0.6951 | 0.6568 | -5.5 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 47.0 | 1.608 | 1.511 | -6.1 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 46.0 | 1.847 | 1.700 | -7.9 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 45.9 | 0.3262 | 0.2992 | -8.3 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 47.3 | 1.479 | 1.400 | -5.3 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 46.7 | 0.3311 | 0.3093 | -6.6 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 93.8 | 0.5809 | 0.5451 | -6.2 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 47.4 | 0.5852 | 0.5553 | -5.1 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 50.4 | 0.8761 | 0.8833 | 0.8 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 49.4 | 0.4853 | 0.4792 | -1.3 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 48.0 | 0.3338 | 0.3203 | -4.0 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.1 | 1.294 | 1.296 | 0.1 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Date Analyzed:** 7/18/14

**Continuing Calibration Verification Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\msvoa12\Data\071814\M7485.D\

**Calibration Date:** 6/13/14
**Calibration ID:** RC1400048
**Analysis Lot:** 402460
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 57.1 | 0.7425 | 0.8476 | 14.2 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 52.2 | 0.2285 | 0.2387 | 4.4 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 53.0 | 0.4199 | 0.4454 | 6.1 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 50.3 | 0.3927 | 0.3950 | 0.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 61.7 | 0.3640 | 0.4490 | 23.4 * | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 51.9 | 0.6622 | 0.6870 | 3.7 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 55.0 | 0.1412 | 0.1554 | 10.0 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 1030 | 0.01880 | 0.01936 | 3.0 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 57.4 | 0.09881 | 0.1134 | 14.8 | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 53.7 | 1.285 | 1.379 | 7.3 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 56.6 | 0.3973 | 0.4499 | 13.3 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 52.8 | 0.3115 | 0.3289 | 5.6 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 51.4 | 0.9545 | 0.9817 | 2.8 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 56.1 | 0.8431 | 0.9463 | 12.2 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 43.9 | 0.5810 | 0.5105 | -12.1 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 55.9 | 0.2867 | 0.3206 | 11.8 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 52.6 | 0.8818 | 0.9270 | 5.1 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 47.6 | 0.5147 | 0.4902 | -4.8 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 52.0 | 0.5238 | 0.5443 | 3.9 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 53.3 | 1.152 | 1.228 | 6.7 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 54.7 | 0.2709 | 0.2963 | 9.4 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 52.8 | 1.361 | 1.436 | 5.5 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 50.5 | 0.3273 | 0.3302 | 0.9 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 104 | 0.6427 | 0.6652 | 3.5 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 50.6 | 0.6461 | 0.6544 | 1.3 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 55.4 | 0.5809 | 0.6433 | 10.7 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 50.9 | 0.4652 | 0.4733 | 1.7 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 53.2 | 0.2865 | 0.3048 | 6.4 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 49.6 | 1.241 | 1.231 | -0.8 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Date Analyzed:** 7/24/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\072414\K9962.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 403347
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 42.9 | 0.7075 | 0.6076 | -14.1 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 50.9 | 0.3414 | 0.3473 | 1.7 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 47.3 | 0.4820 | 0.4560 | -5.4 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 49.3 | 0.4169 | 0.4108 | -1.5 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 47.5 | 0.4920 | 0.4677 | -4.9 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 52.1 | 0.8365 | 0.8720 | 4.2 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 49.3 | 0.7656 | 0.7545 | -1.4 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 1200 | 0.08660 | 0.1039 | 20.0 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 38.2 | 0.6020 | 0.4602 | -23.5 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 48.1 | 1.440 | 1.385 | -3.8 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 47.7 | 0.4660 | 0.4448 | -4.5 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 53.6 | 0.2458 | 0.2633 | 7.1 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 48.2 | 0.9166 | 0.8830 | -3.7 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 45.8 | 1.049 | 0.9607 | -8.4 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 48.8 | 1.118 | 1.090 | -2.5 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 50.1 | 0.3859 | 0.3862 | 0.1 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 50.7 | 1.436 | 1.455 | 1.3 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 48.6 | 0.6951 | 0.6762 | -2.7 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 44.7 | 1.608 | 1.436 | -10.7 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 50.1 | 1.847 | 1.851 | 0.2 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 44.6 | 0.3262 | 0.2907 | -10.9 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 47.5 | 1.479 | 1.404 | -5.1 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 46.4 | 0.3311 | 0.3074 | -7.1 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 90.3 | 0.5809 | 0.5244 | -9.7 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 45.9 | 0.5852 | 0.5374 | -8.2 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 52.7 | 0.8761 | 0.9229 | 5.3 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 49.6 | 0.4853 | 0.4816 | -0.7 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 49.5 | 0.3338 | 0.3305 | -1.0 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.2 | 1.294 | 1.299 | 0.4 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 | 50.000 | 0.4756 | 03 | 50.000 | 0.4875 | 01 | 50.000 | 0.4940 | 04 | 50.000 | 0.4931 |
| 02 | 50.000 | 0.4893 | 07 | 50.000 | 0.4775 | 06 | 50.000 | 0.4833 | 05 | 50.000 | 0.4819 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 0.3361 | 06 | 50.000 | 0.3295 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |
| 04 | 50.000 | 0.3406 | 01 | 50.000 | 0.3368 | 03 | 50.000 | 0.3344 | 08 | 50.000 | 0.3299 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 1.276 | 07 | 50.000 | 1.289 | 02 | 50.000 | 1.305 | 04 | 50.000 | 1.306 |
| 01 | 50.000 | 1.307 | 03 | 50.000 | 1.291 | 08 | 50.000 | 1.289 | 05 | 50.000 | 1.291 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤20 | 1.294 | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\msvoa12\Data\061314\M6499.D | 6/13/14 14:37 | 02 | I:\ACQUDATA\msvoa12\Data\061314\M6500.D | 6/13/14 15:09 |
| 03 | I:\ACQUDATA\msvoa12\Data\061314\M6501.D | 6/13/14 15:42 | 04 | I:\ACQUDATA\msvoa12\Data\061314\M6502.D | 6/13/14 16:14 |
| 05 | I:\ACQUDATA\msvoa12\Data\061314\M6503.D | 6/13/14 16:46 | 06 | I:\ACQUDATA\msvoa12\Data\061314\M6504.D | 6/13/14 17:19 |
| 07 | I:\ACQUDATA\msvoa12\Data\061314\M6505.D | 6/13/14 17:51 | 08 | I:\ACQUDATA\msvoa12\Data\061314\M6506.D | 6/13/14 18:23 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.8400 | 02 | 1.000 | 0.7811 | 03 | 2.000 | 0.7033 | 04 | 5.000 | 0.7164 |
| 05 | 20.000 | 0.7341 | 06 | 50.000 | 0.7130 | 07 | 100.000 | 0.7383 | 08 | 200.000 | 0.7142 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2495 | 02 | 1.000 | 0.2274 | 03 | 2.000 | 0.2259 | 04 | 5.000 | 0.2146 |
| 05 | 20.000 | 0.2283 | 06 | 50.000 | 0.2282 | 07 | 100.000 | 0.2324 | 08 | 200.000 | 0.2219 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4232 | 02 | 1.000 | 0.4190 | 03 | 2.000 | 0.4185 | 04 | 5.000 | 0.4074 |
| 05 | 20.000 | 0.4226 | 06 | 50.000 | 0.4234 | 07 | 100.000 | 0.4310 | 08 | 200.000 | 0.4145 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5009 | 02 | 1.000 | 0.3821 | 03 | 2.000 | 0.3826 | 04 | 5.000 | 0.3610 |
| 05 | 20.000 | 0.3808 | 06 | 50.000 | 0.3670 | 07 | 100.000 | 0.3857 | 08 | 200.000 | 0.3818 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3818 | 02 | 1.000 | 0.3685 | 03 | 2.000 | 0.3686 | 04 | 5.000 | 0.3675 |
| 05 | 20.000 | 0.3660 | 06 | 50.000 | 0.3534 | 07 | 100.000 | 0.3616 | 08 | 200.000 | 0.3446 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.7197 | 02 | 1.000 | 0.6870 | 03 | 2.000 | 0.6695 | 04 | 5.000 | 0.6507 |
| 05 | 20.000 | 0.6188 | 06 | 50.000 | 0.6375 | 07 | 100.000 | 0.6621 | 08 | 200.000 | 0.6524 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 2.000 | 0.1170 | 04 | 5.000 | 0.1543 | 05 | 20.000 | 0.1497 | 06 | 50.000 | 0.1438 |
| 07 | 100.000 | 0.1408 | 08 | 200.000 | 0.1418 | | | | | | |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 20.000 | 0.01773 | 03 | 40.000 | 0.01797 | 04 | 100.000 | 0.01950 | 05 | 400.000 | 0.02033 |
| 06 | 1000.000 | 0.01938 | 07 | 2000.000 | 0.01891 | 08 | 4000.000 | 0.01777 | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 | 5.000 | 0.1005 | 05 | 20.000 | 0.09856 | 06 | 50.000 | 0.09745 | 07 | 100.000 | 0.09889 |
| 08 | 200.000 | 0.09867 | | | | | | | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.299 | 02 | 1.000 | 1.391 | 03 | 2.000 | 1.275 | 04 | 5.000 | 1.244 |
| 05 | 20.000 | 1.283 | 06 | 50.000 | 1.271 | 07 | 100.000 | 1.290 | 08 | 200.000 | 1.229 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4049 | 02 | 1.000 | 0.4235 | 03 | 2.000 | 0.3956 | 04 | 5.000 | 0.3912 |
| 05 | 20.000 | 0.3879 | 06 | 50.000 | 0.3921 | 07 | 100.000 | 0.3980 | 08 | 200.000 | 0.3850 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3326 | 02 | 1.000 | 0.2918 | 03 | 2.000 | 0.3115 | 04 | 5.000 | 0.2982 |
| 05 | 20.000 | 0.3071 | 06 | 50.000 | 0.3071 | 07 | 100.000 | 0.3194 | 08 | 200.000 | 0.3245 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.007 | 02 | 1.000 | 0.9796 | 03 | 2.000 | 0.9358 | 04 | 5.000 | 0.9386 |
| 05 | 20.000 | 0.9430 | 06 | 50.000 | 0.9445 | 07 | 100.000 | 0.9723 | 08 | 200.000 | 0.9149 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9668 | 02 | 1.000 | 0.8691 | 03 | 2.000 | 0.8379 | 04 | 5.000 | 0.8166 |
| 05 | 20.000 | 0.8347 | 06 | 50.000 | 0.8027 | 07 | 100.000 | 0.8201 | 08 | 200.000 | 0.7968 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5520 | 02 | 1.000 | 0.6137 | 03 | 2.000 | 0.5712 | 04 | 5.000 | 0.5457 |
| 05 | 20.000 | 0.6043 | 06 | 50.000 | 0.5781 | 07 | 100.000 | 0.5954 | 08 | 200.000 | 0.5879 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3049 | 02 | 1.000 | 0.2757 | 03 | 2.000 | 0.2533 | 04 | 5.000 | 0.2829 |
| 05 | 20.000 | 0.2905 | 06 | 50.000 | 0.2927 | 07 | 100.000 | 0.3011 | 08 | 200.000 | 0.2927 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9613 | 02 | 1.000 | 0.9717 | 03 | 2.000 | 0.9290 | 04 | 5.000 | 0.8554 |
| 05 | 20.000 | 0.8316 | 06 | 50.000 | 0.8384 | 07 | 100.000 | 0.8551 | 08 | 200.000 | 0.8118 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6919 | 02 | 1.000 | 0.5707 | 03 | 2.000 | 0.5025 | 04 | 5.000 | 0.4764 |
| 05 | 20.000 | 0.4732 | 06 | 50.000 | 0.4669 | 07 | 100.000 | 0.4734 | 08 | 200.000 | 0.4626 |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4995 | 02 | 1.000 | 0.5334 | 03 | 2.000 | 0.5167 | 04 | 5.000 | 0.5251 |
| 05 | 20.000 | 0.5183 | 06 | 50.000 | 0.5200 | 07 | 100.000 | 0.5484 | 08 | 200.000 | 0.5288 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.116 | 02 | 1.000 | 1.112 | 03 | 2.000 | 1.113 | 04 | 5.000 | 1.183 |
| 05 | 20.000 | 1.221 | 06 | 50.000 | 1.179 | 07 | 100.000 | 1.173 | 08 | 200.000 | 1.117 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2870 | 02 | 1.000 | 0.2674 | 03 | 2.000 | 0.2711 | 04 | 5.000 | 0.2539 |
| 05 | 20.000 | 0.2660 | 06 | 50.000 | 0.2658 | 07 | 100.000 | 0.2820 | 08 | 200.000 | 0.2739 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.407 | 02 | 1.000 | 1.409 | 03 | 2.000 | 1.384 | 04 | 5.000 | 1.363 |
| 05 | 20.000 | 1.366 | 06 | 50.000 | 1.349 | 07 | 100.000 | 1.368 | 08 | 200.000 | 1.242 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3248 | 02 | 1.000 | 0.3536 | 03 | 2.000 | 0.3395 | 04 | 5.000 | 0.3156 |
| 05 | 20.000 | 0.3214 | 06 | 50.000 | 0.3207 | 07 | 100.000 | 0.3281 | 08 | 200.000 | 0.3146 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6771 | 02 | 2.000 | 0.6179 | 03 | 4.000 | 0.6544 | 04 | 10.000 | 0.6366 |
| 05 | 40.000 | 0.6468 | 06 | 100.000 | 0.6410 | 07 | 200.000 | 0.6619 | 08 | 400.000 | 0.6063 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6651 | 02 | 1.000 | 0.6441 | 03 | 2.000 | 0.6407 | 04 | 5.000 | 0.6392 |
| 05 | 20.000 | 0.6310 | 06 | 50.000 | 0.6402 | 07 | 100.000 | 0.6681 | 08 | 200.000 | 0.6403 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5884 | 02 | 1.000 | 0.5671 | 03 | 2.000 | 0.5884 | 04 | 5.000 | 0.5918 |
| 05 | 20.000 | 0.5717 | 06 | 50.000 | 0.5819 | 07 | 100.000 | 0.5802 | 08 | 200.000 | 0.5779 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 6/13/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 | 50.000 | 0.4618 | 06 | 50.000 | 0.4712 | 08 | 50.000 | 0.4740 | 01 | 50.000 | 0.4583 |
| 03 | 50.000 | 0.4568 | 05 | 50.000 | 0.4657 | 07 | 50.000 | 0.4715 | 02 | 50.000 | 0.4626 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 07 | 50.000 | 0.2869 | 02 | 50.000 | 0.2875 | 04 | 50.000 | 0.2877 | 06 | 50.000 | 0.2870 |
| 08 | 50.000 | 0.2876 | 01 | 50.000 | 0.2858 | 05 | 50.000 | 0.2866 | 03 | 50.000 | 0.2826 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 1.233 | 03 | 50.000 | 1.231 | 01 | 50.000 | 1.240 | 08 | 50.000 | 1.251 |
| 06 | 50.000 | 1.244 | 04 | 50.000 | 1.238 | 02 | 50.000 | 1.239 | 07 | 50.000 | 1.252 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405421
**Calibration Date:** 6/13/14

**Initial Calibration Summary**
**Volatile Organic Compounds by GC/MS**

**Calibration ID:** RC1400048
**Instrument ID:** R-MS-12

**Signal ID:** 1

| Analyte Name | Compound Type | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 6.2 | | ≤ 20 | 0.7425 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 4.4 | | ≤ 20 | 0.2285 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 1.7 | | ≤ 20 | 0.4199 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 11.3 | | ≤ 20 | 0.3927 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 3.1 | | ≤ 20 | 0.3640 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 4.7 | | ≤ 20 | 0.6622 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 9.2 | | ≤ 20 | 0.1412 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.4 | | ≤ 20 | 0.01880 | | |
| Acetone | TRG | Average RF | % RSD | 1.1 | | ≤ 20 | 0.09881 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 3.8 | | ≤ 20 | 1.285 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.1 | | ≤ 20 | 0.3973 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 4.3 | | ≤ 20 | 0.3115 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 3.1 | | ≤ 20 | 0.9545 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 6.5 | | ≤ 20 | 0.8431 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 4.1 | | ≤ 20 | 0.5810 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 5.7 | | ≤ 20 | 0.2867 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 7.1 | | ≤ 20 | 0.8818 | | |
| Dichloromethane | TRG | Average RF | % RSD | 15.5 | | ≤ 20 | 0.5147 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 2.7 | | ≤ 20 | 0.5238 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.7 | | ≤ 20 | 1.152 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 3.8 | | ≤ 20 | 0.2709 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 3.9 | | ≤ 20 | 1.361 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 4.0 | | ≤ 20 | 0.3273 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 3.6 | | ≤ 20 | 0.6427 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 2.0 | | ≤ 20 | 0.6461 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 1.5 | | ≤ 20 | 0.5809 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤ 20 | 0.4652 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 0.6 | | ≤ 20 | 0.2865 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.6 | | ≤ 20 | 1.241 | | |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low **Folder #:** R1405421 **Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 110413-3:50849 | | R1405421-005 | 41.93 | 35.39 | 5/14/2014 | J. Cushman | 6.54 | **0.76** | 7/11/2014 | Field | 7/17/2014 | . Wojtasiewi | |
| 040714-3:10135 | | R1405421-005 | 39.93 | 35.29 | 6/12/2014 | J. Cushman | 4.64 | **1.08** | 7/11/2014 | Field | 7/17/2014 | . Wojtasiewi | |
| 110413-3:50868 | MS | R1405421-005 | 38.24 | 35.13 | 5/14/2014 | J. Cushman | 3.11 | **1.61** | 7/11/2014 | Field | 7/17/2014 | . Wojtasiewi | |
| 040714-3:10124 | DMS | R1405421-005 | 40.08 | 35.15 | 6/12/2014 | J. Cushman | 4.93 | **1.01** | 7/11/2014 | Field | 7/17/2014 | . Wojtasiewi | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium **Folder #:** R1405421 **Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10331 | | R1405421-005 | 41.42 | 36.77 | 4/28/2014 | J. Cushman | 4.65 | | 7/11/2014 | Field | 7/17/2014 | . Wojtasiewi | |
| 040714-3:10383 | | R1405421-005 | 40.42 | 36.12 | 4/28/2014 | J. Cushman | 4.30 | | 7/11/2014 | Field | 7/17/2014 | . Wojtasiewi | |

0005 4

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

| | | | |
|---|---|---|---|
| Analysis: 8260 - Soil | Analyst: Ben Wojtkiewicz | Tune Method: | T052914.m |
| Date: 07/17/14 | Data Path: j:\acqudata\msvoa7\DATA\071714 | Run Method: | S052914.m |
| Instr. MS#7 | | LIMS Run#: | 402249 |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | - | | | | - | 1 | - | K9843 | - | |
| 2 | ↓ | - | | | | - | 2 | - | 44 | - | |
| 3 | Tune | - | | | | - | 1 | - | 45 | YT | |
| 4 | CCV | - | | | | - | 1 | - | 46 | YC | Acetone ↓ |
| 5 | LCS | - | | | | - | 1 | - | 47 | YL | |
| 6 | MBlank | - | | | | - | 1 | - | 48 | N | not for c/o |
| 7 | MBlank | - | | | | - | 2 | - | 49 | N | MeCl2 > MAL, not |
| 8 | MBlank | - | | | | - | 3 | - | 50 | YB | MeCl2 > MAL |
| 9 | R1405421-005 | 1.08 | 10135 | [redacted] | 11813 | 3 | 1 | NA | 51 | Y | |
| 10 | R1405300-001 | 1 | | [redacted] | 6368 | 2 | 2 | | 52 | Y | |
| 11 | R1405442-001 | 1 | | [redacted] | 8043 | 2 | 1 | | 53 | N | ~~Acetone in CCV, not~~ Y BL 07/29/14 EE |
| 12 | -002 | 1 | | | | | 1 | | 54 | N | ~~Acetone in CCV, not~~ See |
| 13 | -004 | 1 | | | | | 1 | | 55 | N | NCAR#R3227 |
| 14 | -005 | 1 | | | | | 1 | | 56 | Y | |
| 15 | -006 | 1 | | | | | 1 | | 57 | N | ~~Acetone ↓ in CCV, not~~ |
| 16 | -007 | 1 | | | | | 1 | | 58 | N | |
| 17 | -008 | 1 | | | | | 1 | | 59 | N | |
| 18 | -010 | 1 | | | | | 1 | | 60 | Y | |
| 19 | R1405421-005 MS | 1.61 | 50868 | [redacted] | 11813 | 3 | 2 | | 61 | N | IS ↓, not MS |
| 20 | -005 AMS | 1.01 | 10124 | | | | 2 | | 62 | Y | |
| 21 | Blank | - | | | | - | 1 | - | 63 | - | |
| 22 | ↓ | - | | | | - | 2 | - | 64 | - | |

BL 07/18/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary TG : 72049 5mL
Primary HBO : 72046
Primary HSL : 72499
Primary Ext : 72371
Primary :
50mL = CCV

500 Secondary TG : 72050 2mL
Secondary HBO : 72455
Secondary HSL : 72064
200 Secondary Ext : 72454 5mL
Secondary :
50g = LCS

Combined IS/Surr 250 : 72076
Surrogate : -
Internal Std : -

10 uL 2° Spike Std (72584) / 5g = MS, AMS

Analysis: 8260-soil
Date: 07/24/14
Instr. MS#7

Analyst: Ben Wojtasiewicz
Data Path: j:\acqudata\msvoa7\DATA\072414

Tune Method: T052914.m
Run Method: S052914.m
LIMS Run#: 403347

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | - | | | | - | 1 | - | K9958 | - | |
| 2 | ↓ | - | | | | - | 2 | - | 59 | - | |
| 3 | Tune | - | | | | - | 1 | - | 60 | YT | |
| 4 | CCV | - | | | | - | 1 | - | 61 | (N) | compds ↓, pH |
| 5 | CCV | - | | | | - | 2 | - | 62 | YC | |
| 6 | LCS | - | | | | - | 1 | - | 63 | YL | |
| 7 | MBlank | - | | | | - | 1 | - | 64 | (N) | pH for c/o |
| 8 | MBlank | - | | | | - | 2 | - | 65 | YB | |
| 9 | R1405619-002 | 1 | | [redacted] | 6702 | 1 | 1 | NA | 66 | Y | |
| 10 | ↓ -003 | 1 | | ↓ | ↓ | ↓ | 1 | ↓ | 67 | Y | |
| 11 | -004 | 1 | | | | | 1 | | 68 | Y | |
| 12 | -005 | 5 | 1g | | | | 1 | | 69 | Y | |
| 13 | -006 | 5 | ↓ | | | | 1 | | 70 | Y | |
| 14 | ↓ -007 | 5 | ↓ | ↓ | ↓ | ↓ | 1 | | 71 | Y | |
| 15 | R1405598-008 | 1 | | [redacted] | 9422 | 2 | 1 | | 72 | Y | |
| 16 | ↓ -003 | 5 | 1g | ↓ | ↓ | ↓ | 1 | | 73 | (Y) | over range, report + pH MeOH |
| 17 | ↓ -006 | 5 | ↓ | ↓ | ↓ | ↓ | 1 | | 74 | Y | |
| 18 | R1405601-001 | 1 | | [redacted] | 6706 | 1 | 1 | | 75 | Y | |
| 19 | R1405421-005MSD | 0.76 | 50g | [redacted] | | | 4 | | 76 | Y | |
| 20 | R1405601-001MS | 1 | | [redacted] | 6706 | 1 | 2 | | 77 | Y | |
| 21 | ↓ -001DMS | 1 | | ↓ | ↓ | ↓ | 3 | ↓ | 78 | Y | |
| 22 | Blank | - | | | | - | 1 | - | 79 | - | |
| 23 | ↓ | - | | | | - | 2 | - | 80 | - | |

SM 07/25/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary TG : 72623 5mL
Primary MBO : 72046
Primary MSL : 72499
Primary Ext : 72625
Primary :
50mL = CCV

500 Secondary TG : 72050 2mL
Secondary MBO : 72455
Secondary MSL : 72663
200 Secondary Ext : 72454 5mL
Secondary :
50g = LCS

5mL ↓ 125mL

Combined IS/Surr 250 : 72076
50g = MS DMS Surrogate :
Internal Std :

10mL 20 Spike Std (72584)/5g = DMS (5421-005)

| | | | |
|---|---|---|---|
| Analysis: 8260 waters | Analyst: K. Quest | Tune Method: W061314 | |
| Date: 7/18/14 | Data Path: j:\acqudata\msvoa\2\071814 | Run Method: ↓ | |
| Instr. 12 | | LIMS Run#: 402459 (LL) 402460 | |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | BLK | | | | | | | | M7479 | | new is/sn |
| 2 | TUNE (anchor is/sn) | | | | | | | | M7480 | Y | (auto) ~~11:19~~ ~~10:49~~ (LL) 11:19 |
| 3 | CCV | | | | | | | | M7481 | N | VC↓ not |
| 1 | CCV | | | | | | | | M7482 | N | ↓ (mline) |
| 2 | BLK | | | | | | | | M7483 | | |
| 3 | TUNE (anchor is/sn) | | RQ14083886 - 01 | Q83887-01 | | | | | M7484 | Y | (auto) (13:29) |
| 4 | CCV | | ↓ 02 | ↓ 02 | | | | | M7485 | Y | Acrylein↑ Carbon Tet↑ 12DCA↑ |
| 1 | LCS | | (LL) 03 | 03 | | | | | M7486 | Y | Acetone↑ |
| 2 | VBLK | | — | — | | | | | M7487 | N | not c/o |
| 3 | ↓ | | ↓ 04 | ↓ 04 | | | | | M7488 | Y | |
| 4 | R1405484 - 002 | 1.0 | | [redacted] | 12017 | 4 | 1 | <2 | M7489 | Y | |
| 5 | ↓ 001 | 200 | 1/200mls | ↓ | ↓ | ↓ | 1 | <2 | M7490 | N | not 20 |
| 6 | BLK | | | | | | | — | M7491 | — | |
| 7 | R1405423 - 001 | 1.0 | | [redacted] | 6656 | 3 | 1 | <2 | M7492 | Y | |
| 8 | ↓ 002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7493 | Y | |
| 9 | ↓ 003 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7494 | Y | |
| 10 | R1405424 - 001 | 1.0 | | [redacted] | 6656 | 3 | 1 | <2 | M7495 | Y | |
| 11 | ↓ 002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7496 | Y | |
| 12 | R1405421 - 001 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7497 | Y | |
| 13 | ↓ 002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7498 | Y | |
| 14 | R1405417 - 001 | 1.0 | | [redacted] | 9443 | 2 | 1 | <2 | M7499 | Y | |
| 15 | ↓ 002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | M7500 | Y | |
| 16 | ↓ 003 | 1.0 | | ↓ | ↓ | ↓ | 1 | | M7501 | | anchor stopped — |
| 17 | ↓ 004 | 1.0 | | ↓ | ↓ | ↓ | 1 | | M7502 | | did not run! |
| 18 | ↓ (LL) 005 ~~006~~ | 1.0 | | ↓ | ↓ | ↓ | 1 | | M7503 | | (crooked vial) |
| 19 | ↓ 006 | 1.0 | | ↓ | ↓ | ↓ | 1 | | M7504 | | |
| 20 | R1405484 - 001 | 20 | 25/50mls | [redacted] | 12017 | 4 | 2 | <2 | M7505 | | |
| 21 | MS 001 | 20 | ↓ | ↓ | ↓ | ↓ | 2 | <2 | M7506 | | |
| 22 | MSD 001 | 20 | ↓ | ↓ | ↓ | ↓ | 2 | <2 | M7507 | | |
| 23 | BLK | | | | | | | — | M7508 | — | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

All samples = 10 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary HBO : 72046
Primary OCC : 72130
Primary HSL : 72499 5ml → 50mls = CCV
Primary Art : 72371
Primary TG : 72049

200 Secondary Art : 72454 - 5ml
500 Secondary HSL : 72064
Secondary HBO : 72455 2ml
Secondary OCC : 72140
Secondary TG : 72050
} 50mls = LCS

Combined IS/Surr 500 : 72595
Surrogate :
Internal Std :

# Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files

| | | | | | |
|---|---|---|---|---|---|
| 5 | =CZ377.D | 10 | =CZ378.D | 50 | =CZ379.D |
| 80 | =CZ380.D | 100 | =CZ381.D | 120 | =CZ382.D |

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichlorobenzen | ---------- | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | |
| 2) | TM | Pyridine | | | 1.368 | 1.349 | 1.412 | 1.432 | 1.390 | 2.38 |
| 3) | TM | N-Nitrosodimethylam | 0.635 | 0.802 | 0.714 | 0.776 | 0.801 | 0.776 | 0.753 | 7.95 |
| 4) | S | SURR1,2-FLUOROPHENO | 1.204 | 1.171 | 1.224 | 1.261 | 1.297 | 1.268 | 1.240 | 3.45 |
| 5) | TM | Benzaldehyde | | | 0.362 | 0.271 | 0.241 | 0.206 | 0.245 | 32.53 Avg |
| 6) | TM | Aniline | 2.071 | 1.992 | 1.969 | 1.813 | 1.897 | 1.863 | 1.921 | 4.83 |
| 7) | S | SURR2,PHENOL-D6 | 1.589 | 1.734 | 1.655 | 1.582 | 1.655 | 1.631 | 1.636 | 3.18 |
| 8) | TMC | Phenol | 1.822 | 1.734 | 1.579 | 1.728 | 1.642 | 1.708 | 1.676 | 6.11 |
| 9) | TM | bis(2-Clethyl)Ether | 1.321 | 1.151 | 1.269 | 1.278 | 1.167 | 1.205 | 1.214 | 6.43 |
| 10) | TM | 2-Chlorophenol | 1.315 | 1.468 | 1.402 | 1.351 | 1.388 | 1.377 | 1.375 | 3.80 |
| 11) | TM | 1,3-Diclbenzene | 1.628 | 1.630 | 1.483 | 1.470 | 1.493 | 1.472 | 1.514 | 5.38 |
| 12) | TMC | 1,4-Dichlorobenzene | 1.571 | 1.653 | 1.511 | 1.451 | 1.519 | 1.482 | 1.523 | 4.55 |
| 13) | TM | 1,2-Diclbenzene | 1.543 | 1.524 | 1.456 | 1.420 | 1.411 | 1.370 | 1.446 | 4.53 |
| 14) | TM | Benzyl Alcohol | 1.109 | 1.049 | 1.141 | 1.150 | 1.132 | 1.107 | 1.113 | 2.99 |
| 15) | TM | 2,2'-oxybis(1-Chlor | 1.404 | 1.338 | 1.271 | 1.271 | 1.240 | 1.221 | 1.280 | 5.38 |
| 16) | TM | 2-Methylphenol | 1.124 | 1.268 | 1.190 | 1.219 | 1.242 | 1.192 | 1.204 | 3.82 |
| 17) | TM | Acetophenone | 1.903 | 1.944 | 1.810 | 1.771 | 1.804 | 1.749 | 1.809 | 4.94 |
| 18) | TMP | N-Nitroso-Di-n-prop | 1.085 | 1.077 | 0.956 | 0.928 | 0.953 | 0.923 | 0.977 | 7.45 |
| 19) | TM | Hexachloroethane | 0.670 | 0.639 | 0.610 | 0.633 | 0.642 | 0.611 | 0.629 | 3.86 |
| 20) | TM | 3+4-Methylphenol | 1.310 | 1.309 | 1.229 | 1.288 | 1.267 | 1.279 | 1.275 | 2.47 |
| 21) | T | 1-Methyl-2-pyrrolid | | 0.860 | 0.866 | 0.859 | 0.921 | 0.827 | 0.865 | 3.54 |
| 22) | IR | d8-Naphthalene | ---------- | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | |
| 23) | S | SURR4,NITROBENZENE- | 0.397 | 0.454 | 0.421 | 0.418 | 0.414 | 0.418 | 0.413 | 6.27 |
| 24) | TM | Nitrobenzene | 0.393 | 0.408 | 0.379 | 0.369 | 0.362 | 0.358 | 0.373 | 5.74 |
| 25) | TM | Isophorone | 0.722 | 0.712 | 0.664 | 0.664 | 0.672 | 0.643 | 0.673 | 4.82 |
| 26) | TCM | 2-Nitrophenol | 0.197 | 0.204 | 0.192 | 0.199 | 0.207 | 0.208 | 0.201 | 2.81 |
| 27) | TM | Benzoic Acid | | 0.289 | 0.362 | 0.392 | 0.417 | 0.407 | 0.381 | 12.97 |
| 28) | TM | 2,4-Dimethylphenol | 0.424 | 0.392 | 0.362 | 0.372 | 0.366 | 0.358 | 0.375 | 6.61 |
| 29) | TM | bis(-2-Chloroethoxy | 0.428 | 0.395 | 0.379 | 0.379 | 0.390 | 0.378 | 0.389 | 4.84 |
| 30) | TCM | 2,4-Dichlorophenol | 0.723 | 0.724 | 0.645 | 0.619 | 0.647 | 0.623 | 0.658 | 7.06 |
| 31) | TM | 1,2,4-Trichlorobenz | 0.354 | 0.349 | 0.326 | 0.325 | 0.323 | 0.333 | 0.333 | 3.88 |
| 32) | TM | Naphthalene | 1.043 | 1.061 | 0.949 | 0.944 | 0.984 | 0.971 | 0.977 | 6.17 |
| 33) | TM | 4-Chloroaniline | 0.415 | 0.436 | 0.426 | 0.411 | 0.414 | 0.396 | 0.413 | 3.72 |
| 34) | TCM | Hexachlorobutadiene | 0.241 | 0.179 | 0.188 | 0.187 | 0.188 | 0.188 | 0.194 | 10.69 |
| 35) | TMC | 4-Chloro-3-methylph | 0.301 | 0.292 | 0.288 | 0.308 | 0.309 | 0.293 | 0.298 | 2.77 |
| 36) | TM | Caprolactam | | 0.104 | 0.100 | 0.111 | 0.111 | 0.109 | 0.107 | 4.15 |
| 37) | TM | 2-Methylnaphthalene | 0.758 | 0.731 | 0.696 | 0.675 | 0.688 | 0.671 | 0.696 | 5.40 |
| 38) | TM | 1-Methylnaphthalene | 0.677 | 0.705 | 0.627 | 0.632 | 0.638 | 0.613 | 0.643 | 5.44 |
| 39) | IR | d10-Acenaphthene | ---------- | ---------- | ---------- | ISTD | ---------- | ---------- | ---------- | |
| 40) | TPM | Hexachlorocyclopent | 0.095 | 0.140 | 0.234 | 0.256 | 0.260 | 0.287 | 0.222 | 33.59 OA |
| 41) | TCM | 2,4,6-Trichlorophen | 0.334 | 0.376 | 0.372 | 0.363 | 0.361 | 0.356 | 0.361 | 3.84 |

(#) = Out of Range ### Number of calibration levels exceeded format ###



00058

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files
5 =CZ377.D 10 =CZ378.D 50 =CZ379.D
80 =CZ380.D 100 =CZ381.D 120 =CZ382.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 42) | TM | 2,4,5-Trichlorophen | 0.349 | 0.410 | 0.379 | 0.395 | 0.372 | 0.390 | 0.381 | 5.17 | |
| 43) | S | SURR5,2-FLUOROBIPHE | 1.337 | 1.262 | 1.234 | 1.207 | 1.162 | 1.136 | 1.211 | 6.07 | |
| 44) | TM | 1,1'-Biphenyl | 1.438 | 1.473 | 1.382 | 1.341 | 1.306 | 1.282 | 1.352 | 6.22 | |
| 45) | TM | 2-Chloronaphthalene | 1.197 | 1.162 | 1.086 | 1.039 | 1.035 | 1.046 | 1.083 | 6.43 | |
| 46) | TM | 2-Nitroaniline | | | 0.313 | 0.314 | 0.314 | 0.315 | 0.311 | 2.21 | |
| 47) | TM | Acenaphthylene | 1.753 | 1.780 | 1.703 | 1.615 | 1.608 | 1.544 | 1.640 | 6.79 | |
| 48) | TM | Dimethyl phthalate | 1.375 | 1.316 | 1.211 | 1.186 | 1.123 | 1.127 | 1.199 | 9.43 | |
| 49) | TM | 2,6-Dinitrotoluene | 0.252 | 0.300 | 0.298 | 0.296 | 0.298 | 0.296 | 0.291 | 5.95 | |
| 50) | TMC | Acenaphthene | 1.063 | 1.113 | 1.056 | 1.038 | 1.027 | 0.987 | 1.037 | 4.48 | |
| 51) | TM | 3-Nitroaniline | | | 0.314 | 0.306 | 0.311 | 0.311 | 0.309 | 1.43 | |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.111 | 0.157 | 0.170 | 0.186 | 0.164 | 20.11 | LR |
| 53) | TM | Dibenzofuran | 1.742 | 1.622 | 1.550 | 1.466 | 1.473 | 1.422 | 1.516 | 8.93 | |
| 54) | TM | 2,4-Dinitrotoluene | 0.388 | 0.380 | 0.371 | 0.399 | 0.411 | 0.395 | 0.390 | 3.32 | |
| 55) | TMP | 4-Nitrophenol | | | 0.205 | 0.211 | 0.225 | 0.218 | 0.215 | 3.57 | |
| 56) | TM | Fluorene | 1.413 | 1.405 | 1.240 | 1.219 | 1.172 | 1.166 | 1.243 | 9.92 | |
| 57) | TM | 4-Chlorophenyl-phen | 0.666 | 0.669 | 0.606 | 0.595 | 0.596 | 0.586 | 0.610 | 7.00 | |
| 58) | TM | Diethylphthalate | 1.349 | 1.287 | 1.106 | 1.164 | 1.149 | 1.135 | 1.181 | 8.41 | |
| 59) | TM | 4-Nitroaniline | | | 0.287 | 0.317 | 0.320 | 0.336 | 0.317 | 5.83 | |
| 60) | S | SURR3,2,4,6-TRIBROM | 0.133 | 0.139 | 0.120 | 0.138 | 0.129 | 0.139 | 0.134 | 5.48 | |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-methyl | | | | | | | 0.000# | -1.00 | |
| 63) | TM | 4,6-Dinitro-2-methy | | | 0.151 | 0.169 | 0.173 | 0.164 | 0.164 | 5.12 | |
| 64) | TM | 1,2 Diphenylhydrazi | 0.841 | 0.849 | 0.792 | 0.743 | 0.731 | 0.698 | 0.756 | 10.20 | |
| 65) | TCM | N-Nitrosodiphenylam | 0.560 | 0.575 | 0.571 | 0.526 | 0.543 | 0.532 | 0.546 | 4.35 | |
| 66) | TM | 4-Bromophenyl-pheny | 0.222 | 0.218 | 0.212 | 0.199 | 0.209 | 0.204 | 0.208 | 4.60 | |
| 67) | T | 1-Phenyl-1(2,4-dime | | | | | | | 0.000# | -1.00 | |
| 68) | TM | Hexachlorobenzene | 0.226 | 0.217 | 0.211 | 0.210 | 0.215 | 0.211 | 0.214 | 2.75 | |
| 69) | TM | Atrazine | 0.069 | 0.095 | 0.089 | 0.095 | 0.095 | 0.089 | 0.088 | 10.33 | |
| 70) | TCM | Pentachlorophenol | | | 0.122 | 0.141 | 0.154 | 0.146 | 0.143 | 8.71 | |
| 71) | TM | Phenanthrene | 1.108 | 1.114 | 0.988 | 0.996 | 1.009 | 0.968 | 1.014 | 7.17 | |
| 72) | TM | Anthracene | 1.264 | 1.214 | 1.091 | 1.051 | 1.072 | 1.011 | 1.095 | 9.92 | |
| 73) | TM | Carbazole | 1.073 | 1.080 | 1.065 | 1.054 | 1.081 | 1.017 | 1.045 | 4.66 | |
| 74) | TM | Di-n-butylphthalate | 1.276 | 1.357 | 1.359 | 1.330 | 1.303 | 1.250 | 1.287 | 6.08 | |
| 75) | TCM | Fluoranthene | 1.146 | 1.179 | 1.208 | 1.204 | 1.223 | 1.150 | 1.169 | 4.40 | |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.561 | 0.526 | 0.487 | 0.492 | 0.503 | 8.41 | |
| 78) | TM | Pyrene | 1.380 | 1.403 | 1.327 | 1.272 | 1.244 | 1.234 | 1.295 | 5.88 | |
| 79) | S | SURR6,TERPHENYL-D14 | 0.897 | 0.920 | 0.855 | 0.850 | 0.851 | 0.854 | 0.870 | 3.15 | |
| 80) | TM | Butyl benzyl phthal | 0.719 | 0.681 | 0.664 | 0.652 | 0.660 | 0.670 | 0.671 | 3.55 | |
| 81) | TM | 3,3'-Dichlorobenzid | 0.430 | 0.444 | 0.443 | 0.414 | 0.412 | 0.398 | 0.422 | 4.02 | |
| 82) | TM | Benzo(a)anthracene | 1.277 | 1.313 | 1.218 | 1.217 | 1.215 | 1.214 | 1.239 | 3.19 | |
| 83) | TM | Chrysene | 1.271 | 1.253 | 1.148 | 1.153 | 1.156 | 1.137 | 1.177 | 5.05 | |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files

| | | | | | |
|---|---|---|---|---|---|
| 5 | =CZ377.D | 10 | =CZ378.D | 50 | =CZ379.D |
| 80 | =CZ380.D | 100 | =CZ381.D | 120 | =CZ382.D |

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 84) | TM | bis(2-Ethylhexyl)ph | 0.879 | 0.952 | 0.909 | 0.894 | 0.863 | 0.863 | 0.886 | 4.09 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | |
| 86) | TCM | Di-n-octyl phthalat | 1.702 | 1.639 | 1.560 | 1.502 | 1.472 | 1.444 | 1.533 | 6.92 |
| 87) | TM | Benzo(b)Fluoranthen | 1.083 | 1.188 | 1.070 | 1.080 | 1.114 | 1.066 | 1.094 | 4.12 |
| 88) | TM | Benzo(k)fluoranthen | 1.284 | 1.207 | 1.108 | 1.123 | 1.108 | 1.077 | 1.140 | 6.75 |
| 89) | TCM | Benzo(a)pyrene | 1.182 | 1.194 | 1.066 | 1.081 | 1.106 | 1.081 | 1.112 | 4.78 |
| 90) | TM | Indeno(1,2,3-cd)Pyr | 1.132 | 0.800 | 0.934 | 0.951 | 0.965 | 0.953 | 0.958 | 10.10 |
| 91) | TM | Dibenz(a,h)anthrace | 0.961 | 0.868 | 0.944 | 0.946 | 0.954 | 0.947 | 0.937 | 3.35 |
| 92) | TM | Benzo(g,h,i)perylen | 0.946 | 0.829 | 0.907 | 0.875 | 0.908 | 0.869 | 0.887 | 4.19 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D  Vial: 6
Acq On : 9 Jul 2014 12:43 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.390 | 1.349 | 2.9 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.753 | 0.776 | -3.1 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.240 | 1.261 | -1.7 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.245 | 0.271 | -10.6 | 100 | 0.00 |
| 6 | TM | Aniline | 1.921 | 1.813 | 5.6 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.636 | 1.582 | 3.3 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.676 | 1.728 | -3.1 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.214 | 1.278 | -5.3 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.375 | 1.351 | 1.7 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.514 | 1.470 | 2.9 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.523 | 1.451 | 4.7 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.446 | 1.420 | 1.8 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.113 | 1.150 | -3.3 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.280 | 1.271 | 0.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.204 | 1.219 | -1.2 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.809 | 1.771 | 2.1 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.977 | 0.928 | 5.0 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.629 | 0.633 | -0.6 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.275 | 1.288 | -1.0 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.865 | 0.859 | 0.7 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.413 | 0.418 | -1.2 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.373 | 0.369 | 1.1 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.673 | 0.664 | 1.3 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.201 | 0.199 | 1.0 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.381 | 0.392 | -2.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.375 | 0.372 | 0.8 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.389 | 0.379 | 2.6 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.658 | 0.619 | 5.9 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.333 | 0.325 | 2.4 | 100 | 0.00 |
| 32 | TM | Naphthalene | 0.977 | 0.944 | 3.4 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.413 | 0.411 | 0.5 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.194 | 0.187 | 3.6 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.298 | 0.308 | -3.4 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.107 | 0.111 | -3.7 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.696 | 0.675 | 3.0 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.643 | 0.632 | 1.7 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |

(#) = Out of Range

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D Vial: 6
Acq On : 9 Jul 2014 12:43 pm Operator: Z.Miao
Sample : SSTD080 Inst : 5973-A
Misc : 80 PPM STD 8270/625 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 0.222 | 0.256 | -15.3 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.361 | 0.363 | -0.6 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.381 | 0.395 | -3.7 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.211 | 1.207 | 0.3 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.352 | 1.341 | 0.8 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.083 | 1.039 | 4.1 | 100 | 0.00 |
| 46 | TM | 2-Nitroaniline | 0.311 | 0.314 | -1.0 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.640 | 1.615 | 1.5 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.199 | 1.186 | 1.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.291 | 0.296 | -1.7 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.037 | 1.038 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.309 | 0.306 | 1.0 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.164 | 0.157 | 4.3 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.516 | 1.466 | 3.3 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.390 | 0.399 | -2.3 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.215 | 0.211 | 1.9 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.243 | 1.219 | 1.9 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.610 | 0.595 | 2.5 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.181 | 1.164 | 1.4 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.317 | 0.0 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.134 | 0.138 | -3.0 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.164 | 0.169 | -3.0 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.756 | 0.743 | 1.7 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.546 | 0.526 | 3.7 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.208 | 0.199 | 4.3 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 68 | TM | Hexachlorobenzene | 0.214 | 0.210 | 1.9 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.088 | 0.095 | -8.0 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.143 | 0.141 | 1.4 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.014 | 0.996 | 1.8 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.095 | 1.051 | 4.0 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.045 | 1.054 | -0.9 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.287 | 1.330 | -3.3 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.169 | 1.204 | -3.0 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.503 | 0.526 | -4.6 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.295 | 1.272 | 1.8 | 100 | 0.00 |

(#) = Out of Range

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D Vial: 6
Acq On : 9 Jul 2014 12:43 pm Operator: Z.Miao
Sample : SSTD080 Inst : 5973-A
Misc : 80 PPM STD 8270/625 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 0.870 | 0.850 | 2.3 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.671 | 0.652 | 2.8 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.422 | 0.414 | 1.9 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.239 | 1.217 | 1.8 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.177 | 1.153 | 2.0 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.886 | 0.894 | -0.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 1.533 | 1.502 | 2.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.094 | 1.080 | 1.3 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.140 | 1.123 | 1.5 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.112 | 1.081 | 2.8 | 100 | 0.00 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 0.958 | 0.951 | 0.7 | 100 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 0.937 | 0.946 | -1.0 | 100 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 0.887 | 0.875 | 1.4 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Response Factor Report 5973D

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M
Title : 8270 BNA ANALYSIS
Last Update : Wed Jul 02 10:45:14 2014
Response Via : Initial Calibration

Calibration Files
5 =AV019.D 10 =AV020.D 50 =AV021.D 80 =AV022.D 100 =AV023.D 120 =AV024.D 160 =AV025.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | |
| 2) | TM | Pyridine | | 1.313 | 1.336 | 1.325 | 1.339 | 1.325 | 1.328 | | 0.79 |
| 3) | TM | N-Nitrosodimet... | 0.562 | 0.626 | 0.701 | 0.702 | 0.688 | 0.739 | 0.714 | 0.676 | 9.00 |
| 4) | S | SURR1,2-FLUORO... | 1.111 | 1.124 | 1.180 | 1.192 | 1.190 | 1.211 | 1.227 | 1.177 | 3.67 |
| 5) | TM | Benzaldehyde | | 0.365 | 0.335 | 0.290 | 0.249 | 0.152 | 0.278 | | 29.94 AVG |
| 6) | TM | Aniline | 2.025 | 2.073 | 2.049 | 2.024 | 2.043 | 2.133 | 2.040 | 2.055 | 1.85 |
| 7) | S | SURR2,PHENOL-D6 | 1.357 | 1.418 | 1.590 | 1.570 | 1.542 | 1.636 | 1.595 | 1.530 | 6.71 |
| 8) | TMC | Phenol | 1.486 | 1.478 | 1.592 | 1.619 | 1.597 | 1.646 | 1.629 | 1.578 | 4.33 |
| 9) | TM | bis(2-Clethyl)... | 1.160 | 1.156 | 1.182 | 1.188 | 1.071 | 1.125 | 1.138 | 1.146 | 3.45 |
| 10) | TM | 2-Chlorophenol | 1.284 | 1.300 | 1.374 | 1.376 | 1.348 | 1.418 | 1.400 | 1.357 | 3.66 |
| 11) | TM | 1,3-Diclbenzene | 1.604 | 1.610 | 1.579 | 1.583 | 1.559 | 1.563 | 1.567 | 1.581 | 1.26 |
| 12) | TMC | 1,4-Dichlorobe... | 1.732 | 1.623 | 1.646 | 1.620 | 1.603 | 1.641 | 1.632 | 1.642 | 2.55 |
| 13) | TM | 1,2-Diclbenzene | 1.641 | 1.535 | 1.529 | 1.519 | 1.507 | 1.543 | 1.525 | 1.543 | 2.92 |
| 14) | TM | Benzyl Alcohol | 0.916 | 0.856 | 0.999 | 1.008 | 1.021 | 1.063 | 1.026 | 0.984 | 7.33 |
| 15) | TM | 2,2'-oxybis(1-... | 1.663 | 1.681 | 1.648 | 1.622 | 1.626 | 1.665 | 1.647 | 1.650 | 1.29 |
| 16) | TM | 2-Methylphenol | 1.099 | 1.184 | 1.257 | 1.230 | 1.246 | 1.298 | 1.272 | 1.226 | 5.44 |
| 17) | TM | Acetophenone | 1.847 | 1.781 | 1.777 | 1.780 | 1.770 | 1.836 | 1.795 | 1.798 | 1.72 |
| 18) | TMP | N-Nitroso-Di-n... | 0.896 | 0.918 | 0.937 | 0.931 | 0.903 | 0.958 | 0.964 | 0.929 | 2.77 |
| 19) | TM | Hexachloroethane | 0.526 | 0.601 | 0.604 | 0.611 | 0.601 | 0.603 | 0.607 | 0.593 | 5.03 |
| 20) | TM | 3+4-Methylphenol | 1.199 | 1.193 | 1.304 | 1.307 | 1.286 | 1.375 | 1.343 | 1.287 | 5.31 |
| 21) | T | 1-Methyl-2-pyr... | | 0.870 | 0.921 | 0.891 | 0.885 | 0.939 | 0.867 | 0.896 | 3.21 |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.240 | 0.320 | 0.328 | 0.334 | 0.346 | 0.363 | 0.317 | 0.321 | 12.17 |
| 24) | TM | Nitrobenzene | 0.252 | 0.280 | 0.291 | 0.316 | 0.316 | 0.331 | 0.331 | 0.302 | 9.75 |
| 25) | TM | Isophorone | 0.580 | 0.597 | 0.592 | 0.606 | 0.614 | 0.640 | 0.623 | 0.607 | 3.31 |
| 26) | TCM | 2-Nitrophenol | 0.120 | 0.126 | 0.141 | 0.156 | 0.161 | 0.174 | 0.178 | 0.151 | 14.96 |
| 27) | TM | Benzoic Acid | | 0.144 | 0.225 | 0.269 | 0.284 | 0.314 | 0.317 | 0.259 | 25.32 QA |
| 28) | TM | 2,4-Dimethylph... | 0.276 | 0.331 | 0.312 | 0.327 | 0.326 | 0.339 | 0.336 | 0.321 | 6.77 |
| 29) | TM | bis(-2-Chloroe... | 0.373 | 0.369 | 0.356 | 0.362 | 0.370 | 0.373 | 0.368 | 0.367 | 1.65 |
| 30) | TCM | 2,4-Dichloroph... | 0.261 | 0.261 | 0.291 | 0.306 | 0.306 | 0.323 | 0.322 | 0.296 | 8.82 |
| 31) | TM | 1,2,4-Trichlor... | 0.374 | 0.356 | 0.349 | 0.354 | 0.359 | 0.364 | 0.364 | 0.360 | 2.35 |
| 32) | TM | Naphthalene | 1.046 | 1.072 | 1.011 | 1.038 | 1.047 | 1.067 | 1.062 | 1.049 | 1.98 |
| 33) | TM | 4-Chloroaniline | 0.382 | 0.403 | 0.416 | 0.428 | 0.431 | 0.445 | 0.430 | 0.419 | 5.01 |
| 34) | TCM | Hexachlorobuta... | 0.206 | 0.205 | 0.205 | 0.207 | 0.200 | 0.208 | 0.212 | 0.206 | 1.72 |
| 35) | TMC | 4-Chloro-3-met... | 0.223 | 0.245 | 0.258 | 0.264 | 0.271 | 0.284 | 0.279 | 0.260 | 8.09 |
| 36) | TM | Caprolactam | | 0.087 | 0.086 | 0.087 | 0.089 | 0.096 | 0.076 | 0.087 | 7.06 |
| 37) | TM | 2-Methylnaphth... | 0.715 | 0.727 | 0.707 | 0.711 | 0.717 | 0.751 | 0.760 | 0.727 | 2.85 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.641 | 0.665 | 0.660 | 0.659 | 0.668 | 0.693 | 0.689 | 0.668 | 2.68 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.314 | 0.321 | 0.368 | 0.408 | 0.415 | 0.412 | 0.452 | 0.384 | 13.47 |
| 41) | TCM | 2,4,6-Trichlor... | 0.287 | 0.338 | 0.362 | 0.379 | 0.395 | 0.403 | 0.414 | 0.368 | 11.95 |
| 42) | TM | 2,4,5-Trichlor... | 0.337 | 0.361 | 0.382 | 0.421 | 0.394 | 0.406 | 0.412 | 0.388 | 7.71 |
| 43) | S | SURR5,2-FLUORO... | 1.233 | 1.279 | 1.280 | 1.304 | 1.310 | 1.287 | 1.359 | 1.293 | 2.96 |
| 44) | TM | 1,1'-Biphenyl | 1.382 | 1.411 | 1.414 | 1.470 | 1.437 | 1.433 | 1.507 | 1.436 | 2.87 |
| 45) | TM | 2-Chloronaphth... | 1.107 | 1.079 | 1.091 | 1.137 | 1.130 | 1.113 | 1.168 | 1.118 | 2.67 |
| 46) | TM | 2-Nitroaniline | | | 0.238 | 0.260 | 0.258 | 0.266 | 0.272 | 0.259 | 5.07 |
| 47) | TM | Acenaphthylene | 1.608 | 1.678 | 1.778 | 1.838 | 1.822 | 1.824 | 1.894 | 1.778 | 5.63 |
| 48) | TM | Dimethyl phtha... | 1.182 | 1.218 | 1.199 | 1.174 | 1.149 | 1.145 | 1.144 | 1.173 | 2.46 |
| 49) | TM | 2,6-Dinitrotol... | 0.171 | 0.173 | 0.211 | 0.226 | 0.234 | 0.234 | 0.242 | 0.213 | 13.99 |
| 50) | TMC | Acenaphthene | 1.184 | 1.161 | 1.153 | 1.179 | 1.178 | 1.181 | 1.213 | 1.178 | 1.62 |
| 51) | TM | 3-Nitroaniline | | | 0.239 | 0.272 | 0.270 | 0.284 | 0.291 | 0.271 | 7.29 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.087 | 0.116 | 0.124 | 0.136 | 0.155 | 0.124 | 20.33 |
| 53) | TM | Dibenzofuran | 1.703 | 1.671 | 1.641 | 1.665 | 1.674 | 1.681 | 1.691 | 1.675 | 1.18 |
| 54) | TM | 2,4-Dinitrotol... | 0.189 | 0.213 | 0.252 | 0.286 | 0.308 | 0.312 | 0.334 | 0.271 | 19.99 |
| 55) | TMP | 4-Nitrophenol | | | 0.166 | 0.195 | 0.197 | 0.200 | 0.212 | 0.194 | 8.73 |
| 56) | TM | Fluorene | 1.354 | 1.320 | 1.307 | 1.327 | 1.310 | 1.322 | 1.300 | 1.320 | 1.35 |
| 57) | TM | 4-Chlorophenyl... | 0.668 | 0.648 | 0.654 | 0.673 | 0.661 | 0.664 | 0.657 | 0.661 | 1.29 |
| 58) | TM | Diethylphthalate | 1.149 | 1.080 | 1.035 | 1.102 | 1.101 | 1.132 | 1.177 | 1.111 | 4.23 |
| 59) | TM | 4-Nitroaniline | | | 0.268 | 0.310 | 0.322 | 0.339 | 0.345 | 0.317 | 9.59 |
| 60) | S | SURR3,2,4,6-TR... | 0.163 | 0.144 | 0.163 | 0.177 | 0.192 | 0.204 | 0.208 | 0.179 | 13.27 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.096 | 0.111 | 0.118 | 0.119 | 0.131 | 0.115 | 11.28 |
| 64) | TM | 1,2 Diphenylhy... | 0.720 | 0.735 | 0.792 | 0.723 | 0.707 | 0.689 | 0.677 | 0.720 | 5.15 |
| 65) | TCM | N-Nitrosodiphe... | 0.543 | 0.540 | 0.534 | 0.511 | 0.518 | 0.524 | 0.543 | 0.530 | 2.47 |
| 66) | TM | 4-Bromophenyl-... | 0.241 | 0.249 | 0.249 | 0.234 | 0.232 | 0.227 | 0.236 | 0.238 | 3.51 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.255 | 0.268 | 0.278 | 0.260 | 0.260 | 0.260 | 0.269 | 0.264 | 2.97 |
| 69) | TM | Atrazine | 0.069 | 0.058 | 0.084 | 0.085 | 0.089 | 0.089 | 0.089 | 0.081 | 15.01 |
| 70) | TCM | Pentachlorophenol | | | 0.121 | 0.134 | 0.149 | 0.153 | 0.164 | 0.144 | 11.74 |
| 71) | TM | Phenanthrene | 1.078 | 1.088 | 1.055 | 1.064 | 1.090 | 1.107 | 1.142 | 1.089 | 2.66 |
| 72) | TM | Anthracene | 1.061 | 1.109 | 1.121 | 1.124 | 1.176 | 1.178 | 1.215 | 1.141 | 4.54 |
| 73) | TM | Carbazole | 0.976 | 0.943 | 1.081 | 1.080 | 1.092 | 1.112 | 1.111 | 1.056 | 6.45 |
| 74) | TM | Di-n-butylphth... | 0.898 | 0.940 | 1.214 | 1.252 | 1.288 | 1.274 | 1.331 | 1.171 | 15.04 |
| 75) | TCM | Fluoranthene | 1.060 | 1.047 | 1.312 | 1.331 | 1.341 | 1.354 | 1.374 | 1.260 | 11.30 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.480 | 0.472 | 0.476 | 0.474 | 0.428 | 0.466 | 4.64 |
| 78) | TM | Pyrene | 1.028 | 1.059 | 1.139 | 1.117 | 1.164 | 1.228 | 1.200 | 1.134 | 6.38 |
| 79) | S | SURR6,TERPHENY... | 0.825 | 0.832 | 0.797 | 0.802 | 0.846 | 0.882 | 0.876 | 0.837 | 3.98 |
| 80) | TM | Butyl benzyl p... | 0.361 | 0.402 | 0.454 | 0.471 | 0.498 | 0.494 | 0.508 | 0.455 | 12.06 |
| 81) | TM | 3,3'-Dichlorob... | 0.311 | 0.311 | 0.353 | 0.341 | 0.367 | 0.374 | 0.380 | 0.348 | 8.17 |
| 82) | TM | Benzo(a)anthra... | 1.090 | 1.073 | 1.113 | 1.124 | 1.148 | 1.166 | 1.139 | 1.122 | 2.90 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.185 | 1.167 | 1.121 | 1.116 | 1.142 | 1.159 | 1.151 | 1.149 | 2.15 |
| 84) | TM | bis(2-Ethylhex... | 0.465 | 0.514 | 0.575 | 0.626 | 0.630 | 0.602 | 0.644 | 0.580 | 11.55 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.629 | 0.653 | 0.845 | 0.981 | 1.044 | 1.021 | 1.129 | 0.900 | 21.86 oA |
| 87) | TM | Benzo(b)Fluora... | 1.015 | 0.994 | 1.026 | 1.047 | 1.081 | 1.103 | 1.155 | 1.060 | 5.32 |
| 88) | TM | Benzo(k)fluora... | 1.149 | 1.006 | 1.143 | 1.156 | 1.177 | 1.190 | 1.212 | 1.148 | 5.82 |
| 89) | TCM | Benzo(a)pyrene | 0.865 | 0.887 | 1.037 | 1.056 | 1.082 | 1.099 | 1.145 | 1.024 | 10.47 |
| 90) | TM | Indeno(1,2,3-c... | 0.723 | 0.685 | 0.940 | 0.921 | 0.967 | 0.930 | 0.970 | 0.876 | 13.66 |
| 91) | TM | Dibenz(a,h)ant... | 0.885 | 0.730 | 0.979 | 1.010 | 1.023 | 1.012 | 1.047 | 0.955 | 11.74 |
| 92) | TM | Benzo(g,h,i)pe... | 0.855 | 0.757 | 0.955 | 0.948 | 0.954 | 0.956 | 0.963 | 0.913 | 8.57 |

(#) = Out of Range

00066

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.336 | -0.6 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.702 | -3.8 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.192 | -1.3 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.335 | -20.5# | 100 | 0.00 |
| 6 | TM | Aniline | 2.055 | 2.024 | 1.5 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.570 | -2.6 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.619 | -2.6 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.188 | -3.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.376 | -1.4 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.583 | -0.1 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.620 | 1.3 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.519 | 1.6 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.008 | -2.4 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.622 | 1.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.230 | -0.3 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.780 | 1.0 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.931 | -0.2 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.611 | -3.0 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.307 | -1.6 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.891 | 0.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.334 | -4.0 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.316 | -4.6 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.607 | 0.606 | 0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.269 | -3.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.327 | -1.9 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.362 | 1.4 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.354 | 1.7 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.038 | 1.0 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.207 | -0.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.264 | -1.5 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.087 | 0.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.711 | 2.2 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.659 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.408 | -6.2 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.379 | -3.0 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.421 | -8.5 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.304 | -0.9 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.470 | -2.4 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.137 | -1.7 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.260 | -0.4 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.838 | -3.4 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.174 | -0.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.226 | -6.1 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.178 | 1.179 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.272 | -0.4 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.116 | 6.5 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.665 | 0.6 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.286 | -5.5 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.195 | -0.5 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.327 | -0.5 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.673 | -1.8 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.111 | 1.102 | 0.8 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.310 | 2.2 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.177 | 1.1 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.111 | 3.5 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.723 | -0.4 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.511 | 3.6 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 0# | -10.86# |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.260 | 1.5 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.081 | 0.085 | -4.9 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.134 | 6.9 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.089 | 1.064 | 2.3 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.141 | 1.124 | 1.5 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.056 | 1.080 | -2.3 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.252 | -6.9 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.260 | 1.331 | -5.6 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.466 | 0.472 | -1.3 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.134 | 1.117 | 1.5 | 100 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.802 | 4.2 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.471 | -3.5 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.341 | 2.0 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.124 | -0.2 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.149 | 1.116 | 2.9 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.626 | -7.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.981 | -9.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.047 | 1.2 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.156 | -0.7 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.056 | -3.1 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.921 | -5.1 | 100 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.010 | -5.8 | 100 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.948 | -3.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\071814\CZ405.D  Vial: 1
Acq On : 18 Jul 2014 10:29 am  Operator: Z.Miao
Sample : ccv  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

6A: #40
LR: #52.

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050  Min. Rel. Area : 50%  Max. R.T. Dev 0.50min
Max. RRF Dev : 20%  Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 120 | 0.00 |
| 2 | TM | Pyridine | 1.390 | 1.471 | -5.8 | 131 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.753 | 0.825 | -9.6 | 128 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.240 | 1.382 | -11.5 | 132 | 0.00 |
| 5 | TM | Benzaldehyde | 0.245 | 0.214 | 12.7 | 95 | 0.00 |
| 6 | TM | Aniline | 1.921 | 1.931 | -0.5 | 128 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.636 | 1.773 | -8.4 | 135 | 0.00 |
| 8 | TMC | Phenol | 1.676 | 1.689 | -0.8 | 118 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.214 | 1.297 | -6.8 | 122 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.375 | 1.475 | -7.3 | 132 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.514 | 1.590 | -5.0 | 130 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.523 | 1.554 | -2.0 | 129 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.446 | 1.502 | -3.9 | 127 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.113 | 1.206 | -8.4 | 126 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.280 | 1.163 | 9.1 | 110 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.204 | 1.303 | -8.2 | 129 | 0.00 |
| 17 | TM | Acetophenone | 1.809 | 1.787 | 1.2 | 122 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.977 | 0.942 | 3.6 | 122 | 0.00 |
| 19 | TM | Hexachloroethane | 0.629 | 0.644 | -2.4 | 123 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.275 | 1.393 | -9.3 | 130 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.865 | 0.968 | -11.9 | 136 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 127 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.413 | 0.367 | 11.1 | 112 | 0.00 |
| 24 | TM | Nitrobenzene | 0.373 | 0.342 | 8.3 | 118 | 0.00 |
| 25 | TM | Isophorone | 0.673 | 0.655 | 2.7 | 125 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.201 | 0.203 | -1.0 | 130 | 0.00 |
| 27 | TM | Benzoic Acid | 0.381 | 0.383 | -0.5 | 124 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.375 | 0.362 | 3.5 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.389 | 0.385 | 1.0 | 129 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.658 | 0.636 | 3.3 | 131 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.333 | 0.316 | 5.1 | 124 | 0.00 |
| 32 | TM | Naphthalene | 0.977 | 0.953 | 2.5 | 128 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.413 | 0.415 | -0.5 | 128 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.194 | 0.177 | 8.8 | 120 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.298 | 0.326 | -9.4 | 134 | 0.00 |
| 36 | TM | Caprolactam | 0.107 | 0.113 | -5.6 | 129 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.696 | 0.688 | 1.1 | 129 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.643 | 0.639 | 0.6 | 128 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 121 | 0.00 |

(#) = Out of Range



00078

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\071814\CZ405.D  Vial: 1
Acq On : 18 Jul 2014 10:29 am  Operator: Z.Miao
Sample : ccv  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 0.222 | 0.253 | -14.0 | 120 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.361 | 0.378 | -4.7 | 126 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.381 | 0.390 | -2.4 | 119 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.211 | 1.277 | -5.5 | 128 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.352 | 1.447 | -7.0 | 131 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.083 | 1.120 | -3.4 | 131 | 0.00 |
| 46 | TM | 2-Nitroaniline | 0.311 | 0.320 | -2.9 | 124 | 0.00 |
| 47 | TM | Acenaphthylene | 1.640 | 1.777 | -8.4 | 133 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.199 | 1.250 | -4.3 | 128 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.291 | 0.319 | -9.6 | 130 | 0.00 |
| 50 | TMC | Acenaphthene | 1.037 | 1.114 | -7.4 | 130 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.309 | 0.332 | -7.4 | 132 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.164 | 0.181 | -10.4 | 140 | 0.00 |
| 53 | TM | Dibenzofuran | 1.516 | 1.593 | -5.1 | 132 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.390 | 0.429 | -10.0 | 130 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.215 | 0.204 | 5.1 | 117 | 0.00 |
| 56 | TM | Fluorene | 1.243 | 1.296 | -4.3 | 129 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.610 | 0.653 | -7.0 | 133 | 0.00 |
| 58 | TM | Diethylphthalate | 1.181 | 1.217 | -3.0 | 127 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.359 | -13.2 | 137 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.134 | 0.150 | -11.9 | 132 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 127 | 0.01 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 148 | 0.02 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.164 | 0.171 | -4.3 | 128 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.756 | 0.726 | 4.0 | 124 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.546 | 0.550 | -0.7 | 133 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.208 | 0.217 | -4.3 | 139 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 50 | 0.05 |
| 68 | TM | Hexachlorobenzene | 0.214 | 0.219 | -2.3 | 132 | 0.00 |
| 69 | TM | Atrazine | 0.088 | 0.097 | -10.2 | 131 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.143 | 0.147 | -2.8 | 132 | 0.00 |
| 71 | TM | Phenanthrene | 1.014 | 1.014 | 0.0 | 129 | 0.00 |
| 72 | TM | Anthracene | 1.095 | 1.091 | 0.4 | 132 | 0.00 |
| 73 | TM | Carbazole | 1.045 | 1.112 | -6.4 | 134 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.287 | 1.363 | -5.9 | 130 | 0.01 |
| 75 | TCM | Fluoranthene | 1.169 | 1.250 | -6.9 | 132 | 0.01 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 136 | 0.01 |
| 77 | TM | Benzidine | 0.503 | 0.437 | 13.1 | 113 | 0.02 |
| 78 | TM | Pyrene | 1.295 | 1.220 | 5.8 | 130 | 0.01 |

(#) = Out of Range

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\071814\CZ405.D  Vial: 1
Acq On : 18 Jul 2014 10:29 am  Operator: Z.Miao
Sample : ccv  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 0.870 | 0.843 | 3.1 | 135 | 0.02 |
| 80 | TM | Butyl benzyl phthalate | 0.671 | 0.656 | 2.2 | 137 | 0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.422 | 0.404 | 4.3 | 133 | 0.02 |
| 82 | TM | Benzo(a)anthracene | 1.239 | 1.191 | 3.9 | 133 | 0.01 |
| 83 | TM | Chrysene | 1.177 | 1.124 | 4.5 | 132 | 0.01 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.886 | 0.895 | -1.0 | 136 | 0.02 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 135 | 0.01 |
| 86 | TCM | Di-n-octyl phthalate | 1.533 | 1.504 | 1.9 | 135 | 0.01 |
| 87 | TM | Benzo(b)Fluoranthene | 1.094 | 1.090 | 0.4 | 137 | 0.01 |
| 88 | TM | Benzo(k)fluoranthene | 1.140 | 1.163 | -2.0 | 140 | 0.01 |
| 89 | TCM | Benzo(a)pyrene | 1.112 | 1.118 | -0.5 | 140 | 0.01 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 0.958 | 1.004 | -4.8 | 143 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 0.937 | 1.009 | -7.7 | 144 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 0.887 | 0.954 | -7.6 | 148 | 0.00 |

(#) = Out of Range  SPCC's out = 0  CCC's out = 0

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\071814\CZ405.D  Vial: 1
Acq On : 18 Jul 2014 10:29 am  Operator: Z.Miao
Sample : ccv  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 120 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 84.700 | -5.9 | 131 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 87.589 | -9.5 | 128 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 89.206 | -11.5 | 132 | 0.00 |
| 5 | TM | Benzaldehyde | 80.000 | 69.715 | 12.9 | 95 | 0.00 |
| 6 | TM | Aniline | 80.000 | 80.428 | -0.5 | 128 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 86.680 | -8.4 | 135 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 80.593 | -0.7 | 118 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 85.483 | -6.9 | 122 | 0.00 |
| 10 | TM | 2-Chlorophenol | 80.000 | 85.819 | -7.3 | 132 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.989 | -5.0 | 130 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 81.658 | -2.1 | 129 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 83.142 | -3.9 | 127 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 86.667 | -8.3 | 126 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 72.706 | 9.1 | 110 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 86.565 | -8.2 | 129 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 79.014 | 1.2 | 122 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 77.188 | 3.5 | 122 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 81.845 | -2.3 | 123 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 87.443 | -9.3 | 130 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 89.513 | -11.9 | 136 | 0.00 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 127 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 71.075 | 11.2 | 112 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 73.247 | 8.4 | 118 | 0.00 |
| 25 | TM | Isophorone | 80.000 | 77.870 | 2.7 | 125 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 80.885 | -1.1 | 130 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 80.542 | -0.7 | 124 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 77.237 | 3.5 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 79.252 | 0.9 | 129 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 77.425 | 3.2 | 131 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 75.945 | 5.1 | 124 | 0.00 |
| 32 | TM | Naphthalene | 80.000 | 78.049 | 2.4 | 128 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 80.416 | -0.5 | 128 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 73.110 | 8.6 | 120 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 87.421 | -9.3 | 134 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 84.319 | -5.4 | 129 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 79.104 | 1.1 | 129 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 79.501 | 0.6 | 128 | 0.00 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 121 | 0.00 |

(#) = Out of Range

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\071814\CZ405.D  Vial: 1
Acq On : 18 Jul 2014 10:29 am  Operator: Z.Miao
Sample : ccv  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 80.680 | -0.9 | 120 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 83.797 | -4.7 | 126 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 81.826 | -2.3 | 119 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 84.341 | -5.4 | 128 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 85.632 | -7.0 | 131 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 82.682 | -3.4 | 131 | 0.00 |
| 46 | TM | 2-Nitroaniline | 80.000 | 82.424 | -3.0 | 124 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 86.709 | -8.4 | 133 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 83.431 | -4.3 | 128 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 87.774 | -9.7 | 130 | 0.00 |
| 50 | TMC | Acenaphthene | 80.000 | 85.923 | -7.4 | 130 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 86.037 | -7.5 | 132 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 88.057 | -10.1 | 140 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 84.075 | -5.1 | 132 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 87.937 | -9.9 | 130 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 75.746 | 5.3 | 117 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 83.441 | -4.3 | 129 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 85.686 | -7.1 | 133 | 0.00 |
| 58 | TM | Diethylphthalate | 80.000 | 82.451 | -3.1 | 127 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 90.607 | -13.3 | 137 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 89.306 | -11.6 | 132 | 0.00 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 127 | 0.01 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 148 | 0.02 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 83.373 | -4.2 | 128 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 76.870 | 3.9 | 124 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 80.586 | -0.7 | 133 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 83.404 | -4.3 | 139 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 50 | 0.05 |
| 68 | TM | Hexachlorobenzene | 80.000 | 81.672 | -2.1 | 132 | 0.00 |
| 69 | TM | Atrazine | 80.000 | 88.077 | -10.1 | 131 | 0.00 |
| 70 | TCM | Pentachlorophenol | 80.000 | 82.380 | -3.0 | 132 | 0.00 |
| 71 | TM | Phenanthrene | 80.000 | 79.972 | 0.0 | 129 | 0.00 |
| 72 | TM | Anthracene | 80.000 | 79.755 | 0.3 | 132 | 0.00 |
| 73 | TM | Carbazole | 80.000 | 85.104 | -6.4 | 134 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 84.716 | -5.9 | 130 | 0.01 |
| 75 | TCM | Fluoranthene | 80.000 | 85.565 | -7.0 | 132 | 0.01 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 136 | 0.01 |
| 77 | TM | Benzidine | 80.000 | 69.494 | 13.1 | 113 | 0.02 |
| 78 | TM | Pyrene | 80.000 | 75.378 | 5.8 | 130 | 0.01 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\071814\CZ405.D  Vial: 1
Acq On : 18 Jul 2014 10:29 am  Operator: Z.Miao
Sample : ccv  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 77.467 | 3.2 | 135 | 0.02 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 78.200 | 2.2 | 137 | 0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 76.596 | 4.3 | 133 | 0.02 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 76.899 | 3.9 | 133 | 0.01 |
| 83 | TM | Chrysene | 80.000 | 76.391 | 4.5 | 132 | 0.01 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 80.818 | -1.0 | 136 | 0.02 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 135 | 0.01 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 78.464 | 1.9 | 135 | 0.01 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 79.679 | 0.4 | 137 | 0.01 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 81.559 | -1.9 | 140 | 0.01 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 80.399 | -0.5 | 140 | 0.01 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 83.806 | -4.8 | 143 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 80.000 | 86.137 | -7.7 | 144 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 80.000 | 86.017 | -7.5 | 148 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Inst : 5973D

QA : #27.86
LR : #52

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.408 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.752 | -11.2 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.247 | -5.9 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 0.278 | 0.221 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 2.055 | 1.862 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.627 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.686 | -6.8 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.245 | -8.6 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.427 | -5.2 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.644 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.684 | -2.6 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.575 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.045 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.779 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.284 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.868 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.969 | -4.3 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.625 | -5.4 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.343 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.902 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.325 | -1.2 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.336 | -11.3 | 127 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.627 | -3.3 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.240 | 7.3 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.339 | -5.6 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.374 | -1.9 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.360 | 0.0 | 121 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.063 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.422 | -0.7 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.211 | -2.4 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.268 | -3.1 | 121 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.088 | -1.1 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.734 | -1.0 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.677 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.405 | -5.5 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.395 | -7.3 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.415 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.379 | -6.7 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.542 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.196 | -7.0 | 121 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.290 | -12.0 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.862 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.223 | -4.3 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.256 | -20.2# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 1.178 | 1.204 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.290 | -7.0 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.117 | 5.6 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.722 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.333 | -22.9# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.199 | -2.6 | 118 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.394 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.691 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 1.111 | 1.109 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.340 | -7.3 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.180 | -0.6 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.112 | 2.6 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.762 | -5.8 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.521 | 1.7 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.236 | 0.8 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 34# | -0.05 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.263 | 0.4 | 116 | -0.01 |
| 69 | TM | Atrazine | 0.081 | 0.080 | 1.2 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.151 | -4.9 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.106 | -1.6 | 119 | -0.02 |
| 72 | TM | Anthracene | 1.141 | 1.174 | -2.9 | 120 | -0.02 |
| 73 | TM | Carbazole | 1.056 | 1.125 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.272 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 1.260 | 1.370 | -8.7 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 0.466 | 0.000# | 100.0# | 0# | -8.49# |
| 78 | TM | Pyrene | 1.134 | 1.179 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.821 | 1.9 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.466 | -2.4 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.362 | -4.0 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.149 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 1.149 | 1.146 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.612 | -5.5 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.968 | -7.6 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.112 | -4.9 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.186 | -3.3 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.096 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.943 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.030 | -7.9 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.974 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 84.824 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 89.052 | -11.3 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 84.775 | -6.0 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 80.000 | 63.567 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 80.000 | 72.481 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 85.077 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 85.487 | -6.9 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.948 | -8.7 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 80.000 | 84.098 | -5.1 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.219 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.010 | -2.5 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 81.688 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 84.996 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 86.253 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 83.784 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 83.088 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 83.387 | -4.2 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 84.254 | -5.3 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 83.495 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 80.541 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 80.916 | -1.1 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 88.830 | -11.0 | 127 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 82.545 | -3.2 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 82.780 | -3.5 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 74.094 | 7.4 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 84.597 | -5.7 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 81.468 | -1.8 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 82.696 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 79.895 | 0.1 | 121 | -0.01 |
| 32 | TM | Naphthalene | 80.000 | 81.075 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 80.432 | -0.5 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 81.777 | -2.2 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 82.201 | -2.8 | 121 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 81.529 | -1.9 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 80.735 | -0.9 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 81.067 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 84.219 | -5.3 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 85.772 | -7.2 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 85.598 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 85.309 | -6.6 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 85.881 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 85.605 | -7.0 | 121 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 89.493 | -11.9 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 83.794 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 83.372 | -4.2 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 96.290 | -20.4# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 80.000 | 81.754 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 85.411 | -6.8 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 79.250 | 0.9 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 82.219 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 98.456 | -23.1# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 81.977 | -2.5 | 118 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 84.490 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 83.618 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 80.000 | 79.879 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 85.915 | -7.4 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 80.584 | -0.7 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 77.596 | 3.0 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 84.596 | -5.7 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.584 | 1.8 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 79.450 | 0.7 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 34 | -0.05 |
| 68 | TM | Hexachlorobenzene | 80.000 | 79.571 | 0.5 | 116 | -0.01 |
| 69 | TM | Atrazine | 80.000 | 79.759 | 0.3 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 83.825 | -4.8 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 81.231 | -1.5 | 119 | -0.02 |
| 72 | TM | Anthracene | 80.000 | 82.380 | -3.0 | 120 | -0.02 |
| 73 | TM | Carbazole | 80.000 | 85.215 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 86.916 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 80.000 | 87.005 | -8.8 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 80.000 | 0.000 | ~~100.0#~~ | ~~0~~ | ~~8.49#~~ |
| 78 | TM | Pyrene | 80.000 | 83.180 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 78.437 | 2.0 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 81.862 | -2.3 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 83.271 | -4.1 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 81.905 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 80.000 | 79.800 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 84.519 | -5.6 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 80.152 | -0.2 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 83.879 | -4.8 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 82.713 | -3.4 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 85.570 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 86.083 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 80.000 | 86.279 | -7.8 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 80.000 | 85.375 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 213099
**Team:** Semivoa GCMS/DMURPHY

**Prep WorkFlow:** OrgExtAq(7)
**Prep Method:** EPA 3510C

**Status:** Prepped
**Prep Date/Time:** 7/16/14 06:56 AM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408203-01 | MB | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | |
| 2 | RQ1408203-01 | MB | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | |
| 3 | RQ1408203-02 | LCS | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/72491; 1.0000 mL/72016; 1.0000 mL/71908; 1.0000 mL/71467 | |
| 4 | RQ1408203-02 | LCS | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467; 1.0000 mL/72016; 1.0000 mL/72491; 1.0000 mL/71908 | |
| 5 | RQ1408203-03 | DLCS | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71908; 1.0000 mL/72016; 1.0000 mL/71467; 1.0000 mL/72491 | |
| 6 | RQ1408203-03 | DLCS | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467; 1.0000 mL/72016; 1.0000 mL/71908; 1.0000 mL/72491 | |
| 7 | R1405406-00[redacted] | 64G-3Q1M-1X-GS | .01 | 1060mL | 625/SVO | 7 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | 7/22 Q |
| 8 | R1405421-00[redacted] | 1407111343 200-SB-15 | .01 | 1060mL | 8270D/SVO /BEHP + DA | 7 | x | x | 1.00mL | clear-colorless | 1.0000 mL/71467 | 7/29 Q 5+V |

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | Color Coded BNA Surrogate Solution 10 | Inventory ID | 71467 | Logbook Ref: | | Expires On: | 05/21/2016 | Lot #: | 229244 |
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 71908 | Logbook Ref: | | Expires On: | 10/31/2014 | Lot #: | Lc02739 |
| Name: | OLM/SOM additionals Spike 100ppm | Inventory ID | 72016 | Logbook Ref: | | Expires On: | 09/01/2014 | | |
| Name: | Benzidine LCS Spike 100ppm | Inventory ID | 72491 | Logbook Ref: | | Expires On: | 11/30/2014 | | |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #14 (61350) | 2mL Graduated Vials | (72265) | Sulfuric Acid, 50% H2SO4 | (70312) |
| Dichloromethane (Methylene Chloride) 99.9% MeCl2 | canister (72057) | Sodium Hydroxide 50% NaOH | (66000) | Prepared Sodium Sulfate Na2SO4 | (72284) |

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Final Volume |
|---|---|---|---|---|---|
| Started: | 7/16/14 06:56 | Started: | 7/16/14 14:15 | Started: | 7/16/14 18:48 |
| Finished: | 7/16/14 13:30 | Finished: | 7/16/14 15:35 | Finished: | 7/16/14 18:48 |
| By: | DMURPHY | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

# *Preparation Information Benchsheet*

**Prep Run#:** 213099
**Team:** Semivoa GCMS/DMURPHY

**Prep WorkFlow:** OrgExtAq(7)
**Prep Method:** EPA 3510C

**Status:** Prepped
**Prep Date/Time:** 7/16/14 06:56 AM

Comments:

Reviewed By: MGR Date: 7/17 Spike Witness: LPRUNOSKE Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

# *Preparation Information Benchsheet*

**Prep Run#:** 213008 **Prep WorkFlow:** OrgExtS(14) **Status:** Prepped
**Team:** Semivoa GCMS/SGOLBERG **Prep Method:** EPA 3541 **Prep Date/Time:** 7/22/14 2 :00 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408508-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216 | |
| 2 | RQ1408508-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 3 | RQ1408508-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 4 | R1405137-008 [redacted] | 1407011413 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/21 [illegible] |
| 5 | R1405137-009 | 1407011606 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light brown silt/gravel | 1.0000 mL/72216 | |
| 6 | R1405347-002 [redacted] | 1407091138 200-SB-18 88'/90' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/25 [illegible] |
| 7 | R1405421-004 [redacted] | 1407111416 200-SB-15 8'/10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/29 [illegible] S+V. |
| 8 | RQ1408508-04 | R1405421-004 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 9 | RQ1408508-05 | R1405421-004 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 10 | R1405541-002 [redacted] | 1407161203 200-SB-15 98/100' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 8/1 [illegible] |

## Spiking Solutions

Name: 8270 LCS Mix1: 100 ug/mL Inventory ID 71908 Logbook Ref: Expires On: 10/31/2014 Lot #: Lc02739

Name: 8270 Soil Surrogate 100-200ppm Inventory ID 72216 Logbook Ref: 8270 Soil Surrogate Expires On: 01/07/2015

## Preparation Materials

Eppendorf Pipette Repeater EXT #15 (67588)

50:50 Dichloromethane:Acetone (72668)

Prepared Sodium Sulfate Na2SO4 (72600)

Sand Reagent Grade SVOA (72239)

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
|---|---|---|---|---|---|
| Started: | 7/22/14 14:00 | Started: | 7/22/14 18:00 | Started: | 7/23/14 10:56 |
| Finished: | 7/22/14 17:00 | Finished: | 7/22/14 18:30 | Finished: | 7/23/14 10:56 |
| By: | ~~MPEDRO~~ SGolberg | By: | ~~MPEDRO~~ S.Golberg | By: | ~~MPEDRO~~ SGolberg |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: [signature] Date: 7/23/14 Spike Witness: MPEDRO Date:

LOG BOOK #

10 µL 4000 ppm 101 D 200 10 mx
#70461

5973-A

7/8/14

| | | | | | |
|---|---|---|---|---|---|
| | Tune | 50 ng DFTPP | Tune D.m | #70613 CZ403 | N |
| | Tune | ↓ | ↓ | 404 | YT 10:00Am |
| 1 | 16CV | 80 ppm | 82100709.m | 05 | YC |
| 2 | 160 | | | 06 | — |
| 3 | BHC | | | 07 | Ym |
| 4 | Initial Calibration | 10 ppm | 36050718 | 08 | YS |
| 5 | | 50 | | 09 | YS |
| 6 | | 80 | | 10 | YS |
| 7 | | 100 | | 11 | YS |
| 8 | | 120 | | 12 | YS |
| 9 | | 160 | | 13 | YS |
| 10 | | ICV#1 | | 14 | YC |
| 11 | | 2 | | 15 | YC |
| 12 | [redacted] | R014070973-01 BHC | 7/11/14 82706x5. | 16 | Ym |
| 13 | | -02 MS | only | 17 | YQ |
| 14 | | 2m7/8 -03 LCSD | | 18 | YQ |
| 15 | | R52530-002 | | 19 | Y |
| 16 | | -003 | | 20 | Y |
| 17 | | -002 Y3 | DL | 21 | N |
| 18 | | -003 Y3 | DL | 22 | N |
| 19 | [redacted] | R68203-001 BHC | 7/16/14 6x5ppb | 23 | Ym |
| 20 | | -02 MS | | 24 | YQ |
| 21 | | -03 LCSD | | 25 | YQ |
| 22 | | 5406-002 | | 26 | Y |
| 23 | [redacted] | R5421-003 | 82708EHP | 27 | Y 8:24pm |
| 24 | | | | | |
| 25 | | | | | |
| 26 | | | | | |
| 27 | | | | | |

Rm# 402731

Za

| | | |
|---|---|---|
| Analysis: 8270/625 | Analyst: LM | Run Method: 8270070ID.m |
| Date: 7/23/14 | Instr. 5973-D | Quant Method: 8270070ID.m Beaj0616D.m |
| | | LIMS Run#: 403293 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| 1 | Tune 50ng | DFTPP | Tune-D.m | AV201 | ~~N~~T | 10:00AM 0613 |
| 2 | CCV 80 ppm | 8270070ID.m. | | 02 | YC | |
| 3 | CCV 80 PPB | Beaj0616D.m | | AV203 | YC | |
| 4 | [redacted] R6140850 8-01 B/N | 7/22/14 Soxh 8270REHP | | 04 | Ym | |
| 5 | —02 ug | | | 05 | YQ | |
| 6 | —03 ugp | | | 06 | YQ | |
| 7 | [redacted] R6 8515-01 B/N | 7/22 8270TCL W | | 07 | Ym | |
| 8 | —02 ug | | | 08 | YQ | |
| 9 | —03 ugp | | | 09 | YQ | |
| 10 | [redacted] R 5137 —008 | 8270REHP Sol | | 10 | Y | |
| 11 | — 009 | | | 11 | Y | |
| 12 | [redacted] R 5347 — 002 | | | 12 | Y | |
| 13 | [redacted] R 5421 — 004 | | | 13 | Y | |
| 14 | — 004mg | R6855 8-04 | | 14 | YQ | |
| 15 | — 004mgp | —05 | | 15 | Y | |
| 16 | [redacted] R 5541 — 002 | | | 16 | Y | |
| 17 | [redacted] R 5562 — 001 | 8270TCL W | | 17 | Y | |
| 18 | — 002 | | | 18 | Y | |
| 19 | [redacted] 5586 — 003 | 8270REHP | | 19 | Y | |
| 20 | [redacted] R 5590 — 002 | 625 PPL | | 20 | Y | 6:27pm. |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary: _____ exp: Secondary: _____ exp:

Primary: _____ exp: Secondary: _____ exp:

Runlog GCEXT r1 12/5/12

July 31, 2014

Service Request No: R1405541

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 18, 2014. For your reference, these analyses have been assigned our service request number **R1405541**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



ADDRESS 1565 Jefferson Rd, Building 300, Suite 360, Rochester, NY 14623 PHONE 585-288-5380 | FAX 585-288-8475
ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental | www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Soil | **Date Received:** | 07/18/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 07/16/14 and received on 07/18/14 at a cooler temperature of 4.4°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

**Volatile Organics**

Soil samples were analyzed for a site list of Volatile Organics by Method 5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405541

| Lab ID | Client ID |
|---|---|
| R1405541-001 | 1407161200 200-SB-15 98/100' |
| R1405541-002 | 1407161203 200-SB-15 98/100' |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/16/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/18/14 |
| **Sample Name:** | 1407161200 200-SB-15 98/100' | | |
| **Lab Code:** | R1405541-001 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **96.4** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/16/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/18/14 |
| | | **Date Analyzed:** | 7/18/14 16:47 |
| **Sample Name:** | 1407161200 200-SB-15 98/100' | **Units:** | µg/Kg |
| **Lab Code:** | R1405541-001 | **Basis:** | Dry |
| | | **Percent Solids:** | 96.4 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 402250 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071814\K9880.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.07 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.5 | 0.82 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.5 | 0.82 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.5 | 1.4 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.5 | 1.5 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.5 | 0.68 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.5 | 1.6 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.5 | 2.6 | |
| 67-63-0 | Isopropanol | ND | U | 110 | 31 | |
| 67-64-1 | Acetone | **4.0** | J | 5.5 | 3.2 | |
| 71-43-2 | Benzene | ND | U | 5.5 | 0.33 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.5 | 0.68 | |
| 75-25-2 | Bromoform | ND | U | 5.5 | 1.1 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.5 | 0.33 | |
| 67-66-3 | Chloroform | ND | U | 5.5 | 1.4 | |
| 74-87-3 | Chloromethane | ND | U | 5.5 | 0.45 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.5 | 0.82 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.5 | 1.7 | |
| 75-09-2 | Dichloromethane | ND | U | 5.5 | 0.64 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.5 | 0.26 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.5 | 1.1 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.5 | 0.98 | |
| 108-88-3 | Toluene | **1.4** | J | 5.5 | 1.2 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.5 | 1.2 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 11 | 1.3 | |
| 95-47-6 | o-Xylene | ND | U | 5.5 | 0.54 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.5 | 1.6 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 51-136 | 7/18/14 16:47 | |
| Dibromofluoromethane | 99 | 63-138 | 7/18/14 16:47 | |
| Toluene-d8 | 102 | 66-138 | 7/18/14 16:47 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407161200 200-SB-15 98/100' | **Date Collected:** | 7/16/14 |
| **Lab Code:** | R1405541-001 | **Date Received:** | 7/18/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/16/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/18/14 |
| **Sample Name:** | 1407161203 200-SB-15 98/100' | | |
| **Lab Code:** | R1405541-002 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **96.4** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/16/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/18/14 |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 16:43 |
| **Sample Name:** | 1407161203 200-SB-15 98/100' | **Units:** | µg/Kg |
| **Lab Code:** | R1405541-002 | **Basis:** | Dry |
| | | **Percent Solids:** | 96.4 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV216.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | **280** | J | 340 | 45 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 53 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 61 | 47-126 | 7/23/14 16:43 | |
| Nitrobenzene-d5 | 58 | 39-136 | 7/23/14 16:43 | |
| p-Terphenyl-d14 | 55 | 35-152 | 7/23/14 16:43 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407161203 200-SB-15 98/100' | **Date Collected:** | 7/16/14 |
| **Lab Code:** | R1405541-002 | **Date Received:** | 7/18/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405541-MB | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **1.0** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/18/14 11:39 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408387-04 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 402250 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071814\K9872.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 7/18/14 11:39 | |
| Dibromofluoromethane | 99 | 63-138 | 7/18/14 11:39 | |
| Toluene-d8 | 102 | 66-138 | 7/18/14 11:39 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 11:25 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408508-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV204.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 75 | 47-126 | 7/23/14 11:25 | |
| Nitrobenzene-d5 | 66 | 39-136 | 7/23/14 11:25 | |
| p-Terphenyl-d14 | 73 | 35-152 | 7/23/14 11:25 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405541
**Date Analyzed:** 7/18/14

## Lab Control Sample Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 402250

| Analyte Name | Lab Control Sample RQ1408387-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 19.1 | 20.0 | 96 | 64 - 127 |
| 1,1,2-Trichloroethane | 20.4 | 20.0 | 102 | 76 - 123 |
| 1,1,2-Trichlorotrifluoroethane | 21.5 | 20.0 | 107 | 59 - 146 |
| 1,1-Dichloroethene (1,1-DCE) | 23.3 | 20.0 | 116 | 75 - 151 |
| 1,2-Dichloroethane | 18.5 | 20.0 | 93 | 66 - 123 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.0 | 20.0 | 105 | 61 - 138 |
| 2-Butanone (MEK) | 19.4 | 20.0 | 97 | 62 - 128 |
| Isopropanol | 391 | 400 | 98 | 62 - 142 |
| Acetone | 20.2 | 20.0 | 101 | 53 - 143 |
| Benzene | 20.6 | 20.0 | 103 | 74 - 123 |
| Bromodichloromethane | 19.6 | 20.0 | 98 | 77 - 127 |
| Bromoform | 20.2 | 20.0 | 101 | 65 - 133 |
| Chlorobenzene | 20.6 | 20.0 | 103 | 77 - 124 |
| Chloroform | 19.2 | 20.0 | 96 | 73 - 125 |
| Chloromethane | 20.8 | 20.0 | 104 | 56 - 154 |
| Dibromochloromethane | 20.1 | 20.0 | 101 | 77 - 124 |
| Dichlorofluoromethane (CFC 21) | 17.4 | 20.0 | 87 | 79 - 142 |
| Dichloromethane | 20.5 | 20.0 | 102 | 77 - 126 |
| Ethylbenzene | 19.3 | 20.0 | 96 | 73 - 123 |
| Methyl tert-Butyl Ether | 19.9 | 20.0 | 100 | 72 - 131 |
| Tetrachloroethene (PCE) | 21.0 | 20.0 | 105 | 65 - 133 |
| Toluene | 20.4 | 20.0 | 102 | 72 - 127 |
| Trichloroethene (TCE) | 20.8 | 20.0 | 104 | 72 - 129 |
| m,p-Xylenes | 40.8 | 40.0 | 102 | 77 - 125 |
| o-Xylene | 19.9 | 20.0 | 99 | 75 - 124 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 24.7 | 20.0 | 124 | 56 - 154 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405541
**Date Analyzed:** 7/23/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 213008

| | Lab Control Sample RQ1408508-02 | | | Duplicate Lab Control Sample RQ1408508-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2710 | 3330 | 81 | 2940 | 3330 | 88 | 50 - 142 | 8 | 30 |
| Di-n-butyl Phthalate | 2620 | 3330 | 79 | 2650 | 3330 | 80 | 36 - 164 | 1 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

# WSTF CHAIN OF CUSTODY RECORD

Date 7-17-14

Page 1 of 1

Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (S) | Analytes / Method: VOA 8260 | Analytes / Method: SVOC 8270 | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407161200 | 200-SB-15 98/100' | 3 | X | X | | | | | | | | |
| 1407161203 | " " | 1 | X | | X | | | | | | | |
| ~~1407~~ | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

R1405541 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-17-14 / 1100HRS | [illegible] | 7/18/14 0925 |
| | | | |
| | | | |

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number M4-5541

Cooler received on 7/18/14 by: [illegible]

COURIER: ALS UPS (FEDEX) VELOCITY CLIENT

| | | |
|---|---|---|
| 1 | Were Custody seals on outside of cooler? | (Y) N |
| 2 | Custody papers properly completed (ink, signed)? | (Y) N |
| 3 | Did all bottles arrive in good condition (unbroken)? | (Y) N |
| 4 | Circle: (Wet Ice) Dry Ice Gel packs present? | (Y) N |

| | | |
|---|---|---|
| 5a | Perchlorate samples have required headspace? | Y N (NA) |
| 5b | Did VOA vials, Alk,or Sulfide have sig* bubbles? | (Y) N NA |
| 6 | Where did the bottles originate? | (ALS/ROC) CLIENT |
| 7 | Soil VOA received as: Bulk Encore | (5035set) NA |

8. Temperature Readings Date: 7/18/14 Time: 0932 ID: IR#3 IR#4 From: Temp Blank (Sample Bottle)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 4.4° | | | | | | |
| Correction Factor (°C) | – | | | | | | |
| Corrected Temp (°C) | 4.4° | | | | | | |
| Within 0-6°C? | (Y) N | Y N | Y N | Y N | Y N | Y N | Y N |

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by [illegible] on 7/18/14 at 0935

5035 samples placed in storage location: F-05 by [illegible] on 7/18/14 at 0931

PC Secondary Review: JMS 7/18/14

Cooler Breakdown: Date: 7/18/14 Time: 1435 by: JS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? (YES) NO
2. Did all bottle labels and tags agree with custody papers? (YES) NO
3. Were correct containers used for the tests indicated? (YES) NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated (N/A)

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: [illegible]

Other Comments:

* headspace! see C.O.C.

PC Secondary Review: JMS 7/31/14

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405541 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Analyzed:** | 7/18/14 11:39 |
| **Sample Matrix:** | Soil | | |

**Method Blank Summary**
**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Instrument ID:** | R-MS-07 |
| **Lab Code:** | RQ1408387-04 | **File ID:** | I:\ACQUDATA\MSVOA7\DATA\071814\K9872.D\ |
| **Analytical Method:** | 8260C | | |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408387-03 | I:\ACQUDATA\MSVOA7\DATA\071814\K9869.D\ | 7/18/14 09:46 |
| 1407161200 200-SB-15 98/100' | R1405541-001 | I:\ACQUDATA\MSVOA7\DATA\071814\K9880.D\ | 7/18/14 16:47 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405541
**Date Analyzed:** 7/18/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\071814\K9868.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 402250
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 44.9 | 0.7075 | 0.6359 | -10.1 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.4 | 0.3414 | 0.3305 | -3.2 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 47.4 | 0.4820 | 0.4569 | -5.2 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 51.5 | 0.4169 | 0.4292 | 3.0 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 45.4 | 0.4920 | 0.4464 | -9.3 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 50.2 | 0.8365 | 0.8391 | 0.3 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 42.3 | 0.7656 | 0.6476 | -15.4 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 886 | 0.08660 | 0.07674 | -11.4 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 36.3 | 0.6020 | 0.4375 | -27.3 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 49.3 | 1.440 | 1.419 | -1.4 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 47.5 | 0.4660 | 0.4429 | -5.0 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 49.0 | 0.2458 | 0.2409 | -2.0 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 48.6 | 0.9166 | 0.8907 | -2.8 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 44.4 | 1.049 | 0.9322 | -11.1 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 48.2 | 1.118 | 1.077 | -3.6 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 47.7 | 0.3859 | 0.3683 | -4.6 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 49.0 | 1.436 | 1.407 | -2.0 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 46.3 | 0.6951 | 0.6436 | -7.4 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 48.3 | 1.608 | 1.552 | -3.5 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 45.4 | 1.847 | 1.676 | -9.2 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 49.3 | 0.3262 | 0.3213 | -1.5 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 48.9 | 1.479 | 1.446 | -2.3 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 48.6 | 0.3311 | 0.3216 | -2.9 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 95.7 | 0.5809 | 0.5557 | -4.3 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 47.7 | 0.5852 | 0.5583 | -4.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 51.1 | 0.8761 | 0.8959 | 2.3 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 49.9 | 0.4853 | 0.4845 | -0.2 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 48.4 | 0.3338 | 0.3234 | -3.1 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.7 | 1.294 | 1.311 | 1.3 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405541
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405541
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405541
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405541
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 50.000 | 0.4875 | 08 | 50.000 | 0.4756 | 01 | 50.000 | 0.4940 | 04 | 50.000 | 0.4931 |
| 02 | 50.000 | 0.4893 | 07 | 50.000 | 0.4775 | 06 | 50.000 | 0.4833 | 05 | 50.000 | 0.4819 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 0.3361 | 06 | 50.000 | 0.3295 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |
| 04 | 50.000 | 0.3406 | 01 | 50.000 | 0.3368 | 03 | 50.000 | 0.3344 | 08 | 50.000 | 0.3299 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 1.276 | 07 | 50.000 | 1.289 | 02 | 50.000 | 1.305 | 04 | 50.000 | 1.306 |
| 01 | 50.000 | 1.307 | 03 | 50.000 | 1.291 | 08 | 50.000 | 1.289 | 05 | 50.000 | 1.291 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405541
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤ 20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤ 20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤ 20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤ 20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤ 20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤ 20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤ 20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤ 20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤ 20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤ 20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤ 20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤ 20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤ 20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤ 20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤ 20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤ 20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤ 20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤ 20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤ 20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤ 20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤ 20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤ 20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤ 20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤ 20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤ 20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤ 20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤ 20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤ 20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤ 20 | 1.294 | | |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low **Folder #:** R1405541 **Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 110413-3:50906 | | R1405541-001 | 39.71 | 35.03 | 5/14/2014 | J. Cushman | 4.68 | 1.07 | 7/16/2014 | Field | 7/18/2014 | . Wojtasiewic | |
| 110413-3:50883 | | R1405541-001 | 39.70 | 35.08 | 5/14/2014 | J. Cushman | 4.62 | 1.08 | 7/16/2014 | Field | 7/18/2014 | . Wojtasiewic | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium

**Folder #:** R1405541

**Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10385 | | R1405541-001 | 40.80 | 36.13 | 4/28/2014 | J. Cushman | 4.67 | | 7/16/2014 | Field | 7/18/2014 | . Wojtasiewi | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

| | | | |
|---|---|---|---|
| Analysis: 8260-soil | Analyst: Ben Wojtasiewicz | Tune Method: T052914.M | |
| Date: 07/18/14 | Data Path: j:\acqudata\msvoa 7 \ 4 AT4 \ 071814 | Run Method: S052914.M | |
| Instr. MS#7 | | LIMS Run#: 402250 | |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | - | | | | - | 1 | - | K9865 | - | |
| 2 | ↓ | - | | | | - | 2 | - | 66 | - | |
| 3 | Tune | - | | | | - | 1 | - | 67 | YT | |
| 4 | CCV | - | | | | - | 1 | - | 68 | YC | |
| 5 | LCS | - | | | | - | 1 | - | 69 | YL | |
| 6 | MBlank | - | | | | - | 1 | - | 70 | (N) | ok for c/o |
| 7 | MBlank | - | | | | - | 2 | - | 71 | (N) | MCL > MDL |
| 8 | MBlank | - | Evion | | | - | 3 | - | 72 | YB | |
| 9 | R1405442-011 | 1 | | [redacted] | 8043 | 2 | 1 | NA | 73 | Y | |
| 10 | ↓ -012 | 1 | | ↓ | ↓ | ↓ | 1 | ↓ | 74 | Y | |
| 11 | -013 | 1 | | | | | 1 | | 75 | ~~(N)~~ | ~~Acetone in CCV~~ (Y) see NCAR # R3228 |
| 12 | -013MS | 1 | | | | | 2 | | 76 | Y | * BW 07/22/14 |
| 13 | ↓ -013DMS | 1 | | ↓ | ↓ | ↓ | 3 | ↓ | 77 | Y | |
| 14 | CBlank | - | | | | | 1 | | 78 | - | |
| 15 | C&G Vial Blank | - | Lot # 071414-3AWN | | | | 1 | | 79 | (N) | C/u from MS/MSD? ok |
| 16 | R1405541-001 | 1.07 | | [redacted] | 11813 | 3 | 1 | NA | 80 | Y | |
| ~~17~~ | ~~Blank~~ | | | | | | ~~1~~ | | ~~81~~ | | |
| ~~18~~ | ~~↓~~ | | | | | | ~~2~~ | | ~~82~~ | | |
| 17 | R1405554-001 | 1 | | [redacted] | 12023 | 2 | 1 | NA | 81 | (N) | ~~Acetone in CCV~~ *, ok IS↓, ok |
| 18 | ↓ -001 | 5 | 1g | ↓ | ↓ | ↓ | 2 | ↓ | 82 | ↓ (Y) | - good ΔL, see NCAR # R3228 |
| 19 | Blank | - | | | | - | 1 | - | 83 | - | |
| 20 | ↓ | - | | | | - | 2 | - | 84 | - | |

BW 07/22/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

| | | | |
|---|---|---|---|
| 500 Primary TG | : 72049 5mL | 500 Secondary TG | : 72050 2mL |
| Primary MBO | : 72046 | Secondary MBO | : 72455 |
| Primary MSL | : 72499 | Secondary MSL | : 72064 |
| Primary Frt | : 72371 | 200 Secondary Frt | : 72454 5mL |
| Primary | : | Secondary | : |

50mL = CCV

50g = LCS

Combined IS/Surr 250: 72076

Surrogate : –

Internal Std : –

10mL 2° Spike Std (72584) / 5g = MS, ΔMS

Response Factor Report 5973D

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M
Title : 8270 BNA ANALYSIS
Last Update : Wed Jul 02 10:45:14 2014
Response Via : Initial Calibration

Calibration Files
5 =AV019.D 10 =AV020.D 50 =AV021.D 80 =AV022.D 100 =AV023.D 120 =AV024.D 160 =AV025.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | | |
| 2) | TM | Pyridine | | 1.313 | 1.336 | 1.325 | 1.339 | 1.325 | 1.328 | | 0.79 | |
| 3) | TM | N-Nitrosodimet... | 0.562 | 0.626 | 0.701 | 0.702 | 0.688 | 0.739 | 0.714 | 0.676 | 9.00 | |
| 4) | S | SURR1,2-FLUORO... | 1.111 | 1.124 | 1.180 | 1.192 | 1.190 | 1.211 | 1.227 | 1.177 | 3.67 | |
| 5) | TM | Benzaldehyde | | | 0.365 | 0.335 | 0.290 | 0.249 | 0.152 | 0.278 | 29.94 | AVG |
| 6) | TM | Aniline | 2.025 | 2.073 | 2.049 | 2.024 | 2.043 | 2.133 | 2.040 | 2.055 | 1.85 | |
| 7) | S | SURR2,PHENOL-D6 | 1.357 | 1.418 | 1.590 | 1.570 | 1.542 | 1.636 | 1.595 | 1.530 | 6.71 | |
| 8) | TMC | Phenol | 1.486 | 1.478 | 1.592 | 1.619 | 1.597 | 1.646 | 1.629 | 1.578 | 4.33 | |
| 9) | TM | bis(2-Clethyl)... | 1.160 | 1.156 | 1.182 | 1.188 | 1.071 | 1.125 | 1.138 | 1.146 | 3.45 | |
| 10) | TM | 2-Chlorophenol | 1.284 | 1.300 | 1.374 | 1.376 | 1.348 | 1.418 | 1.400 | 1.357 | 3.66 | |
| 11) | TM | 1,3-Diclbenzene | 1.604 | 1.610 | 1.579 | 1.583 | 1.559 | 1.563 | 1.567 | 1.581 | 1.26 | |
| 12) | TMC | 1,4-Dichlorobe... | 1.732 | 1.623 | 1.646 | 1.620 | 1.603 | 1.641 | 1.632 | 1.642 | 2.55 | |
| 13) | TM | 1,2-Diclbenzene | 1.641 | 1.535 | 1.529 | 1.519 | 1.507 | 1.543 | 1.525 | 1.543 | 2.92 | |
| 14) | TM | Benzyl Alcohol | 0.916 | 0.856 | 0.999 | 1.008 | 1.021 | 1.063 | 1.026 | 0.984 | 7.33 | |
| 15) | TM | 2,2'-oxybis(1-... | 1.663 | 1.681 | 1.648 | 1.622 | 1.626 | 1.665 | 1.647 | 1.650 | 1.29 | |
| 16) | TM | 2-Methylphenol | 1.099 | 1.184 | 1.257 | 1.230 | 1.246 | 1.298 | 1.272 | 1.226 | 5.44 | |
| 17) | TM | Acetophenone | 1.847 | 1.781 | 1.777 | 1.780 | 1.770 | 1.836 | 1.795 | 1.798 | 1.72 | |
| 18) | TMP | N-Nitroso-Di-n... | 0.896 | 0.918 | 0.937 | 0.931 | 0.903 | 0.958 | 0.964 | 0.929 | 2.77 | |
| 19) | TM | Hexachloroethane | 0.526 | 0.601 | 0.604 | 0.611 | 0.601 | 0.603 | 0.607 | 0.593 | 5.03 | |
| 20) | TM | 3+4-Methylphenol | 1.199 | 1.193 | 1.304 | 1.307 | 1.286 | 1.375 | 1.343 | 1.287 | 5.31 | |
| 21) | T | 1-Methyl-2-pyr... | | 0.870 | 0.921 | 0.891 | 0.885 | 0.939 | 0.867 | 0.896 | 3.21 | |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.240 | 0.320 | 0.328 | 0.334 | 0.346 | 0.363 | 0.317 | 0.321 | 12.17 | |
| 24) | TM | Nitrobenzene | 0.252 | 0.280 | 0.291 | 0.316 | 0.316 | 0.331 | 0.331 | 0.302 | 9.75 | |
| 25) | TM | Isophorone | 0.580 | 0.597 | 0.592 | 0.606 | 0.614 | 0.640 | 0.623 | 0.607 | 3.31 | |
| 26) | TCM | 2-Nitrophenol | 0.120 | 0.126 | 0.141 | 0.156 | 0.161 | 0.174 | 0.178 | 0.151 | 14.96 | |
| 27) | TM | Benzoic Acid | | 0.144 | 0.225 | 0.269 | 0.284 | 0.314 | 0.317 | 0.259 | 25.32 | QA |
| 28) | TM | 2,4-Dimethylph... | 0.276 | 0.331 | 0.312 | 0.327 | 0.326 | 0.339 | 0.336 | 0.321 | 6.77 | |
| 29) | TM | bis(-2-Chloroe... | 0.373 | 0.369 | 0.356 | 0.362 | 0.370 | 0.373 | 0.368 | 0.367 | 1.65 | |
| 30) | TCM | 2,4-Dichloroph... | 0.261 | 0.261 | 0.291 | 0.306 | 0.306 | 0.323 | 0.322 | 0.296 | 8.82 | |
| 31) | TM | 1,2,4-Trichlor... | 0.374 | 0.356 | 0.349 | 0.354 | 0.359 | 0.364 | 0.364 | 0.360 | 2.35 | |
| 32) | TM | Naphthalene | 1.046 | 1.072 | 1.011 | 1.038 | 1.047 | 1.067 | 1.062 | 1.049 | 1.98 | |
| 33) | TM | 4-Chloroaniline | 0.382 | 0.403 | 0.416 | 0.428 | 0.431 | 0.445 | 0.430 | 0.419 | 5.01 | |
| 34) | TCM | Hexachlorobuta... | 0.206 | 0.205 | 0.205 | 0.207 | 0.200 | 0.208 | 0.212 | 0.206 | 1.72 | |
| 35) | TMC | 4-Chloro-3-met... | 0.223 | 0.245 | 0.258 | 0.264 | 0.271 | 0.284 | 0.279 | 0.260 | 8.09 | |
| 36) | TM | Caprolactam | | 0.087 | 0.086 | 0.087 | 0.089 | 0.096 | 0.076 | 0.087 | 7.06 | |
| 37) | TM | 2-Methylnaphth... | 0.715 | 0.727 | 0.707 | 0.711 | 0.717 | 0.751 | 0.760 | 0.727 | 2.85 | |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.641 | 0.665 | 0.660 | 0.659 | 0.668 | 0.693 | 0.689 | 0.668 | 2.68 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.314 | 0.321 | 0.368 | 0.408 | 0.415 | 0.412 | 0.452 | 0.384 | 13.47 |
| 41) | TCM | 2,4,6-Trichlor... | 0.287 | 0.338 | 0.362 | 0.379 | 0.395 | 0.403 | 0.414 | 0.368 | 11.95 |
| 42) | TM | 2,4,5-Trichlor... | 0.337 | 0.361 | 0.382 | 0.421 | 0.394 | 0.406 | 0.412 | 0.388 | 7.71 |
| 43) | S | SURR5,2-FLUORO... | 1.233 | 1.279 | 1.280 | 1.304 | 1.310 | 1.287 | 1.359 | 1.293 | 2.96 |
| 44) | TM | 1,1'-Biphenyl | 1.382 | 1.411 | 1.414 | 1.470 | 1.437 | 1.433 | 1.507 | 1.436 | 2.87 |
| 45) | TM | 2-Chloronaphth... | 1.107 | 1.079 | 1.091 | 1.137 | 1.130 | 1.113 | 1.168 | 1.118 | 2.67 |
| 46) | TM | 2-Nitroaniline | | | 0.238 | 0.260 | 0.258 | 0.266 | 0.272 | 0.259 | 5.07 |
| 47) | TM | Acenaphthylene | 1.608 | 1.678 | 1.778 | 1.838 | 1.822 | 1.824 | 1.894 | 1.778 | 5.63 |
| 48) | TM | Dimethyl phtha... | 1.182 | 1.218 | 1.199 | 1.174 | 1.149 | 1.145 | 1.144 | 1.173 | 2.46 |
| 49) | TM | 2,6-Dinitrotol... | 0.171 | 0.173 | 0.211 | 0.226 | 0.234 | 0.234 | 0.242 | 0.213 | 13.99 |
| 50) | TMC | Acenaphthene | 1.184 | 1.161 | 1.153 | 1.179 | 1.178 | 1.181 | 1.213 | 1.178 | 1.62 |
| 51) | TM | 3-Nitroaniline | | | 0.239 | 0.272 | 0.270 | 0.284 | 0.291 | 0.271 | 7.29 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.087 | 0.116 | 0.124 | 0.136 | 0.155 | 0.124 | 20.33 |
| 53) | TM | Dibenzofuran | 1.703 | 1.671 | 1.641 | 1.665 | 1.674 | 1.681 | 1.691 | 1.675 | 1.18 |
| 54) | TM | 2,4-Dinitrotol... | 0.189 | 0.213 | 0.252 | 0.286 | 0.308 | 0.312 | 0.334 | 0.271 | 19.99 |
| 55) | TMP | 4-Nitrophenol | | | 0.166 | 0.195 | 0.197 | 0.200 | 0.212 | 0.194 | 8.73 |
| 56) | TM | Fluorene | 1.354 | 1.320 | 1.307 | 1.327 | 1.310 | 1.322 | 1.300 | 1.320 | 1.35 |
| 57) | TM | 4-Chlorophenyl... | 0.668 | 0.648 | 0.654 | 0.673 | 0.661 | 0.664 | 0.657 | 0.661 | 1.29 |
| 58) | TM | Diethylphthalate | 1.149 | 1.080 | 1.035 | 1.102 | 1.101 | 1.132 | 1.177 | 1.111 | 4.23 |
| 59) | TM | 4-Nitroaniline | | | 0.268 | 0.310 | 0.322 | 0.339 | 0.345 | 0.317 | 9.59 |
| 60) | S | SURR3,2,4,6-TR... | 0.163 | 0.144 | 0.163 | 0.177 | 0.192 | 0.204 | 0.208 | 0.179 | 13.27 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.096 | 0.111 | 0.118 | 0.119 | 0.131 | 0.115 | 11.28 |
| 64) | TM | 1,2 Diphenylhy... | 0.720 | 0.735 | 0.792 | 0.723 | 0.707 | 0.689 | 0.677 | 0.720 | 5.15 |
| 65) | TCM | N-Nitrosodiphe... | 0.543 | 0.540 | 0.534 | 0.511 | 0.518 | 0.524 | 0.543 | 0.530 | 2.47 |
| 66) | TM | 4-Bromophenyl-... | 0.241 | 0.249 | 0.249 | 0.234 | 0.232 | 0.227 | 0.236 | 0.238 | 3.51 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.255 | 0.268 | 0.278 | 0.260 | 0.260 | 0.260 | 0.269 | 0.264 | 2.97 |
| 69) | TM | Atrazine | 0.069 | 0.058 | 0.084 | 0.085 | 0.089 | 0.089 | 0.089 | 0.081 | 15.01 |
| 70) | TCM | Pentachlorophenol | | | 0.121 | 0.134 | 0.149 | 0.153 | 0.164 | 0.144 | 11.74 |
| 71) | TM | Phenanthrene | 1.078 | 1.088 | 1.055 | 1.064 | 1.090 | 1.107 | 1.142 | 1.089 | 2.66 |
| 72) | TM | Anthracene | 1.061 | 1.109 | 1.121 | 1.124 | 1.176 | 1.178 | 1.215 | 1.141 | 4.54 |
| 73) | TM | Carbazole | 0.976 | 0.943 | 1.081 | 1.080 | 1.092 | 1.112 | 1.111 | 1.056 | 6.45 |
| 74) | TM | Di-n-butylphth... | 0.898 | 0.940 | 1.214 | 1.252 | 1.288 | 1.274 | 1.331 | 1.171 | 15.04 |
| 75) | TCM | Fluoranthene | 1.060 | 1.047 | 1.312 | 1.331 | 1.341 | 1.354 | 1.374 | 1.260 | 11.30 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.480 | 0.472 | 0.476 | 0.474 | 0.428 | 0.466 | 4.64 |
| 78) | TM | Pyrene | 1.028 | 1.059 | 1.139 | 1.117 | 1.164 | 1.228 | 1.200 | 1.134 | 6.38 |
| 79) | S | SURR6,TERPHENY... | 0.825 | 0.832 | 0.797 | 0.802 | 0.846 | 0.882 | 0.876 | 0.837 | 3.98 |
| 80) | TM | Butyl benzyl p... | 0.361 | 0.402 | 0.454 | 0.471 | 0.498 | 0.494 | 0.508 | 0.455 | 12.06 |
| 81) | TM | 3,3'-Dichlorob... | 0.311 | 0.311 | 0.353 | 0.341 | 0.367 | 0.374 | 0.380 | 0.348 | 8.17 |
| 82) | TM | Benzo(a)anthra... | 1.090 | 1.073 | 1.113 | 1.124 | 1.148 | 1.166 | 1.139 | 1.122 | 2.90 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.185 | 1.167 | 1.121 | 1.116 | 1.142 | 1.159 | 1.151 | 1.149 | 2.15 |
| 84) | TM | bis(2-Ethylhex... | 0.465 | 0.514 | 0.575 | 0.626 | 0.630 | 0.602 | 0.644 | 0.580 | 11.55 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.629 | 0.653 | 0.845 | 0.981 | 1.044 | 1.021 | 1.129 | 0.900 | 21.86 |
| 87) | TM | Benzo(b)Fluora... | 1.015 | 0.994 | 1.026 | 1.047 | 1.081 | 1.103 | 1.155 | 1.060 | 5.32 |
| 88) | TM | Benzo(k)fluora... | 1.149 | 1.006 | 1.143 | 1.156 | 1.177 | 1.190 | 1.212 | 1.148 | 5.82 |
| 89) | TCM | Benzo(a)pyrene | 0.865 | 0.887 | 1.037 | 1.056 | 1.082 | 1.099 | 1.145 | 1.024 | 10.47 |
| 90) | TM | Indeno(1,2,3-c... | 0.723 | 0.685 | 0.940 | 0.921 | 0.967 | 0.930 | 0.970 | 0.876 | 13.66 |
| 91) | TM | Dibenz(a,h)ant... | 0.885 | 0.730 | 0.979 | 1.010 | 1.023 | 1.012 | 1.047 | 0.955 | 11.74 |
| 92) | TM | Benzo(g,h,i)pe... | 0.855 | 0.757 | 0.955 | 0.948 | 0.954 | 0.956 | 0.963 | 0.913 | 8.57 |

(#) = Out of Range

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.336 | -0.6 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.702 | -3.8 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.192 | -1.3 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.335 | -20.5# | 100 | 0.00 |
| 6 | TM | Aniline | 2.055 | 2.024 | 1.5 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.570 | -2.6 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.619 | -2.6 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.188 | -3.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.376 | -1.4 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.583 | -0.1 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.620 | 1.3 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.519 | 1.6 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.008 | -2.4 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.622 | 1.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.230 | -0.3 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.780 | 1.0 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.931 | -0.2 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.611 | -3.0 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.307 | -1.6 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.891 | 0.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.334 | -4.0 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.316 | -4.6 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.607 | 0.606 | 0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.269 | -3.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.327 | -1.9 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.362 | 1.4 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.354 | 1.7 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.038 | 1.0 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.207 | -0.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.264 | -1.5 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.087 | 0.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.711 | 2.2 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.659 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.408 | -6.2 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.379 | -3.0 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.421 | -8.5 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.304 | -0.9 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.470 | -2.4 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.137 | -1.7 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.260 | -0.4 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.838 | -3.4 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.174 | -0.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.226 | -6.1 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.178 | 1.179 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.272 | -0.4 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.116 | 6.5 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.665 | 0.6 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.286 | -5.5 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.195 | -0.5 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.327 | -0.5 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.673 | -1.8 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.111 | 1.102 | 0.8 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.310 | 2.2 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.177 | 1.1 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.111 | 3.5 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.723 | -0.4 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.511 | 3.6 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 0# | -10.86# |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.260 | 1.5 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.081 | 0.085 | -4.9 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.134 | 6.9 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.089 | 1.064 | 2.3 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.141 | 1.124 | 1.5 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.056 | 1.080 | -2.3 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.252 | -6.9 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.260 | 1.331 | -5.6 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.466 | 0.472 | -1.3 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.134 | 1.117 | 1.5 | 100 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.802 | 4.2 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.471 | -3.5 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.341 | 2.0 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.124 | -0.2 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.149 | 1.116 | 2.9 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.626 | -7.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.981 | -9.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.047 | 1.2 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.156 | -0.7 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.056 | -3.1 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.921 | -5.1 | 100 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.010 | -5.8 | 100 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.948 | -3.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV
Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

QA: #27, 86

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

LR: #52

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.408 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.752 | -11.2 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.247 | -5.9 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 0.278 | 0.221 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 2.055 | 1.862 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.627 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.686 | -6.8 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.245 | -8.6 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.427 | -5.2 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.644 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.684 | -2.6 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.575 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.045 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.779 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.284 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.868 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.969 | -4.3 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.625 | -5.4 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.343 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.902 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.325 | -1.2 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.336 | -11.3 | 127 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.627 | -3.3 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.240 | 7.3 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.339 | -5.6 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.374 | -1.9 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.360 | 0.0 | 121 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.063 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.422 | -0.7 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.211 | -2.4 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.268 | -3.1 | 121 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.088 | -1.1 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.734 | -1.0 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.677 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.405 | -5.5 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.395 | -7.3 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.415 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.379 | -6.7 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.542 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.196 | -7.0 | 121 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.290 | -12.0 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.862 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.223 | -4.3 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.256 | -20.2# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 1.178 | 1.204 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.290 | -7.0 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.117 | 5.6 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.722 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.333 | -22.9# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.199 | -2.6 | 118 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.394 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.691 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 1.111 | 1.109 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.340 | -7.3 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.180 | -0.6 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.112 | 2.6 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.762 | -5.8 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.521 | 1.7 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.236 | 0.8 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 34# | -0.05 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.263 | 0.4 | 116 | -0.01 |
| 69 | TM | Atrazine | 0.081 | 0.080 | 1.2 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.151 | -4.9 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.106 | -1.6 | 119 | -0.02 |
| 72 | TM | Anthracene | 1.141 | 1.174 | -2.9 | 120 | -0.02 |
| 73 | TM | Carbazole | 1.056 | 1.125 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.272 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 1.260 | 1.370 | -8.7 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 0.466 | 0.000# | 100.0# | 0# | -8.49# |
| 78 | TM | Pyrene | 1.134 | 1.179 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.821 | 1.9 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.466 | -2.4 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.362 | -4.0 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.149 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 1.149 | 1.146 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.612 | -5.5 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.968 | -7.6 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.112 | -4.9 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.186 | -3.3 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.096 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.943 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.030 | -7.9 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.974 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 84.824 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 89.052 | -11.3 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 84.775 | -6.0 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 80.000 | 63.567 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 80.000 | 72.481 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 85.077 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 85.487 | -6.9 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.948 | -8.7 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 80.000 | 84.098 | -5.1 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.219 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.010 | -2.5 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 81.688 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 84.996 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 86.253 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 83.784 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 83.088 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 83.387 | -4.2 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 84.254 | -5.3 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 83.495 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 80.541 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 80.916 | -1.1 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 88.830 | -11.0 | 127 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 82.545 | -3.2 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 82.780 | -3.5 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 74.094 | 7.4 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 84.597 | -5.7 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 81.468 | -1.8 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 82.696 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 79.895 | 0.1 | 121 | -0.01 |
| 32 | TM | Naphthalene | 80.000 | 81.075 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 80.432 | -0.5 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 81.777 | -2.2 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 82.201 | -2.8 | 121 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 81.529 | -1.9 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 80.735 | -0.9 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 81.067 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 84.219 | -5.3 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 85.772 | -7.2 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 85.598 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 85.309 | -6.6 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 85.881 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 85.605 | -7.0 | 121 | 0.00 |

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 89.493 | -11.9 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 83.794 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 83.372 | -4.2 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 96.290 | -20.4# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 80.000 | 81.754 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 85.411 | -6.8 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 79.250 | 0.9 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 82.219 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 98.456 | -23.1# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 81.977 | -2.5 | 118 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 84.490 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 83.618 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 80.000 | 79.879 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 85.915 | -7.4 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 80.584 | -0.7 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 77.596 | 3.0 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 84.596 | -5.7 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.584 | 1.8 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 79.450 | 0.7 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 34 | -0.05 |
| 68 | TM | Hexachlorobenzene | 80.000 | 79.571 | 0.5 | 116 | -0.01 |
| 69 | TM | Atrazine | 80.000 | 79.759 | 0.3 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 83.825 | -4.8 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 81.231 | -1.5 | 119 | -0.02 |
| 72 | TM | Anthracene | 80.000 | 82.380 | -3.0 | 120 | -0.02 |
| 73 | TM | Carbazole | 80.000 | 85.215 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 86.916 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 80.000 | 87.005 | -8.8 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 80.000 | 0.000 | ~~100.0#~~ | ~~0~~ | ~~-8.49#~~ |
| 78 | TM | Pyrene | 80.000 | 83.180 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 78.437 | 2.0 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 81.862 | -2.3 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 83.271 | -4.1 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 81.905 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 80.000 | 79.800 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 84.519 | -5.6 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 80.152 | -0.2 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 83.879 | -4.8 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 82.713 | -3.4 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 85.570 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 86.083 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 80.000 | 86.279 | -7.8 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 80.000 | 85.375 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 213008 **Prep WorkFlow:** OrgExtS(14) **Status:** Prepped
**Team:** Semivoa GCMS/SGOLBERG **Prep Method:** EPA 3541 **Prep Date/Time:** 7/22/14 2 :00 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408508-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216 | |
| 2 | RQ1408508-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 3 | RQ1408508-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 4 | R1405137-008 [redacted] | 1407011413 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/21 II |
| 5 | R1405137-009 | 1407011606 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light brown silt/gravel | 1.0000 mL/72216 | |
| 6 | R1405347-002 [redacted] | 1407091138 200-SB-18 88'/90' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/25 II |
| 7 | R1405421-004 [redacted] | 1407111416 200-SB-15 8'/10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/29 II. |
| 8 | RQ1408508-04 | R1405421-004 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 9 | RQ1408508-05 | R1405421-004 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 10 | R1405541-002 [redacted] | 1407161203 200-SB-15 98/100' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 8/1 II. SAV. |

## Spiking Solutions

Name: 8270 LCS Mix1: 100 ug/mL Inventory ID 71908 Logbook Ref: Expires On: 10/31/2014 Lot #: Lc02739

Name: 8270 Soil Surrogate 100-200ppm Inventory ID 72216 Logbook Ref: 8270 Soil Surrogate Expires On: 01/07/2015

## Preparation Materials

Eppendorf Pipette Repeater EXT #15 (67588) 50:50 Dichloromethane:Acetone (72668) Prepared Sodium Sulfate Na2SO4 (72600)

Sand Reagent Grade SVOA (72239)

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
|---|---|---|---|---|---|
| Started: | 7/22/14 14:00 | Started: | 7/22/14 18:00 | Started: | 7/23/14 10:56 |
| Finished: | 7/22/14 17:00 | Finished: | 7/22/14 18:30 | Finished: | 7/23/14 10:56 |
| By: | ~~MPEDRO~~ SGolberg | By: | ~~MPEDRO~~ S.Golberg | By: | ~~MPEDRO~~ SGolberg |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: [signature] Date: 7/23/14 Spike Witness: MPEDRO Date:

| | | |
|---|---|---|
| Analysis: 8270/625 | Analyst: LM | Run Method: 8270010D.m |
| Date: 7/23/14 | Instr. 5973-D | Quant Method: 8270010D.m Beg0616D.m |
| | | LIMS Run#: 403293 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| 1 | Tune 50ng | DFTPP | Tune4D.m | AV201 | NT | 10:00AM 0613 |
| 2 | CCV 80 ppm | 8270010D.m. | | 02 | YC | |
| 3 | CCV 80 PPB | Beg0616D.m | | AV203 | YC | |
| 4 | [redacted] R6140850 8-01 B/L | 7/22/14 Sonic | 8270BEHP | 04 | Ym | |
| 5 | —02 ul | | | 05 | YQ | |
| 6 | —03 ulp | | | 06 | YQ | |
| 7 | [redacted] RQ 8515-01 B/L | 7/22 | 8270TCL W | 07 | Ym | |
| 8 | —02 ul | | | 08 | YQ | |
| 9 | —03 ulp | | | 09 | YQ | |
| 10 | [redacted] R 5137-008 | | 8270BEHP Sonic | 10 | Y | |
| 11 | —009 | | | 11 | Y | |
| 12 | [redacted] R 5347-002 | | | 12 | Y | |
| 13 | [redacted] R 5421-004 | | | 13 | Y | |
| 14 | —004ms | | R6855-04 | 14 | YQ | |
| 15 | —004msd | | —05 | 15 | Y | |
| 16 | [redacted] R 5541-002 | | | 16 | Y | |
| 17 | [redacted] R 5562-001 | | 8270TCL W | 17 | Y | |
| 18 | —002 | | | 18 | Y | |
| 19 | [redacted] 5586-003 | | 8270BEHP | 19 | Y | |
| 20 | [redacted] R 5590-002 | | 625 PPL | 20 | Y | 6:27 PM. |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary : exp: Secondary : exp:

Primary: exp: Secondary : exp:

Runlog GCEXT r1 12/5/12

August 07, 2014

Service Request No: R1405630

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 23, 2014. For your reference, these analyses have been assigned our service request number **R1405630**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



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ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental
www.alsglobal.com
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## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Water/Soil | **Date Received:** | 07/23/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 07/21-22/14 and received on 07/23/14 at a cooler temperature of 1.5°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

**Inorganics**

Soil samples were analyzed for pH by method 9045D from SW-846.

Site specific QC was not requested on these samples.

No other analytical or QC issues were encountered.

**Volatile Organics**

Soil and water samples were analyzed for a site list of Volatile Organics by Method 5030/5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated. The 5035 vials were not frozen within 48 hours of collection. The client was notified and the samples analyzed.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination except for low level detection of Isopropanol on the 07/30/14 blank. All affected data has been flagged with a "B".

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil and water samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable except bis(2-ehtylhexyl)phthalate was outside limits high on the 07/25/14 LCS and has been flagged with an "*". No data was affected.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405630

| Lab ID | Client ID |
|---|---|
| R1405630-001 | 1407211030 200-SB-16 |
| R1405630-002 | 1407211250 200-SB-16 |
| R1405630-003 | 1407211253 200-SB-16 |
| R1405630-004 | 1407220800 200-SB-16 18'/20' |
| R1405630-005 | 1407220804 200-SB-16 18'/20' |
| R1405630-006 | 1407220807 200-SB-16 18'/20' |
| R1405630-007 | 1407220940 200-SB-16 28'/30' |
| R1405630-008 | 1407220944 200-SB-16 28'/30' |
| R1405630-009 | 1407220947 200-SB-16 28'/30' |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/21/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/23/14 |
| | | **Date Analyzed:** | 7/30/14 11:47 |
| **Sample Name:** | 1407211030 200-SB-16 | **Units:** | µg/L |
| **Lab Code:** | R1405630-001 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 404249 |
| **Data File Name:** | I:\ACQUDATA\MSVOA8\DATA\073014\C5329.D\ | **Instrument Name:** | R-MS-08 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | **1.8** | J | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 85-122 | 7/30/14 11:47 | |
| Dibromofluoromethane | 102 | 89-119 | 7/30/14 11:47 | |
| Toluene-d8 | 109 | 87-121 | 7/30/14 11:47 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407211030 200-SB-16 | **Date Collected:** | 7/21/14 |
| **Lab Code:** | R1405630-001 | **Date Received:** | 7/23/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/21/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/23/14 |
| | | **Date Analyzed:** | 7/30/14 12:14 |
| **Sample Name:** | 1407211250 200-SB-16 | **Units:** | µg/L |
| **Lab Code:** | R1405630-002 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 404249 |
| **Data File Name:** | I:\ACQUDATA\MSVOA8\DATA\073014\C5330.D\ | **Instrument Name:** | R-MS-08 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | **3.3** | J | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 85-122 | 7/30/14 12:14 | |
| Dibromofluoromethane | 100 | 89-119 | 7/30/14 12:14 | |
| Toluene-d8 | 107 | 87-121 | 7/30/14 12:14 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407211250 200-SB-16 | **Date Collected:** | 7/21/14 |
| **Lab Code:** | R1405630-002 | **Date Received:** | 7/23/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/21/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/23/14 |
| | | **Date Extracted:** | 7/24/14 |
| | | **Date Analyzed:** | 7/25/14 20:58 |
| **Sample Name:** | 1407211253 200-SB-16 | **Units:** | µg/L |
| **Lab Code:** | R1405630-003 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403843 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 213818 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072514\AV248.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | **2.4** | J | 9.4 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 9.4 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 87 | 39-119 | 7/25/14 20:58 | |
| Nitrobenzene-d5 | 82 | 37-117 | 7/25/14 20:58 | |
| p-Terphenyl-d14 | 103 | 40-133 | 7/25/14 20:58 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407211253 200-SB-16 | **Date Collected:** | 7/21/14 |
| **Lab Code:** | R1405630-003 | **Date Received:** | 7/23/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8270D | DMURPHY | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| **Sample Name:** | 1407220800 200-SB-16 18'/20' | | |
| **Lab Code:** | R1405630-004 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **94.0** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| | | **Date Analyzed:** | 7/25/14 12:26 |
| **Sample Name:** | 1407220800 200-SB-16 18'/20' | **Units:** | µg/Kg |
| **Lab Code:** | R1405630-004 | **Basis:** | Dry |
| | | **Percent Solids:** | 94.0 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9992.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .98 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.2 | 0.77 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.2 | 0.77 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.2 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.2 | 1.4 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.2 | 0.64 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.2 | 1.5 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.2 | 2.4 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 30 | |
| 67-64-1 | Acetone | **9.1** | | 5.2 | 3.0 | |
| 71-43-2 | Benzene | ND | U | 5.2 | 0.31 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.2 | 0.64 | |
| 75-25-2 | Bromoform | ND | U | 5.2 | 0.97 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.2 | 0.31 | |
| 67-66-3 | Chloroform | ND | U | 5.2 | 1.4 | |
| 74-87-3 | Chloromethane | ND | U | 5.2 | 0.42 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.2 | 0.77 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.2 | 1.6 | |
| 75-09-2 | Dichloromethane | ND | U | 5.2 | 0.60 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.2 | 0.24 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.2 | 0.99 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.2 | 0.92 | |
| 108-88-3 | Toluene | **2.1** | J | 5.2 | 1.1 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.2 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.2 | |
| 95-47-6 | o-Xylene | ND | U | 5.2 | 0.51 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.2 | 1.5 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 101 | 51-136 | 7/25/14 12:26 | |
| Dibromofluoromethane | 98 | 63-138 | 7/25/14 12:26 | |
| Toluene-d8 | 101 | 66-138 | 7/25/14 12:26 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407220800 200-SB-16 18'/20' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405630-004 | **Date Received:** | 7/23/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| **Sample Name:** | 1407220804 200-SB-16 18'/20' | | |
| **Lab Code:** | R1405630-005 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **94.0** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| | | **Date Extracted:** | 7/28/14 |
| | | **Date Analyzed:** | 7/29/14 16:59 |
| **Sample Name:** | 1407220804 200-SB-16 18'/20' | **Units:** | µg/Kg |
| **Lab Code:** | R1405630-005 | **Basis:** | Dry |
| | | **Percent Solids:** | 94.0 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 404220 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213876 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072914\AV269.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 350 | 46 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 350 | 54 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 57 | 47-126 | 7/29/14 16:59 | |
| Nitrobenzene-d5 | 55 | 39-136 | 7/29/14 16:59 | |
| p-Terphenyl-d14 | 91 | 35-152 | 7/29/14 16:59 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407220804 200-SB-16 18'/20' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405630-005 | **Date Received:** | 7/23/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| **Sample Name:** | 1407220807 200-SB-16 18'/20' | | |
| **Lab Code:** | R1405630-006 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.32 | | pH Units | | 1 | NA | 7/23/14 16:52 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407220807 200-SB-16 18'/20' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405630-006 | **Date Received:** | 7/23/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| **Sample Name:** | 1407220940 200-SB-16 28'/30' | | |
| **Lab Code:** | R1405630-007 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.8** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| | | **Date Analyzed:** | 7/25/14 13:04 |
| **Sample Name:** | 1407220940 200-SB-16 28'/30' | **Units:** | µg/Kg |
| **Lab Code:** | R1405630-007 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.8 |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9993.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .89 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.6 | 0.67 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.6 | 0.67 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.6 | 1.2 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.6 | 1.2 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.6 | 0.56 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.6 | 1.3 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.6 | 2.1 | |
| 67-63-0 | Isopropanol | ND | U | 91 | 26 | |
| 67-64-1 | Acetone | **2.7** | J | 4.6 | 2.6 | |
| 71-43-2 | Benzene | ND | U | 4.6 | 0.27 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.6 | 0.56 | |
| 75-25-2 | Bromoform | ND | U | 4.6 | 0.85 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.6 | 0.27 | |
| 67-66-3 | Chloroform | ND | U | 4.6 | 1.2 | |
| 74-87-3 | Chloromethane | ND | U | 4.6 | 0.37 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.6 | 0.67 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.6 | 1.4 | |
| 75-09-2 | Dichloromethane | ND | U | 4.6 | 0.52 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.6 | 0.21 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.6 | 0.86 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.6 | 0.81 | |
| 108-88-3 | Toluene | **2.1** | J | 4.6 | 0.92 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.6 | 0.92 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 9.1 | 1.0 | |
| 95-47-6 | o-Xylene | ND | U | 4.6 | 0.44 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.6 | 1.3 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 7/25/14 13:04 | |
| Dibromofluoromethane | 96 | 63-138 | 7/25/14 13:04 | |
| Toluene-d8 | 100 | 66-138 | 7/25/14 13:04 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407220940 200-SB-16 28'/30' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405630-007 | **Date Received:** | 7/23/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| **Sample Name:** | 1407220944 200-SB-16 28'/30' | | |
| **Lab Code:** | R1405630-008 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.8** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| | | **Date Extracted:** | 7/28/14 |
| | | **Date Analyzed:** | 7/29/14 18:17 |
| **Sample Name:** | 1407220944 200-SB-16 28'/30' | **Units:** | µg/Kg |
| **Lab Code:** | R1405630-008 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.8 |

**Semivolatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 404220 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213876 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072914\AV272.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 66 | 47-126 | 7/29/14 18:17 | |
| Nitrobenzene-d5 | 69 | 39-136 | 7/29/14 18:17 | |
| p-Terphenyl-d14 | 105 | 35-152 | 7/29/14 18:17 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407220944 200-SB-16 28'/30' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405630-008 | **Date Received:** | 7/23/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/23/14 |
| **Sample Name:** | 1407220947 200-SB-16 28'/30' | | |
| **Lab Code:** | R1405630-009 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.81 | | pH Units | | 1 | NA | 7/23/14 16:52 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407220947 200-SB-16 28'/30' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405630-009 | **Date Received:** | 7/23/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405630-MB | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | 1.0 | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/25/14 09:33 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408705-05 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9988.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 51-136 | 7/25/14 09:33 | |
| Dibromofluoromethane | 96 | 63-138 | 7/25/14 09:33 | |
| Toluene-d8 | 99 | 66-138 | 7/25/14 09:33 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/30/14 10:47 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1408880-04 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 404249 |
| **Data File Name:** | I:\ACQUDATA\MSVOA8\DATA\073014\C5327.D\ | **Instrument Name:** | R-MS-08 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | **11** | J | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 103 | 85-122 | 7/30/14 10:47 | |
| Dibromofluoromethane | 101 | 89-119 | 7/30/14 10:47 | |
| Toluene-d8 | 110 | 87-121 | 7/30/14 10:47 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Extracted:** | 7/24/14 |
| | | **Date Analyzed:** | 7/25/14 16:35 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1408616-01 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403843 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 213818 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072514\AV238.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 10 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 10 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 83 | 39-119 | 7/25/14 16:35 | |
| Nitrobenzene-d5 | 81 | 37-117 | 7/25/14 16:35 | |
| p-Terphenyl-d14 | 101 | 40-133 | 7/25/14 16:35 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405630 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/28/14 |
| | | **Date Analyzed:** | 7/29/14 13:09 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408646-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 404220 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213876 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072914\AV261.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 66 | 47-126 | 7/29/14 13:09 | |
| Nitrobenzene-d5 | 60 | 39-136 | 7/29/14 13:09 | |
| p-Terphenyl-d14 | 96 | 35-152 | 7/29/14 13:09 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405630
**Date Analyzed:** 7/25/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 403534

| | Lab Control Sample RQ1408705-03 | | | Duplicate Lab Control Sample RQ1408705-04 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| 1,1,1-Trichloroethane (TCA) | 18.5 | 20.0 | 93 | 16.7 | 20.0 | 83 | 64 - 127 | 11 | 30 |
| 1,1,2-Trichloroethane | 19.0 | 20.0 | 95 | 19.1 | 20.0 | 96 | 76 - 123 | 1 | 30 |
| 1,1,2-Trichlorotrifluoroethane | 20.6 | 20.0 | 103 | 16.5 | 20.0 | 83 | 59 - 146 | 22 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | 22.5 | 20.0 | 113 | 20.7 | 20.0 | 103 | 75 - 151 | 9 | 30 |
| 1,2-Dichloroethane | 18.7 | 20.0 | 94 | 18.2 | 20.0 | 91 | 66 - 123 | 3 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.2 | 20.0 | 106 | 21.4 | 20.0 | 107 | 61 - 138 | <1 | 30 |
| 2-Butanone (MEK) | 16.5 | 20.0 | 82 | 19.2 | 20.0 | 96 | 62 - 128 | 16 | 30 |
| Isopropanol | 361 | 400 | 90 | 411 | 400 | 103 | 62 - 142 | 13 | 30 |
| Acetone | 15.3 | 20.0 | 76 | 19.9 | 20.0 | 99 | 53 - 143 | 26 | 30 |
| Benzene | 19.5 | 20.0 | 97 | 19.3 | 20.0 | 96 | 74 - 123 | 1 | 30 |
| Bromodichloromethane | 18.9 | 20.0 | 95 | 19.0 | 20.0 | 95 | 77 - 127 | <1 | 30 |
| Bromoform | 18.6 | 20.0 | 93 | 18.5 | 20.0 | 92 | 65 - 133 | 1 | 30 |
| Chlorobenzene | 20.7 | 20.0 | 104 | 18.6 | 20.0 | 93 | 77 - 124 | 11 | 30 |
| Chloroform | 18.1 | 20.0 | 90 | 17.9 | 20.0 | 89 | 73 - 125 | 1 | 30 |
| Chloromethane | 18.9 | 20.0 | 95 | 19.2 | 20.0 | 96 | 56 - 154 | 1 | 30 |
| Dibromochloromethane | 18.7 | 20.0 | 94 | 19.2 | 20.0 | 96 | 77 - 124 | 2 | 30 |
| Dichlorofluoromethane (CFC 21) | 17.1 | 20.0 | 86 | 17.4 | 20.0 | 87 | 79 - 142 | 1 | 30 |
| Dichloromethane | 20.2 | 20.0 | 101 | 20.2 | 20.0 | 101 | 77 - 126 | <1 | 30 |
| Ethylbenzene | 18.7 | 20.0 | 94 | 16.0 | 20.0 | 80 | 73 - 123 | 16 | 30 |
| Methyl tert-Butyl Ether | 18.8 | 20.0 | 94 | 19.4 | 20.0 | 97 | 72 - 131 | 3 | 30 |
| Tetrachloroethene (PCE) | 20.4 | 20.0 | 102 | 17.6 | 20.0 | 88 | 65 - 133 | 15 | 30 |
| Toluene | 20.0 | 20.0 | 100 | 18.4 | 20.0 | 92 | 72 - 127 | 8 | 30 |
| Trichloroethene (TCE) | 18.8 | 20.0 | 94 | 17.8 | 20.0 | 89 | 72 - 129 | 5 | 30 |
| m,p-Xylenes | 40.8 | 40.0 | 102 | 35.1 | 40.0 | 88 | 77 - 125 | 15 | 30 |
| o-Xylene | 20.1 | 20.0 | 100 | 17.8 | 20.0 | 89 | 75 - 124 | 12 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.8 | 20.0 | 119 | 25.1 | 20.0 | 125 | 56 - 154 | 5 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405630
**Date Analyzed:** 7/30/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/L
**Basis:** NA

**Analysis Lot:** 404249

| Analyte Name | Lab Control Sample RQ1408880-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 20.0 | 20.0 | 100 | 71 - 123 |
| 1,1,2-Trichloroethane | 19.1 | 20.0 | 95 | 79 - 117 |
| 1,1,2-Trichlorotrifluoroethane | 19.9 | 20.0 | 99 | 64 - 136 |
| 1,1-Dichloroethene (1,1-DCE) | 23.4 | 20.0 | 117 | 74 - 135 |
| 1,2-Dichloroethane | 18.4 | 20.0 | 92 | 72 - 130 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 18.9 | 20.0 | 95 | 62 - 138 |
| 2-Butanone (MEK) | 21.4 | 20.0 | 107 | 66 - 129 |
| Isopropanol | 506 | 400 | 126 | 57 - 137 |
| Acetone | 26.1 | 20.0 | 130 | 51 - 146 |
| Benzene | 19.7 | 20.0 | 99 | 76 - 118 |
| Bromodichloromethane | 19.3 | 20.0 | 96 | 79 - 122 |
| Bromoform | 18.7 | 20.0 | 94 | 65 - 138 |
| Chlorobenzene | 20.2 | 20.0 | 101 | 80 - 121 |
| Chloroform | 19.8 | 20.0 | 99 | 76 - 120 |
| Chloromethane | 25.7 | 20.0 | 128 | 64 - 140 |
| Dibromochloromethane | 19.5 | 20.0 | 97 | 79 - 125 |
| Dichlorofluoromethane (CFC 21) | 16.2 | 20.0 | 81 | 79 - 144 |
| Dichloromethane | 20.2 | 20.0 | 101 | 73 - 122 |
| Ethylbenzene | 18.7 | 20.0 | 93 | 76 - 120 |
| Methyl tert-Butyl Ether | 21.2 | 20.0 | 106 | 73 - 131 |
| Tetrachloroethene (PCE) | 18.8 | 20.0 | 94 | 69 - 124 |
| Toluene | 20.3 | 20.0 | 101 | 77 - 120 |
| Trichloroethene (TCE) | 19.7 | 20.0 | 99 | 76 - 123 |
| m,p-Xylenes | 41.8 | 40.0 | 104 | 78 - 123 |
| o-Xylene | 20.4 | 20.0 | 102 | 77 - 131 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 22.7 | 20.0 | 114 | 65 - 143 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405630
**Date Analyzed:** 7/25/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3510C

**Units:** µg/L
**Basis:** NA

**Extraction Lot:** 213818

| | Lab Control Sample RQ1408616-02 | | | | Duplicate Lab Control Sample RQ1408616-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 128 | 100 | 128 | * | 123 | 100 | 123 | 62 - 124 | 4 | 30 |
| Di-n-butyl Phthalate | 115 | 100 | 115 | | 113 | 100 | 113 | 57 - 139 | 2 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405630
**Date Analyzed:** 7/29/14

### Lab Control Sample Summary
### Semivolatile Organic Compounds by GC/MS

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 213876

| | Lab Control Sample RQ1408646-02 | | | Duplicate Lab Control Sample RQ1408646-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 3760 | 3330 | 113 | 3860 | 3330 | 116 | 50 - 142 | 3 | 30 |
| Di-n-butyl Phthalate | 3620 | 3330 | 108 | 3710 | 3330 | 111 | 36 - 164 | 2 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

# WSTF CHAIN OF CUSTODY RECORD

Date 7-22-14

Page 1 of 1

Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407211030 | 200-SB-16 | 3 | A | X | | | | | | | | (Bubbles) |
| 1407211250 | " | 3 | A | X | | | | | | | | (Bubbles) |
| 1407211253 | " | 2 | A | | X | | | | | | | |
| 1407220800 | 200-SB-16 18/20' | 3 | S | X | | | | | | | | |
| 1407220804 | " " | 1 | S | | X | | | | | | | |
| 1407220807 | " " | 1 | S | | | X | | | | | | |
| 1407220940 | " 28/30' | 3 | S | X | | | | | | | | |
| 1407220944 | " " | 1 | S | | X | | | | | | | |
| 1407220947 | " " | 1 | S | | | X | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-22-14 / 1100 HRS. | [signature] | 7/23/14 0900 |
| | | | |
| | | | |

R1405630 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number LU-5690.

Cooler received on 7/23/14 by: [illegible]

COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were Custody seals on outside of cooler? | Y N | 5a | Perchlorate samples have required headspace? | Y N NA |
| 2 | Custody papers properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk,or Sulfide have sig* bubbles? | Y N NA |
| 3 | Did all bottles arrive in good condition (unbroken)? | Y N | 6 | Where did the bottles originate? | ALS/ROC CLIENT |
| 4 | Circle: Wet Ice Dry Ice Gel packs present? | Y N | 7 | Soil VOA received as: Bulk Encore 5035set ~~NA~~ | |

8. Temperature Readings Date: 7/23/14 Time: 1008 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 3.3 | | | | | | |
| Correction Factor (°C) | -1.8 | | | | | | |
| Corrected Temp (°C) | 1.5 | | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

**If out of Temperature, note packing/ice condition:** _____ Ice melted Poorly Packed Same Day Rule

**&Client Approval to Run Samples:** _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: R-002 by [illegible] on 7/23/14 at 1010
5035 samples placed in storage location: F-05 by [illegible] on 7/23/14 at 1010

PC Secondary Review: [illegible] 7/23/14

Cooler Breakdown: Date: 7/23/14 Time: 1345 by: SJS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: [illegible]

Other Comments:

headspace: see C.O.C.

PC Secondary Review: [illegible] 8/6/14

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
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**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405630
**Date Analyzed:** 7/25/14 09:33

## Method Blank Summary
## Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408705-05
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\072514\K9988.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408705-03 | I:\ACQUDATA\MSVOA7\DATA\072514\K9986.D\ | 7/25/14 08:16 |
| 1407220800 200-SB-16 18'/20' | R1405630-004 | I:\ACQUDATA\MSVOA7\DATA\072514\K9992.D\ | 7/25/14 12:26 |
| 1407220940 200-SB-16 28'/30' | R1405630-007 | I:\ACQUDATA\MSVOA7\DATA\072514\K9993.D\ | 7/25/14 13:04 |
| Duplicate Lab Control Sample | RQ1408705-04 | I:\ACQUDATA\MSVOA7\DATA\072514\K9996.D\ | 7/25/14 15:12 |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405630
**Date Analyzed:** 7/30/14 10:47

## Method Blank Summary
## Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408880-04
**Instrument ID:** R-MS-08
**File ID:** I:\ACQUDATA\MSVOA8\DATA\073014\C5327.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408880-03 | I:\ACQUDATA\MSVOA8\DATA\073014\C5325.D\ | 7/30/14 09:53 |
| 1407211030 200-SB-16 | R1405630-001 | I:\ACQUDATA\MSVOA8\DATA\073014\C5329.D\ | 7/30/14 11:47 |
| 1407211250 200-SB-16 | R1405630-002 | I:\ACQUDATA\MSVOA8\DATA\073014\C5330.D\ | 7/30/14 12:14 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Date Analyzed:** 7/25/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\072514\K9985.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 403534
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 48.1 | 0.7075 | 0.6801 | -3.9 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.7 | 0.3414 | 0.3325 | -2.6 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 57.6 | 0.4820 | 0.5555 | 15.2 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 52.3 | 0.4169 | 0.4356 | 4.5 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 45.3 | 0.4920 | 0.4455 | -9.5 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 51.6 | 0.8365 | 0.8625 | 3.1 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 40.0 | 0.7656 | 0.6129 | -20.0 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 874 | 0.08660 | 0.07572 | -12.6 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 33.0 | 0.6020 | 0.3978 | -33.9 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 50.9 | 1.440 | 1.467 | 1.9 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 48.6 | 0.4660 | 0.4526 | -2.9 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 50.8 | 0.2458 | 0.2498 | 1.6 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 52.9 | 0.9166 | 0.9696 | 5.8 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 45.4 | 1.049 | 0.9526 | -9.2 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 50.5 | 1.118 | 1.128 | 0.9 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 50.1 | 0.3859 | 0.3863 | 0.1 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 50.2 | 1.436 | 1.441 | 0.3 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 48.7 | 0.6951 | 0.6771 | -2.6 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 53.3 | 1.608 | 1.713 | 6.5 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 47.1 | 1.847 | 1.738 | -5.9 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 56.2 | 0.3262 | 0.3665 | 12.4 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 52.4 | 1.479 | 1.549 | 4.8 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 51.4 | 0.3311 | 0.3405 | 2.8 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 108 | 0.5809 | 0.6284 | 8.2 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 52.9 | 0.5852 | 0.6191 | 5.8 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 51.0 | 0.8761 | 0.8939 | 2.0 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 48.8 | 0.4853 | 0.4735 | -2.4 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 48.0 | 0.3338 | 0.3202 | -4.1 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.9 | 1.294 | 1.318 | 1.8 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Date Analyzed:** 7/30/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA8\DATA\073014\C5324.D\

**Calibration Date:** 7/21/14
**Calibration ID:** RC1400063
**Analysis Lot:** 404249
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 51.0 | 0.7035 | 0.7178 | 2.0 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 50.4 | 0.1667 | 0.1679 | 0.7 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 48.6 | 0.2003 | 0.1946 | -2.9 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 54.3 | 0.3770 | 0.4092 | 8.5 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 44.8 | 0.2780 | 0.2491 | -10.4 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 48.9 | 0.4452 | 0.4351 | -2.3 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 52.3 | 0.1224 | 0.1280 | 4.6 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 1070 | 0.01196 | 0.01283 | 7.2 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 53.6 | 0.07769 | 0.08321 | 7.1 | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 50.6 | 0.9340 | 0.9460 | 1.3 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 47.8 | 0.3144 | 0.3003 | -4.5 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 50.6 | 0.2910 | 0.2945 | 1.2 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 50.3 | 0.8375 | 0.8428 | 0.6 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 50.5 | 0.7797 | 0.7876 | 1.0 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 64.7 | 0.5313 | 0.6878 | 29.5 * | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 49.4 | 0.2581 | 0.2549 | -1.2 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 49.9 | 0.9950 | 0.9930 | -0.2 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 50.5 | 0.4569 | 0.4617 | 1.0 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 49.2 | 1.360 | 1.339 | -1.6 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 52.4 | 0.8218 | 0.8619 | 4.9 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 45.8 | 0.3433 | 0.3147 | -8.3 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 50.2 | 1.241 | 1.246 | 0.4 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 48.5 | 0.2750 | 0.2668 | -3.0 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 103 | 0.5470 | 0.5650 | 3.3 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 51.4 | 0.5390 | 0.5545 | 2.9 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 52.4 | 0.2687 | 0.2817 | 4.8 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 50.5 | 0.3854 | 0.3892 | 1.0 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 49.8 | 0.2718 | 0.2707 | -0.4 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 54.3 | 0.9949 | 1.081 | 8.7 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 0.4819 | 06 | 50.000 | 0.4833 | 07 | 50.000 | 0.4775 | 02 | 50.000 | 0.4893 |
| 04 | 50.000 | 0.4931 | 01 | 50.000 | 0.4940 | 03 | 50.000 | 0.4875 | 08 | 50.000 | 0.4756 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.3295 | 05 | 50.000 | 0.3361 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |
| 04 | 50.000 | 0.3406 | 01 | 50.000 | 0.3368 | 08 | 50.000 | 0.3299 | 03 | 50.000 | 0.3344 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 08 | 50.000 | 1.289 | 03 | 50.000 | 1.291 | 01 | 50.000 | 1.307 | 04 | 50.000 | 1.306 |
| 02 | 50.000 | 1.305 | 07 | 50.000 | 1.289 | 06 | 50.000 | 1.276 | 05 | 50.000 | 1.291 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 5/29/14

**Initial Calibration Summary**
**Volatile Organic Compounds by GC/MS**

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤20 | 1.294 | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400063
**Instrument ID:** R-MS-08

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA8\DATA\072114\C5216 | 7/21/14 15:18 | 02 | I:\ACQUDATA\MSVOA8\DATA\072114\C5217 | 7/21/14 15:45 |
| 03 | I:\ACQUDATA\MSVOA8\DATA\072114\C5218 | 7/21/14 16:12 | 04 | I:\ACQUDATA\MSVOA8\DATA\072114\C5219 | 7/21/14 16:39 |
| 05 | I:\ACQUDATA\MSVOA8\DATA\072114\C5220 | 7/21/14 17:06 | 06 | I:\ACQUDATA\MSVOA8\DATA\072114\C5221 | 7/21/14 17:33 |
| 07 | I:\ACQUDATA\MSVOA8\DATA\072114\C5222 | 7/21/14 18:00 | 08 | I:\ACQUDATA\MSVOA8\DATA\072114\C5223 | 7/21/14 18:27 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.7314 | 02 | 1.000 | 0.6673 | 03 | 2.000 | 0.7901 | 04 | 5.000 | 0.7446 |
| 05 | 20.000 | 0.6489 | 06 | 50.000 | 0.6673 | 07 | 100.000 | 0.6924 | 08 | 200.000 | 0.6856 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.1659 | 02 | 1.000 | 0.1659 | 03 | 2.000 | 0.1784 | 04 | 5.000 | 0.1713 |
| 05 | 20.000 | 0.1700 | 06 | 50.000 | 0.1647 | 07 | 100.000 | 0.1602 | 08 | 200.000 | 0.1573 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2334 | 02 | 1.000 | 0.2140 | 03 | 2.000 | 0.2098 | 04 | 5.000 | 0.2204 |
| 05 | 20.000 | 0.1683 | 06 | 50.000 | 0.1761 | 07 | 100.000 | 0.1879 | 08 | 200.000 | 0.1928 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3916 | 02 | 1.000 | 0.3593 | 03 | 2.000 | 0.3995 | 04 | 5.000 | 0.3964 |
| 05 | 20.000 | 0.3543 | 06 | 50.000 | 0.3592 | 07 | 100.000 | 0.3789 | 08 | 200.000 | 0.3770 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2727 | 02 | 1.000 | 0.2968 | 03 | 2.000 | 0.2909 | 04 | 5.000 | 0.3075 |
| 05 | 20.000 | 0.2944 | 06 | 50.000 | 0.2771 | 07 | 100.000 | 0.2498 | 08 | 200.000 | 0.2350 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5928 | 02 | 1.000 | 0.4060 | 03 | 2.000 | 0.4281 | 04 | 5.000 | 0.4464 |
| 05 | 20.000 | 0.4585 | 06 | 50.000 | 0.4074 | 07 | 100.000 | 0.4259 | 08 | 200.000 | 0.3964 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 1.000 | 0.1429 | 03 | 2.000 | 0.1499 | 04 | 5.000 | 0.1305 | 05 | 20.000 | 0.1117 |
| 06 | 50.000 | 0.1094 | 07 | 100.000 | 0.1087 | 08 | 200.000 | 0.1039 | | | |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 10.000 | 0.01585 | 02 | 20.000 | 0.01309 | 03 | 40.000 | 0.01198 | 04 | 100.000 | 0.01079 |
| 05 | 400.000 | 0.01114 | 06 | 1000.000 | 0.01143 | 07 | 2000.000 | 0.01110 | 08 | 4000.000 | 0.01034 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400063
**Instrument ID:** R-MS-08

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 04 | 5.000 | 0.07768 | 05 | 20.000 | 0.07750 | 06 | 50.000 | 0.07728 | 07 | 100.000 | 0.07901 |
| 08 | 200.000 | 0.07700 | | | | | | | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9906 | 02 | 1.000 | 0.8991 | 03 | 2.000 | 0.9844 | 04 | 5.000 | 0.9526 |
| 05 | 20.000 | 0.9585 | 06 | 50.000 | 0.8743 | 07 | 100.000 | 0.9187 | 08 | 200.000 | 0.8935 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3135 | 02 | 1.000 | 0.3072 | 03 | 2.000 | 0.3082 | 04 | 5.000 | 0.3312 |
| 05 | 20.000 | 0.3207 | 06 | 50.000 | 0.3156 | 07 | 100.000 | 0.3105 | 08 | 200.000 | 0.3081 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2309 | 02 | 1.000 | 0.2754 | 03 | 2.000 | 0.2872 | 04 | 5.000 | 0.2828 |
| 05 | 20.000 | 0.2933 | 06 | 50.000 | 0.3063 | 07 | 100.000 | 0.3202 | 08 | 200.000 | 0.3321 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.8547 | 02 | 1.000 | 0.8427 | 03 | 2.000 | 0.8577 | 04 | 5.000 | 0.8690 |
| 05 | 20.000 | 0.7888 | 06 | 50.000 | 0.7954 | 07 | 100.000 | 0.8460 | 08 | 200.000 | 0.8458 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.8506 | 02 | 1.000 | 0.8182 | 03 | 2.000 | 0.7895 | 04 | 5.000 | 0.8265 |
| 05 | 20.000 | 0.7554 | 06 | 50.000 | 0.7297 | 07 | 100.000 | 0.7470 | 08 | 200.000 | 0.7207 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4831 | 02 | 1.000 | 0.5470 | 03 | 2.000 | 0.5349 | 04 | 5.000 | 0.5075 |
| 05 | 20.000 | 0.5156 | 06 | 50.000 | 0.5153 | 07 | 100.000 | 0.5525 | 08 | 200.000 | 0.5943 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2376 | 02 | 1.000 | 0.2344 | 03 | 2.000 | 0.2680 | 04 | 5.000 | 0.2616 |
| 05 | 20.000 | 0.2584 | 06 | 50.000 | 0.2607 | 07 | 100.000 | 0.2698 | 08 | 200.000 | 0.2743 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.309 | 02 | 1.000 | 0.9849 | 03 | 2.000 | 0.9463 | 04 | 5.000 | 0.9767 |
| 05 | 20.000 | 0.9902 | 06 | 50.000 | 0.9466 | 07 | 100.000 | 0.9216 | 08 | 200.000 | 0.8854 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400063
**Instrument ID:** R-MS-08

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5638 | 02 | 1.000 | 0.4883 | 03 | 2.000 | 0.4684 | 04 | 5.000 | 0.4494 |
| 05 | 20.000 | 0.4382 | 06 | 50.000 | 0.4119 | 07 | 100.000 | 0.4219 | 08 | 200.000 | 0.4137 |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.427 | 02 | 1.000 | 1.316 | 03 | 2.000 | 1.526 | 04 | 5.000 | 1.490 |
| 05 | 20.000 | 1.237 | 06 | 50.000 | 1.291 | 07 | 100.000 | 1.314 | 08 | 200.000 | 1.281 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.8434 | 02 | 1.000 | 0.7998 | 03 | 2.000 | 0.8134 | 04 | 5.000 | 0.8470 |
| 05 | 20.000 | 0.8404 | 06 | 50.000 | 0.8168 | 07 | 100.000 | 0.8248 | 08 | 200.000 | 0.7887 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3742 | 02 | 1.000 | 0.3225 | 03 | 2.000 | 0.3821 | 04 | 5.000 | 0.3544 |
| 05 | 20.000 | 0.2971 | 06 | 50.000 | 0.3180 | 07 | 100.000 | 0.3396 | 08 | 200.000 | 0.3584 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.288 | 02 | 1.000 | 1.209 | 03 | 2.000 | 1.339 | 04 | 5.000 | 1.332 |
| 05 | 20.000 | 1.173 | 06 | 50.000 | 1.192 | 07 | 100.000 | 1.217 | 08 | 200.000 | 1.176 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2856 | 02 | 1.000 | 0.2752 | 03 | 2.000 | 0.2774 | 04 | 5.000 | 0.2863 |
| 05 | 20.000 | 0.2534 | 06 | 50.000 | 0.2655 | 07 | 100.000 | 0.2765 | 08 | 200.000 | 0.2799 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5465 | 02 | 2.000 | 0.5404 | 03 | 4.000 | 0.5841 | 04 | 10.000 | 0.5890 |
| 05 | 40.000 | 0.5009 | 06 | 100.000 | 0.5291 | 07 | 200.000 | 0.5242 | 08 | 400.000 | 0.5617 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5703 | 02 | 1.000 | 0.5095 | 03 | 2.000 | 0.5663 | 04 | 5.000 | 0.5651 |
| 05 | 20.000 | 0.4894 | 06 | 50.000 | 0.5171 | 07 | 100.000 | 0.5254 | 08 | 200.000 | 0.5689 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3595 | 02 | 1.000 | 0.2593 | 03 | 2.000 | 0.2704 | 04 | 5.000 | 0.2645 |
| 05 | 20.000 | 0.2576 | 06 | 50.000 | 0.2639 | 07 | 100.000 | 0.2346 | 08 | 200.000 | 0.2400 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400063
**Instrument ID:** R-MS-08

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 16.670 | 0.3728 | 04 | 16.670 | 0.3599 | 01 | 16.670 | 0.3680 | 03 | 16.670 | 0.3976 |
| 05 | 33.340 | 0.4048 | 06 | 50.000 | 0.4118 | 07 | 100.000 | 0.3799 | 08 | 200.000 | 0.3884 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 16.670 | 0.2663 | 04 | 16.670 | 0.2601 | 01 | 16.670 | 0.2620 | 03 | 16.670 | 0.2742 |
| 05 | 33.340 | 0.2886 | 06 | 50.000 | 0.2899 | 07 | 100.000 | 0.2664 | 08 | 200.000 | 0.2669 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 16.670 | 0.9559 | 02 | 16.670 | 0.9573 | 03 | 16.670 | 1.018 | 04 | 16.670 | 0.9204 |
| 05 | 33.340 | 1.031 | 06 | 50.000 | 1.046 | 07 | 100.000 | 1.034 | 08 | 200.000 | 0.9968 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405630
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400063
**Instrument ID:** R-MS-08

**Signal ID:** 1

| Analyte Name | Compound Type | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 6.8 | | ≤20 | 0.7035 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 4.0 | | ≤20 | 0.1667 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 11.3 | | ≤20 | 0.2003 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 4.8 | | ≤20 | 0.3770 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 8.9 | | ≤20 | 0.2780 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 14.2 | | ≤20 | 0.4452 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 15.1 | | ≤20 | 0.1224 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 14.8 | | ≤20 | 0.01196 | | |
| Acetone | TRG | Average RF | % RSD | 1.0 | | ≤20 | 0.07769 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 4.7 | | ≤20 | 0.9340 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 2.6 | | ≤20 | 0.3144 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 10.6 | | ≤20 | 0.2910 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 3.5 | | ≤20 | 0.8375 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 6.2 | | ≤20 | 0.7797 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 6.4 | | ≤20 | 0.5313 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 5.7 | | ≤20 | 0.2581 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 13.2 | | ≤20 | 0.9950 | | |
| Dichloromethane | TRG | Average RF | % RSD | 11.1 | | ≤20 | 0.4569 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 7.8 | | ≤20 | 1.360 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 2.6 | | ≤20 | 0.8218 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 8.5 | | ≤20 | 0.3433 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 5.5 | | ≤20 | 1.241 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 4.0 | | ≤20 | 0.2750 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 5.5 | | ≤20 | 0.5470 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.5390 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 14.4 | | ≤20 | 0.2687 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 4.8 | | ≤20 | 0.3854 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 4.2 | | ≤20 | 0.2718 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 4.6 | | ≤20 | 0.9949 | | |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low

**Folder #:** R1405630

**Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10134 | | R1405630-004 | 39.96 | 34.86 | 6/12/2014 | J. Cushman | 5.10 | **0.98** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |
| 040714-3:10123 | | R1405630-004 | 39.26 | 35.10 | 6/12/2014 | J. Cushman | 4.16 | **1.20** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |
| 110413-3:50910 | | R1405630-007 | 40.78 | 35.15 | 5/14/2014 | J. Cushman | 5.63 | **0.89** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |
| 110413-3:50927 | | R1405630-007 | 41.35 | 35.04 | 5/14/2014 | J. Cushman | 6.31 | **0.79** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium **Folder #:** R1405630 **Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10348 | | R1405630-004 | 41.16 | 36.87 | 4/28/2014 | J. Cushman | 4.29 | | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | J. Wojtasiewic | |
| 040714-3:10382 | | R1405630-007 | 42.81 | 37.07 | 4/28/2014 | J. Cushman | 5.74 | | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | J. Wojtasiewic | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

Analysis: 8260-soil
Date: 07/25/14
Instr. MS#7

Analyst: Ben Wojtasiewicz
Data Path: j:\acqudata\msvoa7\DATA\072514

Tune Method: T052914.M
Run Method: S052914.M
LIMS Run#: 403534

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Tune | - | | | | - | 1 | - | K9984 | YT | |
| 2 | CCV | - | | | | - | 1 | - | 85 | YC | |
| 3 | LCS | - | | | | - | 1 | - | 86 | YL | |
| 4 | MBlank | - | | | | - | 1 | - | 87 | ⊗ | not for c/o |
| 5 | MBlank | - | | | | - | 2 | - | 88 | YB | |
| 6 | R1405572-002 | 1 | | [redacted] | 6730 | 1 | 1 | NA | 89 | Y | |
| 7 | R1405586-004 | 1.46 | 50862 | [redacted] | 11913 | 3 | 1 | ↓ | 90 | Y | |
| 8 | ↓ -005 | 1.22 | 50884 | ↓ | ↓ | ↓ | 1 | ↓ | 91 | Y | |
| 9 | R1405630-004 | 0.98 | 10134 | ↓ | ↓ | ↓ | 1 | ↓ | 92 | Y | |
| 10 | ↓ -007 | 0.89 | 50910 | ↓ | ↓ | ↓ | 1 | ↓ | 93 | Y | |
| 11 | R1405662-001 | 0.82 | 10138 | ↓ | ↓ | ↓ | 1 | ↓ | 94 | Y | |
| 12 | ↓ -002 | 0.88 | 10120 | ↓ | ↓ | ↓ | 1 | ↓ | 95 | Y | |
| 13 | DLCS | - | | | | - | 2 | - | 96 | Y | |
| 14 | Blank | - | | | | - | 1 | - | 97 | - | |
| 15 | ↓ | - | | | | - | 2 | - | 98 | - | |

SW 07/28/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary TG : 72623 5mL
Primary MBO : 72646
Primary MSL : 72499
Primary Int : 72625
Primary :
50mL = CCV

500 Secondary TG : 72050 2mL
Secondary MBO : 72455
Secondary MSL : 72663
200 Secondary Int : 72454 5mL
Secondary :
50g = LCS, DLCS

Combined IS/Surr 250 : 72676
Surrogate : -
Internal Std : -

| | | | |
|---|---|---|---|
| Analysis: 8260 | Analyst: Ben Wojtkiewicz | Tune Method: W072114.m | |
| Date: 07/30/14 | Data Path: j:\acqudata\msvoa 8\DATA\073014 | Run Method: ↓ | |
| Instr. MS #8 | | LIMS Run#: 404249 | |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Blank | - | | | | - | 1 | - | 0532 | - | |
| 2 | ↓ | - | | | | - | 2 | - | 22 | - | |
| 3 | Tune | - | | | | - | 1 | - | 23 | YT | |
| 4 | CCV | - | | | | - | 1 | - | 24 | YC | |
| 5 | LCS | - | | | | - | 1 | - | 25 | YL | |
| 6 | MBlank | - | | | | - | 1 | - | 26 | (N) | pH for cln |
| 7 | MBlank | - | | | | - | 2 | - | 27 | YB | |
| 8 | R01408792 -01 | 1 | TCLP MBlank | | | | 1 | 5 | 28 | Y | |
| 9 | R1405630 -001 | 1 | | [redacted] | 11813 | 3 | 1 | <2 | 29 | Y | |
| 10 | ↓ -002 | 1 | | ↓ | ↓ | ↓ | 1 | <2 | 30 | Y | |
| 11 | R1405681 -001 | 25 | 2mL/50mL | [redacted] | 7397 | 2 | 1 | 6 | 31 | Y | |
| 12 | R1405682 -001 | 10 | 5mL/50mL | ↓ | ↓ | ↓ | 1 | 6 | 32 | Y | |
| 13 | R1405683 -001 | 10 | 5mL/50mL | ↓ | ↓ | ↓ | 1 | 6 | 33 | Y | |
| 14 | R1405677 -001 | 10 | 5mL/50mL | [redacted] | 6680 | 2 | 1 | 10 | 34 | Y | |
| 15 | R1405680 -001 | 1 | | [redacted] | 6675 | 2 | 1 | <2 | 35 | Y | |
| 16 | ↓ -002 | 1 | | ↓ | ↓ | ↓ | 1 | <2 | 36 | Y | |
| 17 | -003 | 1 | | | | | 1 | <2 | 37 | Y | |
| 18 | -004 | 1 | | | | | 1 | <2 | 38 | Y | |
| 19 | -005 | 1 | | | | | 1 | <2 | 39 | Y | |
| 20 | ↓ -006 | 1 | | ↓ | ↓ | ↓ | 1 | <2 | 40 | Y | |
| 21 | R1405658 -002 | 1 | | [redacted] | 6673 | 2 | 1 | <2 | 41 | Y | |
| 22 | ↓ -001 | 25 | 8mL/200mL | ↓ | ↓ | ↓ | 1 | <2 | 42 | (Y) | over range, spent + pH + e 1/50 |
| 23 | R1405807 -001 | 1 | | [redacted] | 11563 | 2 | 1 | <2 | 43 | Y | |
| 24 | R1405658 -001MS | 25 | see 23 ove | [redacted] | 6673 | 2 | 2 | <2 | 44 | Y | |
| 25 | ↓ -001DMS | 25 | ↓ | ↓ | ↓ | ↓ | 3 | | 45 | Y | |
| 26 | Blank | - | | | | - | 1 | - | 46 | - | |
| 27 | ↓ | - | | | | - | 2 | - | 47 | - | |
| 28 | | - | | | | - | 3 | - | 48 | - | |
| 29 | | - | | | | - | 4 | - | 49 | - | |
| 30 | ↓ | - | | | | - | 5 | - | 50 | - | |
| | | | | | | | | | | | BW 07/31/14 |
| | | | | | | | | | | | |

All samples = 10 mL + 5 uL ~~combined~~ IS/Surr. 10 mL purged

500 Primary T6 : 72623 5uL
Primary MBO : 72865 50mL
Primary MSL : 72499 =CCV
Primary OCC : 72430
Primary Ext : 72625

500 Secondary T6 : 72866 2uL
Secondary MBO : 72455 50mL
Secondary MSL : 72663 =LCS
Secondary OCC : —
200 Secondary Ext : 72954 5uL

4.25 425mL =MS, DMS 10.6

Combined IS/Surr : —
Surrogate 100 : 72976
Internal Std 100 : 72975

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M
Title : 8270 BNA ANALYSIS
Last Update : Wed Jul 02 10:45:14 2014
Response Via : Initial Calibration

Calibration Files
5 =AV019.D 10 =AV020.D 50 =AV021.D 80 =AV022.D 100 =AV023.D 120 =AV024.D 160 =AV025.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | |
| 2) | TM | Pyridine | | 1.313 | 1.336 | 1.325 | 1.339 | 1.325 | 1.328 | | 0.79 |
| 3) | TM | N-Nitrosodimet... | 0.562 | 0.626 | 0.701 | 0.702 | 0.688 | 0.739 | 0.714 | 0.676 | 9.00 |
| 4) | S | SURR1,2-FLUORO... | 1.111 | 1.124 | 1.180 | 1.192 | 1.190 | 1.211 | 1.227 | 1.177 | 3.67 |
| 5) | TM | Benzaldehyde | | | 0.365 | 0.335 | 0.290 | 0.249 | 0.152 | 0.278 | 29.94 AVG |
| 6) | TM | Aniline | 2.025 | 2.073 | 2.049 | 2.024 | 2.043 | 2.133 | 2.040 | 2.055 | 1.85 |
| 7) | S | SURR2,PHENOL-D6 | 1.357 | 1.418 | 1.590 | 1.570 | 1.542 | 1.636 | 1.595 | 1.530 | 6.71 |
| 8) | TMC | Phenol | 1.486 | 1.478 | 1.592 | 1.619 | 1.597 | 1.646 | 1.629 | 1.578 | 4.33 |
| 9) | TM | bis(2-Clethyl)... | 1.160 | 1.156 | 1.182 | 1.188 | 1.071 | 1.125 | 1.138 | 1.146 | 3.45 |
| 10) | TM | 2-Chlorophenol | 1.284 | 1.300 | 1.374 | 1.376 | 1.348 | 1.418 | 1.400 | 1.357 | 3.66 |
| 11) | TM | 1,3-Diclbenzene | 1.604 | 1.610 | 1.579 | 1.583 | 1.559 | 1.563 | 1.567 | 1.581 | 1.26 |
| 12) | TMC | 1,4-Dichlorobe... | 1.732 | 1.623 | 1.646 | 1.620 | 1.603 | 1.641 | 1.632 | 1.642 | 2.55 |
| 13) | TM | 1,2-Diclbenzene | 1.641 | 1.535 | 1.529 | 1.519 | 1.507 | 1.543 | 1.525 | 1.543 | 2.92 |
| 14) | TM | Benzyl Alcohol | 0.916 | 0.856 | 0.999 | 1.008 | 1.021 | 1.063 | 1.026 | 0.984 | 7.33 |
| 15) | TM | 2,2'-oxybis(1-... | 1.663 | 1.681 | 1.648 | 1.622 | 1.626 | 1.665 | 1.647 | 1.650 | 1.29 |
| 16) | TM | 2-Methylphenol | 1.099 | 1.184 | 1.257 | 1.230 | 1.246 | 1.298 | 1.272 | 1.226 | 5.44 |
| 17) | TM | Acetophenone | 1.847 | 1.781 | 1.777 | 1.780 | 1.770 | 1.836 | 1.795 | 1.798 | 1.72 |
| 18) | TMP | N-Nitroso-Di-n... | 0.896 | 0.918 | 0.937 | 0.931 | 0.903 | 0.958 | 0.964 | 0.929 | 2.77 |
| 19) | TM | Hexachloroethane | 0.526 | 0.601 | 0.604 | 0.611 | 0.601 | 0.603 | 0.607 | 0.593 | 5.03 |
| 20) | TM | 3+4-Methylphenol | 1.199 | 1.193 | 1.304 | 1.307 | 1.286 | 1.375 | 1.343 | 1.287 | 5.31 |
| 21) | T | 1-Methyl-2-pyr... | | 0.870 | 0.921 | 0.891 | 0.885 | 0.939 | 0.867 | 0.896 | 3.21 |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.240 | 0.320 | 0.328 | 0.334 | 0.346 | 0.363 | 0.317 | 0.321 | 12.17 |
| 24) | TM | Nitrobenzene | 0.252 | 0.280 | 0.291 | 0.316 | 0.316 | 0.331 | 0.331 | 0.302 | 9.75 |
| 25) | TM | Isophorone | 0.580 | 0.597 | 0.592 | 0.606 | 0.614 | 0.640 | 0.623 | 0.607 | 3.31 |
| 26) | TCM | 2-Nitrophenol | 0.120 | 0.126 | 0.141 | 0.156 | 0.161 | 0.174 | 0.178 | 0.151 | 14.96 |
| 27) | TM | Benzoic Acid | | 0.144 | 0.225 | 0.269 | 0.284 | 0.314 | 0.317 | 0.259 | 25.32 ok |
| 28) | TM | 2,4-Dimethylph... | 0.276 | 0.331 | 0.312 | 0.327 | 0.326 | 0.339 | 0.336 | 0.321 | 6.77 |
| 29) | TM | bis(-2-Chloroe... | 0.373 | 0.369 | 0.356 | 0.362 | 0.370 | 0.373 | 0.368 | 0.367 | 1.65 |
| 30) | TCM | 2,4-Dichloroph... | 0.261 | 0.261 | 0.291 | 0.306 | 0.306 | 0.323 | 0.322 | 0.296 | 8.82 |
| 31) | TM | 1,2,4-Trichlor... | 0.374 | 0.356 | 0.349 | 0.354 | 0.359 | 0.364 | 0.364 | 0.360 | 2.35 |
| 32) | TM | Naphthalene | 1.046 | 1.072 | 1.011 | 1.038 | 1.047 | 1.067 | 1.062 | 1.049 | 1.98 |
| 33) | TM | 4-Chloroaniline | 0.382 | 0.403 | 0.416 | 0.428 | 0.431 | 0.445 | 0.430 | 0.419 | 5.01 |
| 34) | TCM | Hexachlorobuta... | 0.206 | 0.205 | 0.205 | 0.207 | 0.200 | 0.208 | 0.212 | 0.206 | 1.72 |
| 35) | TMC | 4-Chloro-3-met... | 0.223 | 0.245 | 0.258 | 0.264 | 0.271 | 0.284 | 0.279 | 0.260 | 8.09 |
| 36) | TM | Caprolactam | | 0.087 | 0.086 | 0.087 | 0.089 | 0.096 | 0.076 | 0.087 | 7.06 |
| 37) | TM | 2-Methylnaphth... | 0.715 | 0.727 | 0.707 | 0.711 | 0.717 | 0.751 | 0.760 | 0.727 | 2.85 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.641 | 0.665 | 0.660 | 0.659 | 0.668 | 0.693 | 0.689 | 0.668 | 2.68 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.314 | 0.321 | 0.368 | 0.408 | 0.415 | 0.412 | 0.452 | 0.384 | 13.47 |
| 41) | TCM | 2,4,6-Trichlor... | 0.287 | 0.338 | 0.362 | 0.379 | 0.395 | 0.403 | 0.414 | 0.368 | 11.95 |
| 42) | TM | 2,4,5-Trichlor... | 0.337 | 0.361 | 0.382 | 0.421 | 0.394 | 0.406 | 0.412 | 0.388 | 7.71 |
| 43) | S | SURR5,2-FLUORO... | 1.233 | 1.279 | 1.280 | 1.304 | 1.310 | 1.287 | 1.359 | 1.293 | 2.96 |
| 44) | TM | 1,1'-Biphenyl | 1.382 | 1.411 | 1.414 | 1.470 | 1.437 | 1.433 | 1.507 | 1.436 | 2.87 |
| 45) | TM | 2-Chloronaphth... | 1.107 | 1.079 | 1.091 | 1.137 | 1.130 | 1.113 | 1.168 | 1.118 | 2.67 |
| 46) | TM | 2-Nitroaniline | | | 0.238 | 0.260 | 0.258 | 0.266 | 0.272 | 0.259 | 5.07 |
| 47) | TM | Acenaphthylene | 1.608 | 1.678 | 1.778 | 1.838 | 1.822 | 1.824 | 1.894 | 1.778 | 5.63 |
| 48) | TM | Dimethyl phtha... | 1.182 | 1.218 | 1.199 | 1.174 | 1.149 | 1.145 | 1.144 | 1.173 | 2.46 |
| 49) | TM | 2,6-Dinitrotol... | 0.171 | 0.173 | 0.211 | 0.226 | 0.234 | 0.234 | 0.242 | 0.213 | 13.99 |
| 50) | TMC | Acenaphthene | 1.184 | 1.161 | 1.153 | 1.179 | 1.178 | 1.181 | 1.213 | 1.178 | 1.62 |
| 51) | TM | 3-Nitroaniline | | | 0.239 | 0.272 | 0.270 | 0.284 | 0.291 | 0.271 | 7.29 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.087 | 0.116 | 0.124 | 0.136 | 0.155 | 0.124 | 20.33 |
| 53) | TM | Dibenzofuran | 1.703 | 1.671 | 1.641 | 1.665 | 1.674 | 1.681 | 1.691 | 1.675 | 1.18 |
| 54) | TM | 2,4-Dinitrotol... | 0.189 | 0.213 | 0.252 | 0.286 | 0.308 | 0.312 | 0.334 | 0.271 | 19.99 |
| 55) | TMP | 4-Nitrophenol | | | 0.166 | 0.195 | 0.197 | 0.200 | 0.212 | 0.194 | 8.73 |
| 56) | TM | Fluorene | 1.354 | 1.320 | 1.307 | 1.327 | 1.310 | 1.322 | 1.300 | 1.320 | 1.35 |
| 57) | TM | 4-Chlorophenyl... | 0.668 | 0.648 | 0.654 | 0.673 | 0.661 | 0.664 | 0.657 | 0.661 | 1.29 |
| 58) | TM | Diethylphthalate | 1.149 | 1.080 | 1.035 | 1.102 | 1.101 | 1.132 | 1.177 | 1.111 | 4.23 |
| 59) | TM | 4-Nitroaniline | | | 0.268 | 0.310 | 0.322 | 0.339 | 0.345 | 0.317 | 9.59 |
| 60) | S | SURR3,2,4,6-TR... | 0.163 | 0.144 | 0.163 | 0.177 | 0.192 | 0.204 | 0.208 | 0.179 | 13.27 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.096 | 0.111 | 0.118 | 0.119 | 0.131 | 0.115 | 11.28 |
| 64) | TM | 1,2 Diphenylhy... | 0.720 | 0.735 | 0.792 | 0.723 | 0.707 | 0.689 | 0.677 | 0.720 | 5.15 |
| 65) | TCM | N-Nitrosodiphe... | 0.543 | 0.540 | 0.534 | 0.511 | 0.518 | 0.524 | 0.543 | 0.530 | 2.47 |
| 66) | TM | 4-Bromophenyl-... | 0.241 | 0.249 | 0.249 | 0.234 | 0.232 | 0.227 | 0.236 | 0.238 | 3.51 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.255 | 0.268 | 0.278 | 0.260 | 0.260 | 0.260 | 0.269 | 0.264 | 2.97 |
| 69) | TM | Atrazine | 0.069 | 0.058 | 0.084 | 0.085 | 0.089 | 0.089 | 0.089 | 0.081 | 15.01 |
| 70) | TCM | Pentachlorophenol | | | 0.121 | 0.134 | 0.149 | 0.153 | 0.164 | 0.144 | 11.74 |
| 71) | TM | Phenanthrene | 1.078 | 1.088 | 1.055 | 1.064 | 1.090 | 1.107 | 1.142 | 1.089 | 2.66 |
| 72) | TM | Anthracene | 1.061 | 1.109 | 1.121 | 1.124 | 1.176 | 1.178 | 1.215 | 1.141 | 4.54 |
| 73) | TM | Carbazole | 0.976 | 0.943 | 1.081 | 1.080 | 1.092 | 1.112 | 1.111 | 1.056 | 6.45 |
| 74) | TM | Di-n-butylphth... | 0.898 | 0.940 | 1.214 | 1.252 | 1.288 | 1.274 | 1.331 | 1.171 | 15.04 |
| 75) | TCM | Fluoranthene | 1.060 | 1.047 | 1.312 | 1.331 | 1.341 | 1.354 | 1.374 | 1.260 | 11.30 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.480 | 0.472 | 0.476 | 0.474 | 0.428 | 0.466 | 4.64 |
| 78) | TM | Pyrene | 1.028 | 1.059 | 1.139 | 1.117 | 1.164 | 1.228 | 1.200 | 1.134 | 6.38 |
| 79) | S | SURR6,TERPHENY... | 0.825 | 0.832 | 0.797 | 0.802 | 0.846 | 0.882 | 0.876 | 0.837 | 3.98 |
| 80) | TM | Butyl benzyl p... | 0.361 | 0.402 | 0.454 | 0.471 | 0.498 | 0.494 | 0.508 | 0.455 | 12.06 |
| 81) | TM | 3,3'-Dichlorob... | 0.311 | 0.311 | 0.353 | 0.341 | 0.367 | 0.374 | 0.380 | 0.348 | 8.17 |
| 82) | TM | Benzo(a)anthra... | 1.090 | 1.073 | 1.113 | 1.124 | 1.148 | 1.166 | 1.139 | 1.122 | 2.90 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.185 | 1.167 | 1.121 | 1.116 | 1.142 | 1.159 | 1.151 | 1.149 | 2.15 |
| 84) | TM | bis(2-Ethylhex... | 0.465 | 0.514 | 0.575 | 0.626 | 0.630 | 0.602 | 0.644 | 0.580 | 11.55 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.629 | 0.653 | 0.845 | 0.981 | 1.044 | 1.021 | 1.129 | 0.900 | 21.86 |
| 87) | TM | Benzo(b)Fluora... | 1.015 | 0.994 | 1.026 | 1.047 | 1.081 | 1.103 | 1.155 | 1.060 | 5.32 |
| 88) | TM | Benzo(k)fluora... | 1.149 | 1.006 | 1.143 | 1.156 | 1.177 | 1.190 | 1.212 | 1.148 | 5.82 |
| 89) | TCM | Benzo(a)pyrene | 0.865 | 0.887 | 1.037 | 1.056 | 1.082 | 1.099 | 1.145 | 1.024 | 10.47 |
| 90) | TM | Indeno(1,2,3-c... | 0.723 | 0.685 | 0.940 | 0.921 | 0.967 | 0.930 | 0.970 | 0.876 | 13.66 |
| 91) | TM | Dibenz(a,h)ant... | 0.885 | 0.730 | 0.979 | 1.010 | 1.023 | 1.012 | 1.047 | 0.955 | 11.74 |
| 92) | TM | Benzo(g,h,i)pe... | 0.855 | 0.757 | 0.955 | 0.948 | 0.954 | 0.956 | 0.963 | 0.913 | 8.57 |

(#) = Out of Range

00000

Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.336 | -0.6 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.702 | -3.8 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.192 | -1.3 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.335 | -20.5# | 100 | 0.00 |
| 6 | TM | Aniline | 2.055 | 2.024 | 1.5 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.570 | -2.6 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.619 | -2.6 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.188 | -3.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.376 | -1.4 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.583 | -0.1 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.620 | 1.3 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.519 | 1.6 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.008 | -2.4 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.622 | 1.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.230 | -0.3 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.780 | 1.0 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.931 | -0.2 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.611 | -3.0 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.307 | -1.6 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.891 | 0.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.334 | -4.0 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.316 | -4.6 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.607 | 0.606 | 0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.269 | -3.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.327 | -1.9 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.362 | 1.4 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.354 | 1.7 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.038 | 1.0 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.207 | -0.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.264 | -1.5 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.087 | 0.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.711 | 2.2 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.659 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.408 | -6.2 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.379 | -3.0 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.421 | -8.5 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.304 | -0.9 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.470 | -2.4 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.137 | -1.7 | 100 | 0.00 |

Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.260 | -0.4 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.838 | -3.4 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.174 | -0.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.226 | -6.1 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.178 | 1.179 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.272 | -0.4 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.116 | 6.5 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.665 | 0.6 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.286 | -5.5 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.195 | -0.5 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.327 | -0.5 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.673 | -1.8 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.111 | 1.102 | 0.8 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.310 | 2.2 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.177 | 1.1 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.111 | 3.5 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.723 | -0.4 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.511 | 3.6 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 0# | -10.86# |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.260 | 1.5 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.081 | 0.085 | -4.9 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.134 | 6.9 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.089 | 1.064 | 2.3 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.141 | 1.124 | 1.5 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.056 | 1.080 | -2.3 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.252 | -6.9 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.260 | 1.331 | -5.6 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.466 | 0.472 | -1.3 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.134 | 1.117 | 1.5 | 100 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.802 | 4.2 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.471 | -3.5 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.341 | 2.0 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.124 | -0.2 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.149 | 1.116 | 2.9 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.626 | -7.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.981 | -9.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.047 | 1.2 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.156 | -0.7 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.056 | -3.1 | 100 | 0.00 |

Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 0 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.921 | -5.1 | 100 | 0.00 |
| 1 TM | Dibenz(a,h)anthracene | 0.955 | 1.010 | -5.8 | 100 | 0.00 |
| 2 TM | Benzo(g,h,i)perylene | 0.913 | 0.948 | -3.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072514\
Data File : AV231.D
Acq On : 25 Jul 2014 1:02 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

LR: #52.
QA # 27, 86

Quant Time: Jul 25 13:18:52 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.383 | -4.1 | 123 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.744 | -10.1 | 126 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.289 | -9.5 | 129 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.299 | -7.6 | 106 | 0.00 |
| 6 | TM | Aniline | 2.055 | 1.906 | 7.3 | 112 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.698 | -11.0 | 129 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.756 | -11.3 | 129 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.244 | -8.6 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.497 | -10.3 | 129 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.651 | -4.4 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.686 | -2.7 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.590 | -3.0 | 125 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.122 | -14.0 | 132 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.917 | -16.2 | 141 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.359 | -10.8 | 131 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.916 | -6.6 | 128 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 1.038 | -11.7 | 133 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.633 | -6.7 | 123 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.435 | -11.5 | 131 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 1.009 | -12.6 | 135 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 122 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.351 | -9.3 | 128 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.354 | -17.2 | 137 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.665 | -9.6 | 134 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.192 | -27.2 | 151 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.358 | -38.2# | 163 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.351 | -9.3 | 131 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.392 | -6.8 | 132 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.326 | -10.1 | 130 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.361 | -0.3 | 125 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.064 | -1.4 | 125 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 122 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.216 | -4.9 | 128 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.297 | -14.2 | 137 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.106 | -21.8# | 149 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.765 | -5.2 | 131 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.700 | -4.8 | 130 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 129 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.392 | -2.1 | 124 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.403 | -9.5 | 138 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.406 | -4.6 | 125 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.301 | -0.6 | 129 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.445 | -0.6 | 127 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.156 | -3.4 | 132 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\072514\
Data File : AV231.D
Acq On : 25 Jul 2014 1:02 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 25 13:18:52 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.306 | -18.1 | 152 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.820 | -2.4 | 128 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.238 | -5.5 | 137 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.282 | -32.4# | 161 | 0.00 |
| 50 | TMC | Acenaphthene | 1.178 | 1.199 | -1.8 | 132 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.307 | -13.3 | 146 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.144 | -16.1 | 160 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.718 | -2.6 | 134 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.362 | -33.6# | 164 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.228 | -17.5 | 152 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.387 | -5.1 | 135 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.691 | -4.5 | 133 | -0.01 |
| 58 | TM | Diethylphthalate | 1.111 | 1.202 | -8.2 | 141 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.366 | -15.5 | 153 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.208 | -16.2 | 152 | -0.01 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 132 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.140 | -21.7# | 166 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.758 | -5.3 | 138 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.509 | 4.0 | 131 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 131 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 78 | -0.06 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.259 | 1.9 | 131 | -0.01 |
| 69 | TM | Atrazine | 0.081 | 0.083 | -2.5 | 129 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.179 | -24.3 | 176 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.104 | -1.4 | 137 | -0.02 |
| 72 | TM | Anthracene | 1.141 | 1.182 | -3.6 | 138 | -0.02 |
| 73 | TM | Carbazole | 1.056 | 1.147 | -8.6 | 140 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.398 | -19.4 | 147 | -0.02 |
| 75 | TCM | Fluoranthene | 1.260 | 1.398 | -11.0 | 138 | -0.02 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 127 | -0.03 |
| 77 | TM | Benzidine | 0.466 | 0.383 | ~~-17.8~~ | ~~103~~ | ~~-0.03~~ |
| 78 | TM | Pyrene | 1.134 | 1.205 | -6.3 | 137 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.879 | -5.0 | 139 | -0.03 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.555 | -22.0# | 149 | -0.03 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.407 | -17.0 | 151 | -0.03 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.192 | -6.2 | 134 | -0.03 |
| 83 | TM | Chrysene | 1.149 | 1.163 | -1.2 | 132 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.766 | -32.1# | 155 | -0.03 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 133 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 1.296 | -44.0# | 176 | -0.03 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.121 | -5.8 | 142 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.155 | -0.6 | 133 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.112 | -8.6 | 140 | -0.01 |

Data Path : I:\ACQUDATA\5973D\Data\072514\
Data File : AV231.D
Acq On : 25 Jul 2014 1:02 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 25 13:18:52 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 1.049 | -19.7 | 152 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.080 | -13.1 | 142 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 1.046 | -14.6 | 147 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 1

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072514\
Data File : AV231.D
Acq On : 25 Jul 2014 1:02 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 25 13:18:52 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 83.312 | -4.1 | 123 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 88.106 | -10.1 | 126 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 87.673 | -9.6 | 129 | 0.00 |
| 5 | TM | Benzaldehyde | 80.000 | 85.870 | -7.3 | 106 | 0.00 |
| 6 | TM | Aniline | 80.000 | 74.188 | 7.3 | 112 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 88.767 | -11.0 | 129 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 89.028 | -11.3 | 129 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.847 | -8.6 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 80.000 | 88.255 | -10.3 | 129 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.563 | -4.5 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.120 | -2.7 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 82.447 | -3.1 | 125 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 91.194 | -14.0 | 132 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 92.925 | -16.2 | 141 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 88.627 | -10.8 | 131 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 85.236 | -6.5 | 128 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 89.385 | -11.7 | 133 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 85.294 | -6.6 | 123 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 89.218 | -11.5 | 131 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 90.137 | -12.7 | 135 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 122 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 87.276 | -9.1 | 128 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 93.773 | -17.2 | 137 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 87.542 | -9.4 | 134 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 102.070 | -27.6 | 151 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 101.405 | -26.8# | 163 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 87.496 | -9.4 | 131 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 85.313 | -6.6 | 132 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 88.059 | -10.1 | 130 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 80.276 | -0.3 | 125 | -0.01 |
| 32 | TM | Naphthalene | 80.000 | 81.124 | -1.4 | 125 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 81.636 | -2.0 | 122 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 83.944 | -4.9 | 128 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 91.362 | -14.2 | 137 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 97.494 | -21.9# | 149 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 84.200 | -5.3 | 131 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 83.808 | -4.8 | 130 | -0.01 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 129 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 81.634 | -2.0 | 124 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 87.533 | -9.4 | 138 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 83.681 | -4.6 | 125 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 80.467 | -0.6 | 129 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 80.504 | -0.6 | 127 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 82.701 | -3.4 | 132 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072514\
Data File : AV231.D
Acq On : 25 Jul 2014 1:02 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 25 13:18:52 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 94.550 | -18.2 | 152 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 81.893 | -2.4 | 128 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 84.428 | -5.5 | 137 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 106.082 | -32.6# | 161 | 0.00 |
| 50 | TMC | Acenaphthene | 80.000 | 81.372 | -1.7 | 132 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 90.518 | -13.1 | 146 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 91.347 | -14.2 | 160 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 82.030 | -2.5 | 134 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 106.934 | -33.7# | 164 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 94.193 | -17.7 | 152 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 84.048 | -5.1 | 135 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 83.715 | -4.6 | 133 | -0.01 |
| 58 | TM | Diethylphthalate | 80.000 | 86.573 | -8.2 | 141 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 92.484 | -15.6 | 153 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 93.054 | -16.3 | 152 | -0.01 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 132 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 97.450 | -21.8# | 166 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 84.225 | -5.3 | 138 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 76.722 | 4.1 | 131 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 78.474 | 1.9 | 131 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 78 | -0.06 |
| 68 | TM | Hexachlorobenzene | 80.000 | 78.367 | 2.0 | 131 | -0.01 |
| 69 | TM | Atrazine | 80.000 | 82.479 | -3.1 | 129 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 99.516 | -24.4 | 176 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 81.058 | -1.3 | 137 | -0.02 |
| 72 | TM | Anthracene | 80.000 | 82.911 | -3.6 | 138 | -0.02 |
| 73 | TM | Carbazole | 80.000 | 86.895 | -8.6 | 140 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 95.533 | -19.4 | 147 | -0.02 |
| 75 | TCM | Fluoranthene | 80.000 | 88.771 | -11.0 | 138 | -0.02 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 127 | -0.03 |
| 77 | TM | Benzidine | 80.000 | 65.726 | ~~-17.8~~ | ~~103~~ | ~~-0.03~~ |
| 78 | TM | Pyrene | 80.000 | 85.001 | -6.3 | 137 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 84.036 | -5.0 | 139 | -0.03 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 97.480 | -21.9# | 149 | -0.03 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 93.456 | -16.8 | 151 | -0.03 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 84.969 | -6.2 | 134 | -0.03 |
| 83 | TM | Chrysene | 80.000 | 80.970 | -1.2 | 132 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 105.738 | -32.2# | 155 | -0.03 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 133 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 102.356 | -27.9 | 176 | -0.03 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 84.601 | -5.8 | 142 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 80.536 | -0.7 | 133 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 86.853 | -8.6 | 140 | -0.01 |

Data Path : I:\ACQUDATA\5973D\Data\072514\
Data File : AV231.D
Acq On : 25 Jul 2014 1:02 pm
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 25 13:18:52 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 95.785 | -19.7 | 152 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 80.000 | 90.443 | -13.1 | 142 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 80.000 | 91.657 | -14.6 | 147 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV
Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

QA: #27, 86
LR: #52

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 136 | -0.01 |
| 2 | TM | Pyridine | 1.328 | 1.391 | -4.7 | 142 | -0.03 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.741 | -9.6 | 144 | -0.02 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.292 | -9.8 | 148 | -0.02 |
| 5 | TM | Benzaldehyde | 0.278 | 0.312 | -12.2 | 127 | -0.01 |
| 6 | TM | Aniline | 2.055 | 1.881 | 8.5 | 127 | -0.02 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.680 | -9.8 | 146 | -0.01 |
| 8 | TMC | Phenol | 1.578 | 1.736 | -10.0 | 146 | -0.01 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.239 | -8.1 | 142 | -0.02 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.470 | -8.3 | 146 | -0.01 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.651 | -4.4 | 142 | -0.02 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.684 | -2.6 | 142 | -0.01 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.606 | -4.1 | 144 | -0.01 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.112 | -13.0 | 151 | -0.01 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.880 | -13.9 | 158 | -0.01 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.340 | -9.3 | 149 | -0.01 |
| 17 | TM | Acetophenone | 1.798 | 1.920 | -6.8 | 147 | -0.01 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.996 | -7.2 | 146 | -0.01 |
| 19 | TM | Hexachloroethane | 0.593 | 0.647 | -9.1 | 144 | -0.02 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.417 | -10.1 | 148 | -0.01 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.976 | -8.9 | 149 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 138 | -0.01 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.353 | -10.0 | 145 | -0.01 |
| 24 | TM | Nitrobenzene | 0.302 | 0.353 | -16.9 | 154 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.654 | -7.7 | 149 | -0.01 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.194 | -28.5 | 171 | -0.01 |
| 27 | TM | Benzoic Acid | 0.259 | 0.348 | -34.4# | 178 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.352 | -9.7 | 148 | -0.01 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.391 | -6.5 | 149 | -0.01 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.328 | -10.8 | 148 | -0.02 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.374 | -3.9 | 145 | -0.02 |
| 32 | TM | Naphthalene | 1.049 | 1.074 | -2.4 | 143 | -0.01 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.437 | -4.3 | 141 | -0.01 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.217 | -5.3 | 145 | -0.02 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.294 | -13.1 | 153 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.104 | -19.5 | 164 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.760 | -4.5 | 147 | -0.01 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.698 | -4.5 | 146 | -0.02 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 145 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.402 | -4.7 | 143 | -0.01 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.405 | -10.1 | 155 | -0.02 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.433 | -11.6 | 149 | -0.01 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.329 | -2.8 | 147 | -0.01 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.475 | -2.7 | 145 | -0.01 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.148 | -2.7 | 146 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.312 | -20.5# | 174 | -0.01 |
| 47 | TM | Acenaphthylene | 1.778 | 1.832 | -3.0 | 144 | -0.01 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.210 | -3.2 | 149 | -0.01 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.272 | -27.7# | 174 | -0.01 |
| 50 | TMC | Acenaphthene | 1.178 | 1.184 | -0.5 | 145 | -0.01 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.310 | -14.4 | 165 | -0.01 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.145 | -16.9 | 180 | -0.01 |
| 53 | TM | Dibenzofuran | 1.675 | 1.721 | -2.7 | 150 | -0.01 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.371 | -36.9# | 188 | -0.01 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.224 | -15.5 | 166 | -0.01 |
| 56 | TM | Fluorene | 1.320 | 1.365 | -3.4 | 149 | -0.02 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.704 | -6.5 | 151 | -0.02 |
| 58 | TM | Diethylphthalate | 1.111 | 1.191 | -7.2 | 156 | -0.01 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.339 | -6.9 | 158 | -0.01 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.202 | -12.8 | 165 | -0.02 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 145 | -0.03 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.139 | -20.9# | 181 | -0.02 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.747 | -3.8 | 150 | -0.02 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.517 | 2.5 | 147 | -0.02 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.232 | 2.5 | 144 | -0.02 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 89 | -0.08 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.253 | 4.2 | 141 | -0.02 |
| 69 | TM | Atrazine | 0.081 | 0.079 | 2.5 | 135 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.173 | -20.1 | 187 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.120 | -2.8 | 153 | -0.03 |
| 72 | TM | Anthracene | 1.141 | 1.176 | -3.1 | 152 | -0.03 |
| 73 | TM | Carbazole | 1.056 | 1.093 | -3.5 | 147 | -0.03 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.372 | -17.2 | 159 | -0.03 |
| 75 | TCM | Fluoranthene | 1.260 | 1.374 | -9.0 | 150 | -0.04 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 139 | -0.04 |
| 77 | TM | Benzidine | 0.466 | 0.362 | 22.3# | 106 | -0.04 |
| 78 | TM | Pyrene | 1.134 | 1.201 | -5.9 | 149 | -0.04 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.877 | -4.8 | 152 | -0.04 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.533 | -17.1 | 157 | -0.04 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.400 | -14.9 | 163 | -0.04 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.180 | -5.2 | 146 | -0.04 |
| 83 | TM | Chrysene | 1.149 | 1.155 | -0.5 | 144 | -0.04 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.725 | -25.0# | 161 | -0.05 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 144 | -0.04 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 1.254 | -39.3# | 184 | -0.04 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.122 | -5.8 | 155 | -0.04 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.190 | -3.7 | 148 | -0.04 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.112 | -8.6 | 152 | -0.03 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.980 | -11.9 | 154 | -0.02 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.052 | -10.2 | 150 | -0.03 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.975 | -6.8 | 148 | -0.02 |

(#) = Out of Range SPCC's out = 0 CCC's out = 1

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 136 | -0.01 |
| 2 | TM | Pyridine | 80.000 | 83.827 | -4.8 | 142 | -0.03 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 87.668 | -9.6 | 144 | -0.02 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 87.841 | -9.8 | 148 | -0.02 |
| 5 | TM | Benzaldehyde | 80.000 | 89.759 | -12.2 | 127 | -0.01 |
| 6 | TM | Aniline | 80.000 | 73.225 | 8.5 | 127 | -0.02 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 87.859 | -9.8 | 146 | -0.01 |
| 8 | TMC | Phenol | 80.000 | 88.013 | -10.0 | 146 | -0.01 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.493 | -8.1 | 142 | -0.02 |
| 10 | TM | 2-Chlorophenol | 80.000 | 86.633 | -8.3 | 146 | -0.01 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.573 | -4.5 | 142 | -0.02 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.026 | -2.5 | 142 | -0.01 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 83.271 | -4.1 | 144 | -0.01 |
| 14 | TM | Benzyl Alcohol | 80.000 | 90.411 | -13.0 | 151 | -0.01 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 91.142 | -13.9 | 158 | -0.01 |
| 16 | TM | 2-Methylphenol | 80.000 | 87.391 | -9.2 | 149 | -0.01 |
| 17 | TM | Acetophenone | 80.000 | 85.426 | -6.8 | 147 | -0.01 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 85.730 | -7.2 | 146 | -0.01 |
| 19 | TM | Hexachloroethane | 80.000 | 87.259 | -9.1 | 144 | -0.02 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 88.060 | -10.1 | 148 | -0.01 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 87.168 | -9.0 | 149 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 138 | -0.01 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 87.842 | -9.8 | 145 | -0.01 |
| 24 | TM | Nitrobenzene | 80.000 | 93.420 | -16.8 | 154 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 86.140 | -7.7 | 149 | -0.01 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 102.743 | -28.4 | 171 | -0.01 |
| 27 | TM | Benzoic Acid | 80.000 | 99.100 | -23.9# | 178 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 87.770 | -9.7 | 148 | -0.01 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 85.065 | -6.3 | 149 | -0.01 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 88.808 | -11.0 | 148 | -0.02 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 82.986 | -3.7 | 145 | -0.02 |
| 32 | TM | Naphthalene | 80.000 | 81.892 | -2.4 | 143 | -0.01 |
| 33 | TM | 4-Chloroaniline | 80.000 | 83.467 | -4.3 | 141 | -0.01 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 84.360 | -5.4 | 145 | -0.02 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 90.325 | -12.9 | 153 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 95.478 | -19.3 | 164 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 83.684 | -4.6 | 147 | -0.01 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 83.582 | -4.5 | 146 | -0.02 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 145 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 83.678 | -4.6 | 143 | -0.01 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 88.109 | -10.1 | 155 | -0.02 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 89.259 | -11.6 | 149 | -0.01 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 82.237 | -2.8 | 147 | -0.01 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 82.168 | -2.7 | 145 | -0.01 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 82.151 | -2.7 | 146 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 96.507 | -20.6# | 174 | -0.01 |
| 47 | TM | Acenaphthylene | 80.000 | 82.437 | -3.0 | 144 | -0.01 |
| 48 | TM | Dimethyl phthalate | 80.000 | 82.547 | -3.2 | 149 | -0.01 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 102.127 | -27.7# | 174 | -0.01 |
| 50 | TMC | Acenaphthene | 80.000 | 80.375 | -0.5 | 145 | -0.01 |
| 51 | TM | 3-Nitroaniline | 80.000 | 91.451 | -14.3 | 165 | -0.01 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 91.602 | -14.5 | 180 | -0.01 |
| 53 | TM | Dibenzofuran | 80.000 | 82.179 | -2.7 | 150 | -0.01 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 109.622 | -37.0# | 188 | -0.01 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 92.370 | -15.5 | 166 | -0.01 |
| 56 | TM | Fluorene | 80.000 | 82.757 | -3.4 | 149 | -0.02 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 85.288 | -6.6 | 151 | -0.02 |
| 58 | TM | Diethylphthalate | 80.000 | 85.797 | -7.2 | 156 | -0.01 |
| 59 | TM | 4-Nitroaniline | 80.000 | 85.450 | -6.8 | 158 | -0.01 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 90.410 | -13.0 | 165 | -0.02 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 145 | -0.03 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 96.303 | -20.4# | 181 | -0.02 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 82.963 | -3.7 | 150 | -0.02 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.018 | 2.5 | 147 | -0.02 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 78.035 | 2.5 | 144 | -0.02 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 89 | -0.08 |
| 68 | TM | Hexachlorobenzene | 80.000 | 76.451 | 4.4 | 141 | -0.02 |
| 69 | TM | Atrazine | 80.000 | 78.243 | 2.2 | 135 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 95.748 | -19.7 | 187 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 82.272 | -2.8 | 153 | -0.03 |
| 72 | TM | Anthracene | 80.000 | 82.481 | -3.1 | 152 | -0.03 |
| 73 | TM | Carbazole | 80.000 | 82.762 | -3.5 | 147 | -0.03 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 93.729 | -17.2 | 159 | -0.03 |
| 75 | TCM | Fluoranthene | 80.000 | 87.284 | -9.1 | 150 | -0.04 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 139 | -0.04 |
| 77 | TM | Benzidine | 80.000 | 62.037 | 22.5# | 106 | -0.04 |
| 78 | TM | Pyrene | 80.000 | 84.745 | -5.9 | 149 | -0.04 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 83.797 | -4.7 | 152 | -0.04 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 93.629 | -17.0 | 157 | -0.04 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 91.986 | -15.0 | 163 | -0.04 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 84.151 | -5.2 | 146 | -0.04 |
| 83 | TM | Chrysene | 80.000 | 80.446 | -0.6 | 144 | -0.04 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 100.010 | -25.0# | 161 | -0.05 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 144 | -0.04 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 99.599 | -24.5 | 184 | -0.04 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 84.648 | -5.8 | 155 | -0.04 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 82.940 | -3.7 | 148 | -0.04 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 86.820 | -8.5 | 152 | -0.03 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 89.459 | -11.8 | 154 | -0.02 |
| 91 | TM | Dibenz(a,h)anthracene | 80.000 | 88.137 | -10.2 | 150 | -0.03 |
| 92 | TM | Benzo(g,h,i)perylene | 80.000 | 85.487 | -6.9 | 148 | -0.02 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 213818 **Prep WorkFlow:** OrgExtAq(7) **Status:** Prepped
**Team:** Semivoa GCMS/DMURPHY **Prep Method:** EPA 3510C **Prep Date/Time:** 7/24/14 06:54 AM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408616-01 | MB | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71467 | |
| 2 | RQ1408616-01 | MB | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71467 | |
| 3 | RQ1408616-02 | LCS | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71908; 1.0000 mL/72491; 1.0000 mL/71467; 1.0000 mL/72016 | |
| 4 | RQ1408616-02 | LCS | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/72016; 1.0000 mL/71467; 1.0000 mL/71908; 1.0000 mL/72491 | |
| 5 | RQ1408616-03 | DLCS | | 1000mL | 625/SVO | 6 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71467; 1.0000 mL/72016; 1.0000 mL/71908; 1.0000 mL/72491 | |
| 6 | RQ1408616-03 | DLCS | | 1000mL | 8270D/SVO | 6 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71908; 1.0000 mL/72491; 1.0000 mL/71467; 1.0000 mL/72016 | |
| 7 | R1405622-002[redacted] | 006D-3Q1M-2X-GS | .01 | 1060mL | 625/SVO/BBL | 7 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71467 | 7/30 II |
| 8 | R1405625-001[redacted] | LTFTWWNA007 | .09 | 1060mL | 625/SVO/BBL | 7 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71467 | 7/30 II |
| 9 | R1405627-001[redacted] | MWC11 | .10 | 1060mL | 8270D/SVO/8044 | 7 | x | x | 1.00mL | orange-opaque | 1.0000 mL/71467 | 8/6/14 II |
| 10 | R1405627-002 | MWC13 | .09 | 1060mL | 8270D/SVO | 7 | x | x | 1.00mL | orange-opaque | 1.0000 mL/71467 | |
| 11 | R1405627-003 | MWC16 | .10 | 1060mL | 8270D/SVO | 7 | x | x | 1.00mL | orange-opaque | 1.0000 mL/71467 | |
| 12 | R1405627-004 | MWC15 | .11 | 1060mL | 8270D/SVO | 7 | x | x | 1.00mL | orange-opaque | 1.0000 mL/71467 | |
| 13 | R1405627-005 | MWC12 | .10 | 1060mL | 8270D/SVO | 7 | x | x | 1.00mL | yellow-cloudy | 1.0000 mL/71467 | |
| 14 | R1405627-006 | MWC14 | .08 | 1060mL | 8270D/SVO | 7 | x | x | 1.00mL | yellow-cloudy | 1.0000 mL/71467 | |
| 15 | R1405627-007 | MWC17 | .11 | 1060mL | 8270D/SVO | 7 | x | x | 1.00mL | yellow-cloudy | 1.0000 mL/71467 | |
| 16 | R1405630-00[redacted] | 1407211253 200-SB-16 | .01 | 1060mL | 8270D/SVO/BF-HP | 7 | x | x | 1.00mL | clear-cololrless | 1.0000 mL/71467 | 8/5 II 5 ~~7~~ 6 |

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | Color Coded BNA Surrogate Solution 10 | Inventory ID | 71467 | Logbook Ref: | | Expires On: | 05/21/2016 | Lot #: | 229244 |
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 71908 | Logbook Ref: | | Expires On: | 10/31/2014 | Lot #: | Lc02739 |
| Name: | OLM/SOM additionals Spike 100ppm | Inventory ID | 72016 | Logbook Ref: | | Expires On: | 09/01/2014 | | |
| Name: | Benzidine LCS Spike 100ppm | Inventory ID | 72491 | Logbook Ref: | | Expires On: | 11/30/2014 | | |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #14 (61350) | 2mL Graduated Vials | (72265) | Sulfuric Acid, 50% H2SO4 | (72556) |
| Dichloromethane (Methylene Chloride) 99.9% MeCl2 | canister (72057) | Sodium Hydroxide 50% NaOH | (66000) | Prepared Sodium Sulfate Na2SO4 | (72600) |

# *Preparation Information Benchsheet*

**Prep Run#:** 213818
**Team:** Semivoa GCMS/DMURPHY

**Prep WorkFlow:** OrgExtAq(7)
**Prep Method:** EPA 3510C

**Status:** Prepped
**Prep Date/Time:** 7/24/14 06:54 AM

**Preparation Steps**

| | | | | | |
|---|---|---|---|---|---|
| Step: | Extraction | Step: | Concentration | Step: | Final Volume |
| Started: | 7/24/14 06:54 | Started: | 7/24/14 16:05 | Started: | 7/24/14 18:25 |
| Finished: | 7/24/14 14:34 | Finished: | 7/24/14 17:40 | Finished: | 7/24/14 18:25 |
| By: | DMURPHY | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: MS Date: 7/25 Spike Witness: LPRUNOSKE Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

# *Preparation Information Benchsheet*

**Prep Run#:** 213876
**Team:** Semivoa GCMS/SGOLBERG

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 7/28/14 01:12 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408646-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216 | |
| 2 | RQ1408646-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 3 | RQ1408646-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 4 | R1405630-005 [redacted] | 1407220804 200-SB-16 18'/20' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | 8/6 III SHV. |
| 5 | RQ1408646-04 | R1405630-005 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216; 1.0000 mL/71908 | SHV |
| 6 | RQ1408646-05 | R1405630-005 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/71908; 1.0000 mL/72216 | SHV. |
| 7 | R1405630-008 | 1407220944 200-SB-16 28'/30' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | SHV. |
| 8 | R1405662-003 [redacted] | 1407221139 200-SB-16 48'/50' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | 8/7 II. |
| 9 | R1405662-004 | 1407230754 200-SB-16 58'/60' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | |
| 10 | R1405753-004 [redacted] | Area D (0-6) | .05 | 30.0g | 8270D/SVO /TCL. | | | . | 1.00mL | medium brown sandy silt with gravel | 1.0000 mL/72216 | 8/4 I. |

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 71908 | Logbook Ref: | | Expires On: | 10/31/2014 | Lot #: | Lc02739 |
| Name: | 8270 Soil Surrogate 100-200ppm | Inventory ID | 72216 | Logbook Ref: | 8270 Soil Surrogate | Expires On: | 01/07/2015 | | |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #13 (41092) | 2mL Graduated Vials | (72265) | 50:50 Dichloromethane:Acetone | (72668) |
| Prepared Sodium Sulfate Na2SO4 | (72284) | Sand Reagent Grade | SVOA (72239) | | |

## Preparation Steps

| | | | | | |
|---|---|---|---|---|---|
| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
| Started: | 7/28/14 13:12 | Started: | 7/28/14 19:30 | Started: | 7/28/14 21:30 |
| Finished: | 7/28/14 19:26 | Finished: | 7/28/14 20:35 | Finished: | 7/28/14 21:30 |
| By: | SGOLBERG | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: [signature] Date: 7/29

Spike Witness: JWU Date:

| | | | |
|---|---|---|---|
| Analysis: 8270/625 | Analyst: ZM | Run Method: 8270070ID, K007IOD.m | |
| Date: 7/25/14 | Instr. 5973-D | Quant Method: 8270070ID, K007IOD.m | 360E0613D, Bay06160. |
| | | LIMS Run#: 403843 | |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| | Tune 50ng | DFTPP | Tune-D.m | ~~A~~V224 | N | |
| | Tune ↓ | | ↓ | 25 | N | |
| | Chkb | | | 26 | — | |
| | Tune 50ng | DFTPP | Tune-D.m | 27 | N | |
| | Tune ↓ | | ↓ | 28 | N | chased liner. |
| | Tune ↓ | | ↓ | 29 | YT | 12:17 pm #70613 |
| 1 | CCV ~~80 ppm 8270070ID.m~~ | 2m 7/25/14 50 ppm | K007IOD. | 30 | YC | update QC limits of surrogates. |
| 2 | CCV 80 ppm | 8270070ID.m | | 31 | YC | |
| 3 | CCV 80 ppm | Bay06160.m | | 1JV232 | YC | |
| 4 | [redacted] RC 8615 | -01 BIL | 7/24/14 W | 33 | Ym | |
| 5 | -02 US | | | 34 | YC | |
| 6 | -03 USD | | | 35 | YC | |
| 7 | 5611-001 | | | 36 | Y | |
| 8 | -002 Y3 | | | 37 | Y | |
| 9 | [redacted] RC 8616-01 | BIL | 7/24/14 W | 38 | Ym | |
| 10 | -02 US | | 8270 8044 | 39 | YC | |
| 11 | -03 USD | | | 40 | YC | |
| 12 | 5627-001 | | | 41 | Y | |
| 13 | -002 | | | 42 | Y | |
| 14 | -003 | | | 43 | Y | |
| 15 | -004 | | | 44 | Y | |
| 16 | -005 | | | 45 | Y | |
| 17 | -006 | | | 46 | Y | |
| 18 | -007 | | | 47 | Y | |
| 19 | [redacted] R5630-003 | 8270BEHP | | 48 | Y | |
| 20 | [redacted] R5622-002 | 625PPL | | 49 | Y | |
| 21 | [redacted] R5625-001 | 625PPL | | 50 | Y | |
| 22 | CCV 80ppm | 8270K80P | 360E0613D. | 1JV51 | YC | |

All samples = 1 mL + 10 uL Combined IS/Surr.: #70461

Primary : exp: Secondary : exp:

Primary: exp: Secondary : exp:

Runlog GCEXT r1 12/5/12



00079

| | | | |
|---|---|---|---|
| Analysis: 8270 | Analyst: ZM | Run Method: 8270070ID.m | |
| Date: 7/29/14 | Instr. 5973-D | Quant Method: 8270070ID, 360E06BD, Benzo06BD, Hexa0729D. | |
| | | LIMS Run#: 404220 | |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| | Tune 50ng | DFTPP | Tune-D | AU256 | N | #70613 |
| | Tune | ↓ | ↓ | 57 | YT | |
| 1 | CCV 80 ppm 8270070ID | | | 58 | YL | |
| 2 | CCV 80 ppm ~~8270061BD~~ | | zm 8/30/14 360E06BD | 59 | YL | Hexa0729D.m |
| 3 | CCV 80 ppm Benzo06BD | | | 60 | YL | |
| 4 | [redacted] R6140864S-01 | BIL | 8270 7/28/14 Soil | 61 | Yn | |
| 5 | -02 | LOQ | low | 62 | Y | |
| 6 | -02 | LOQ | high | 63 | Y | |
| 7 | R4707-006 | LODV | low | 64 | Y | |
| 8 | -006 | LODV | high | 65 | Y | |
| 9 | [redacted] R6846-02 | LCS | 7/28/14 Soil 8270BCL | 66 | YQ | |
| 10 | -03 | LCSD | | 67 | YQ | |
| 11 | R5753-004 | | | 68 | NO | |
| 12 | [redacted] R5630-003 | | 8270BEHP | 69 | Y | |
| 13 | -003MS | | R6846-04 | 70 | YQ | |
| 14 | -003MSD | | -05 | 71 | YQ | |
| 15 | -008 | | | 72 | Y | |
| 16 | [redacted] R5662-003 | | | 73 | Y | |
| 17 | -004 | | | 74 | Y | |

All samples = 1 mL + 10 uL Combined IS/Surr.; #70461

Primary : _____ exp: Secondary : _____ exp:

Primary: _____ exp: Secondary : _____ exp:

Runlog GCEXT r1 12/5/12

August 07, 2014

Service Request No: R1405662

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 24, 2014. For your reference, these analyses have been assigned our service request number **R1405662.**

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



ADDRESS 1565 Jefferson Rd, Building 300, Suite 360, Rochester, NY 14623 PHONE 585-288-5380 | FAX 585-288-8475
ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

Environmental | www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Soil | **Date Received:** | 07/24/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 07/22-23/14 and received on 07/24/14 at a cooler temperature of 5.1°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

**Inorganics**

Soil samples were analyzed for pH by method 9045D from SW-846.

Site specific QC was not requested on these samples.

No other analytical or QC issues were encountered.

**Volatile Organics**

Soil samples were analyzed for a site list of Volatile Organics by Method 5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405662

| Lab ID | Client ID |
|---|---|
| R1405662-001 | 1407221135 200-SB-16 48'/50' |
| R1405662-002 | 1407230750 200-SB-16 58'/60' |
| R1405662-003 | 1407221139 200-SB-16 48'/50' |
| R1405662-004 | 1407230754 200-SB-16 58'/60' |
| R1405662-005 | 1407221142 200-SB-16 48'/50' |
| R1405662-006 | 1407230757 200-SB-16 58'/60' |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

# Spike was diluted out.

+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| **Sample Name:** | 1407221135 200-SB-16 48'/50' | | |
| **Lab Code:** | R1405662-001 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.9** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| | | **Date Analyzed:** | 7/25/14 13:42 |
| **Sample Name:** | 1407221135 200-SB-16 48'/50' | **Units:** | µg/Kg |
| **Lab Code:** | R1405662-001 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.9 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9994.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .82 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.1 | 0.61 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.1 | 0.61 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.1 | 1.1 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.1 | 1.1 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.1 | 0.51 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.1 | 1.2 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.1 | 1.9 | |
| 67-63-0 | Isopropanol | ND | U | 83 | 24 | |
| 67-64-1 | Acetone | **20** | | 4.1 | 2.4 | |
| 71-43-2 | Benzene | ND | U | 4.1 | 0.25 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.1 | 0.51 | |
| 75-25-2 | Bromoform | ND | U | 4.1 | 0.78 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.1 | 0.25 | |
| 67-66-3 | Chloroform | ND | U | 4.1 | 1.1 | |
| 74-87-3 | Chloromethane | ND | U | 4.1 | 0.34 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.1 | 0.61 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.1 | 1.3 | |
| 75-09-2 | Dichloromethane | ND | U | 4.1 | 0.48 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.1 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.1 | 0.78 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.1 | 0.73 | |
| 108-88-3 | Toluene | **1.1** | J | 4.1 | 0.83 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.1 | 0.84 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 8.3 | 0.91 | |
| 95-47-6 | o-Xylene | ND | U | 4.1 | 0.40 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.1 | 1.2 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 7/25/14 13:42 | |
| Dibromofluoromethane | 96 | 63-138 | 7/25/14 13:42 | |
| Toluene-d8 | 101 | 66-138 | 7/25/14 13:42 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407221135 200-SB-16 48'/50' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405662-001 | **Date Received:** | 7/24/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/23/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| **Sample Name:** | 1407230750 200-SB-16 58'/60' | | |
| **Lab Code:** | R1405662-002 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.5** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/23/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| | | **Date Analyzed:** | 7/25/14 14:19 |
| **Sample Name:** | 1407230750 200-SB-16 58'/60' | **Units:** | µg/Kg |
| **Lab Code:** | R1405662-002 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.5 |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9995.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | .88 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 4.5 | 0.66 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 4.5 | 0.66 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 4.5 | 1.2 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 4.5 | 1.2 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 4.5 | 0.56 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 4.5 | 1.3 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 4.5 | 2.1 | |
| 67-63-0 | Isopropanol | ND | U | 90 | 26 | |
| 67-64-1 | Acetone | **21** | | 4.5 | 2.6 | |
| 71-43-2 | Benzene | ND | U | 4.5 | 0.27 | |
| 75-27-4 | Bromodichloromethane | ND | U | 4.5 | 0.56 | |
| 75-25-2 | Bromoform | ND | U | 4.5 | 0.84 | |
| 108-90-7 | Chlorobenzene | ND | U | 4.5 | 0.27 | |
| 67-66-3 | Chloroform | ND | U | 4.5 | 1.2 | |
| 74-87-3 | Chloromethane | ND | U | 4.5 | 0.37 | |
| 124-48-1 | Dibromochloromethane | ND | U | 4.5 | 0.66 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 4.5 | 1.4 | |
| 75-09-2 | Dichloromethane | ND | U | 4.5 | 0.52 | |
| 100-41-4 | Ethylbenzene | ND | U | 4.5 | 0.21 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 4.5 | 0.85 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 4.5 | 0.80 | |
| 108-88-3 | Toluene | **1.8** | J | 4.5 | 0.91 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 4.5 | 0.92 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 9.0 | 0.99 | |
| 95-47-6 | o-Xylene | ND | U | 4.5 | 0.44 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 4.5 | 1.3 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 7/25/14 14:19 | |
| Dibromofluoromethane | 97 | 63-138 | 7/25/14 14:19 | |
| Toluene-d8 | 102 | 66-138 | 7/25/14 14:19 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407230750 200-SB-16 58'/60' | **Date Collected:** | 7/23/14 |
| **Lab Code:** | R1405662-002 | **Date Received:** | 7/24/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8260C | | BWOJTASIEWICZ |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| **Sample Name:** | 1407221139 200-SB-16 48'/50' | | |
| **Lab Code:** | R1405662-003 | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **98.9** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| | | **Date Extracted:** | 7/28/14 |
| | | **Date Analyzed:** | 7/29/14 18:43 |
| **Sample Name:** | 1407221139 200-SB-16 48'/50' | **Units:** | µg/Kg |
| **Lab Code:** | R1405662-003 | **Basis:** | Dry |
| | | **Percent Solids:** | 98.9 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 404220 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213876 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072914\AV273.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 52 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 68 | 47-126 | 7/29/14 18:43 | |
| Nitrobenzene-d5 | 67 | 39-136 | 7/29/14 18:43 | |
| p-Terphenyl-d14 | 104 | 35-152 | 7/29/14 18:43 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407221139 200-SB-16 48'/50' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405662-003 | **Date Received:** | 7/24/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/23/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| **Sample Name:** | 1407230754 200-SB-16 58'/60' | | |
| **Lab Code:** | R1405662-004 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **97.5** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/23/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| | | **Date Extracted:** | 7/28/14 |
| | | **Date Analyzed:** | 7/29/14 19:08 |
| **Sample Name:** | 1407230754 200-SB-16 58'/60' | **Units:** | µg/Kg |
| **Lab Code:** | R1405662-004 | **Basis:** | Dry |
| | | **Percent Solids:** | 97.5 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 404220 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213876 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072914\AV274.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 340 | 44 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 340 | 53 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 75 | 47-126 | 7/29/14 19:08 | |
| Nitrobenzene-d5 | 67 | 39-136 | 7/29/14 19:08 | |
| p-Terphenyl-d14 | 98 | 35-152 | 7/29/14 19:08 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407230754 200-SB-16 58'/60' | **Date Collected:** | 7/23/14 |
| **Lab Code:** | R1405662-004 | **Date Received:** | 7/24/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | JWALKER |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/22/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| **Sample Name:** | 1407221142 200-SB-16 48'/50' | | |
| **Lab Code:** | R1405662-005 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 9.14 | | pH Units | | 1 | NA | 7/28/14 12:57 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407221142 200-SB-16 48'/50' | **Date Collected:** | 7/22/14 |
| **Lab Code:** | R1405662-005 | **Date Received:** | 7/24/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/23/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/24/14 |
| **Sample Name:** | 1407230757 200-SB-16 58'/60' | | |
| **Lab Code:** | R1405662-006 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.92 | | pH Units | | 1 | NA | 7/28/14 12:57 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407230757 200-SB-16 58'/60' | **Date Collected:** | 7/23/14 |
| **Lab Code:** | R1405662-006 | **Date Received:** | 7/24/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405662-MB | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **1.0** | | Percent | 1.0 | 1 | NA | 7/24/14 10:16 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/25/14 09:33 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408705-05 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9988.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 51-136 | 7/25/14 09:33 | |
| Dibromofluoromethane | 96 | 63-138 | 7/25/14 09:33 | |
| Toluene-d8 | 99 | 66-138 | 7/25/14 09:33 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405662 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/28/14 |
| | | **Date Analyzed:** | 7/29/14 13:09 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408646-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 404220 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213876 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072914\AV261.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 66 | 47-126 | 7/29/14 13:09 | |
| Nitrobenzene-d5 | 60 | 39-136 | 7/29/14 13:09 | |
| p-Terphenyl-d14 | 96 | 35-152 | 7/29/14 13:09 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405662
**Date Analyzed:** 7/25/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 403534

| | Lab Control Sample RQ1408705-03 | | | Duplicate Lab Control Sample RQ1408705-04 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| 1,1,1-Trichloroethane (TCA) | 18.5 | 20.0 | 93 | 16.7 | 20.0 | 83 | 64 - 127 | 11 | 30 |
| 1,1,2-Trichloroethane | 19.0 | 20.0 | 95 | 19.1 | 20.0 | 96 | 76 - 123 | 1 | 30 |
| 1,1,2-Trichlorotrifluoroethane | 20.6 | 20.0 | 103 | 16.5 | 20.0 | 83 | 59 - 146 | 22 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | 22.5 | 20.0 | 113 | 20.7 | 20.0 | 103 | 75 - 151 | 9 | 30 |
| 1,2-Dichloroethane | 18.7 | 20.0 | 94 | 18.2 | 20.0 | 91 | 66 - 123 | 3 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.2 | 20.0 | 106 | 21.4 | 20.0 | 107 | 61 - 138 | <1 | 30 |
| 2-Butanone (MEK) | 16.5 | 20.0 | 82 | 19.2 | 20.0 | 96 | 62 - 128 | 16 | 30 |
| Isopropanol | 361 | 400 | 90 | 411 | 400 | 103 | 62 - 142 | 13 | 30 |
| Acetone | 15.3 | 20.0 | 76 | 19.9 | 20.0 | 99 | 53 - 143 | 26 | 30 |
| Benzene | 19.5 | 20.0 | 97 | 19.3 | 20.0 | 96 | 74 - 123 | 1 | 30 |
| Bromodichloromethane | 18.9 | 20.0 | 95 | 19.0 | 20.0 | 95 | 77 - 127 | <1 | 30 |
| Bromoform | 18.6 | 20.0 | 93 | 18.5 | 20.0 | 92 | 65 - 133 | 1 | 30 |
| Chlorobenzene | 20.7 | 20.0 | 104 | 18.6 | 20.0 | 93 | 77 - 124 | 11 | 30 |
| Chloroform | 18.1 | 20.0 | 90 | 17.9 | 20.0 | 89 | 73 - 125 | 1 | 30 |
| Chloromethane | 18.9 | 20.0 | 95 | 19.2 | 20.0 | 96 | 56 - 154 | 1 | 30 |
| Dibromochloromethane | 18.7 | 20.0 | 94 | 19.2 | 20.0 | 96 | 77 - 124 | 2 | 30 |
| Dichlorofluoromethane (CFC 21) | 17.1 | 20.0 | 86 | 17.4 | 20.0 | 87 | 79 - 142 | 1 | 30 |
| Dichloromethane | 20.2 | 20.0 | 101 | 20.2 | 20.0 | 101 | 77 - 126 | <1 | 30 |
| Ethylbenzene | 18.7 | 20.0 | 94 | 16.0 | 20.0 | 80 | 73 - 123 | 16 | 30 |
| Methyl tert-Butyl Ether | 18.8 | 20.0 | 94 | 19.4 | 20.0 | 97 | 72 - 131 | 3 | 30 |
| Tetrachloroethene (PCE) | 20.4 | 20.0 | 102 | 17.6 | 20.0 | 88 | 65 - 133 | 15 | 30 |
| Toluene | 20.0 | 20.0 | 100 | 18.4 | 20.0 | 92 | 72 - 127 | 8 | 30 |
| Trichloroethene (TCE) | 18.8 | 20.0 | 94 | 17.8 | 20.0 | 89 | 72 - 129 | 5 | 30 |
| m,p-Xylenes | 40.8 | 40.0 | 102 | 35.1 | 40.0 | 88 | 77 - 125 | 15 | 30 |
| o-Xylene | 20.1 | 20.0 | 100 | 17.8 | 20.0 | 89 | 75 - 124 | 12 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.8 | 20.0 | 119 | 25.1 | 20.0 | 125 | 56 - 154 | 5 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405662
**Date Analyzed:** 7/29/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 213876

| | Lab Control Sample RQ1408646-02 | | | Duplicate Lab Control Sample RQ1408646-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 3760 | 3330 | 113 | 3860 | 3330 | 116 | 50 - 142 | 3 | 30 |
| Di-n-butyl Phthalate | 3620 | 3330 | 108 | 3710 | 3330 | 111 | 36 - 164 | 2 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Date 7-23-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407221135 | 200-SB-16 48'/50' | 3 | S | X | | | | | | | | |
| 1407230750 | " 58'/60' | 3 | S | X | | | | | | | | |
| 1407221139 | " 48'/50' | 1 | S | | X | | | | | | | |
| 1407230754 | " 58'/60' | 1 | S | | X | | | | | | | |
| 1407221142 | " 48'/50' | 1 | S | | | X | | | | | | |
| 1407230757 | " 58'/60' | 1 | S | | | X | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-23-14 / 1100 HRS. | [signature] ALS 7/24/14 0925 | |

R1405662 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number MU-5662.

Cooler received on 7/24 by: JS COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were Custody seals on outside of cooler? | Y N | 5a | Perchlorate samples have required headspace? | Y N NA |
| 2 | Custody papers properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk,or Sulfide have sig* bubbles? | Y N NA |
| 3 | Did all bottles arrive in good condition (unbroken)? | Y N | 6 | Where did the bottles originate? | ALS/ROC CLIENT |
| 4 | Circle: Wet Ice Dry Ice Gel packs present? | Y N | 7 | Soil VOA received as: Bulk Encore 5035set | NA |

8. Temperature Readings Date: 7/24 Time: 0942 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 5.1 | | | | | | |
| Correction Factor (°C) | – | | | | | | |
| Corrected Temp (°C) | 5.1 | | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

**If out of Temperature, note packing/ice condition:** _____ Ice melted Poorly Packed Same Day Rule

**&Client Approval to Run Samples:** _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: 1052 by JS on 7/24 at 0942
5035 samples placed in storage location: POS by JS on 7/24 at 0942

PC Secondary Review: JMS 7/24/14

Cooler Breakdown: Date: 7/24 Time: 1426 by: JS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated NA

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

Bottle lot numbers: check

Other Comments:

PC Secondary Review: JMS 8/6/14 *significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405662
**Date Analyzed:** 7/25/14 09:33

## Method Blank Summary
## Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408705-05
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\072514\K9988.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408705-03 | I:\ACQUDATA\MSVOA7\DATA\072514\K9986.D\ | 7/25/14 08:16 |
| 1407221135 200-SB-16 48'/50' | R1405662-001 | I:\ACQUDATA\MSVOA7\DATA\072514\K9994.D\ | 7/25/14 13:42 |
| 1407230750 200-SB-16 58'/60' | R1405662-002 | I:\ACQUDATA\MSVOA7\DATA\072514\K9995.D\ | 7/25/14 14:19 |
| Duplicate Lab Control Sample | RQ1408705-04 | I:\ACQUDATA\MSVOA7\DATA\072514\K9996.D\ | 7/25/14 15:12 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405662
**Date Analyzed:** 7/25/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\072514\K9985.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 403534
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 48.1 | 0.7075 | 0.6801 | -3.9 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.7 | 0.3414 | 0.3325 | -2.6 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 57.6 | 0.4820 | 0.5555 | 15.2 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 52.3 | 0.4169 | 0.4356 | 4.5 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 45.3 | 0.4920 | 0.4455 | -9.5 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 51.6 | 0.8365 | 0.8625 | 3.1 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 40.0 | 0.7656 | 0.6129 | -20.0 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 874 | 0.08660 | 0.07572 | -12.6 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 33.0 | 0.6020 | 0.3978 | -33.9 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 50.9 | 1.440 | 1.467 | 1.9 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 48.6 | 0.4660 | 0.4526 | -2.9 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 50.8 | 0.2458 | 0.2498 | 1.6 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 52.9 | 0.9166 | 0.9696 | 5.8 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 45.4 | 1.049 | 0.9526 | -9.2 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 50.5 | 1.118 | 1.128 | 0.9 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 50.1 | 0.3859 | 0.3863 | 0.1 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 50.2 | 1.436 | 1.441 | 0.3 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 48.7 | 0.6951 | 0.6771 | -2.6 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 53.3 | 1.608 | 1.713 | 6.5 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 47.1 | 1.847 | 1.738 | -5.9 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 56.2 | 0.3262 | 0.3665 | 12.4 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 52.4 | 1.479 | 1.549 | 4.8 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 51.4 | 0.3311 | 0.3405 | 2.8 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 108 | 0.5809 | 0.6284 | 8.2 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 52.9 | 0.5852 | 0.6191 | 5.8 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 51.0 | 0.8761 | 0.8939 | 2.0 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 48.8 | 0.4853 | 0.4735 | -2.4 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 48.0 | 0.3338 | 0.3202 | -4.1 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.9 | 1.294 | 1.318 | 1.8 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405662
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405662
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405662
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405662
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 50.000 | 0.4893 | 07 | 50.000 | 0.4775 | 06 | 50.000 | 0.4833 | 04 | 50.000 | 0.4931 |
| 01 | 50.000 | 0.4940 | 03 | 50.000 | 0.4875 | 08 | 50.000 | 0.4756 | 05 | 50.000 | 0.4819 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 50.000 | 0.3368 | 08 | 50.000 | 0.3299 | 03 | 50.000 | 0.3344 | 04 | 50.000 | 0.3406 |
| 05 | 50.000 | 0.3361 | 06 | 50.000 | 0.3295 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 1.276 | 07 | 50.000 | 1.289 | 02 | 50.000 | 1.305 | 08 | 50.000 | 1.289 |
| 03 | 50.000 | 1.291 | 01 | 50.000 | 1.307 | 04 | 50.000 | 1.306 | 05 | 50.000 | 1.291 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405662
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤ 20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤ 20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤ 20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤ 20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤ 20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤ 20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤ 20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤ 20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤ 20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤ 20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤ 20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤ 20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤ 20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤ 20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤ 20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤ 20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤ 20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤ 20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤ 20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤ 20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤ 20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤ 20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤ 20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤ 20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤ 20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤ 20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤ 20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤ 20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤ 20 | 1.294 | | |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low **Folder #:** R1405662 **Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10138 | | R1405662-001 | 40.88 | 34.81 | 6/12/2014 | J. Cushman | 6.07 | **0.82** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |
| 040714-3:10130 | | R1405662-001 | 40.85 | 35.03 | 6/12/2014 | J. Cushman | 5.82 | **0.86** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |
| 040714-3:10120 | | R1405662-002 | 41.14 | 35.48 | 6/12/2014 | J. Cushman | 5.66 | **0.88** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |
| 040714-3:10125 | | R1405662-002 | 40.09 | 34.78 | 6/12/2014 | J. Cushman | 5.31 | **0.94** | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium

**Folder #:** R1405662

**Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10323 | | R1405662-001 | 41.97 | 36.31 | 4/28/2014 | J. Cushman | 5.66 | | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |
| 040714-3:10335 | | R1405662-002 | 41.83 | 36.18 | 4/28/2014 | J. Cushman | 5.65 | | 7/22/2014 | B. Wojtasiewic | 7/25/2014 | . Wojtasiewi | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

| | | | |
|---|---|---|---|
| Analysis: 8260-soil | Analyst: Ben Wojtasiewicz | Tune Method: | T052914.M |
| Date: 07/25/14 | Data Path: j:\acqudata\msvoa7\DATA\072514 | Run Method: | S052914.M |
| Instr. MS#7 | | LIMS Run#: | 403534 |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Tune | - | | | | - | 1 | - | K9989 | YT | |
| 2 | CCV | - | | | | - | 1 | - | 85 | YC | |
| 3 | LCS | - | | | | - | 1 | - | 86 | YL | |
| 4 | MBlank | - | | | | - | 1 | - | 87 | ⊗ | not for c/o |
| 5 | MBlank | - | | | | - | 2 | - | 88 | YB | |
| 6 | R1405572-002 | 1 | | [redacted] | 6730 | 1 | 1 | NA | 89 | Y | |
| 7 | R1405586-004 | 1.46 | 50862 | [redacted] | 11813 | 3 | 1 | | 90 | Y | |
| 8 | ↓ -005 | 1.22 | 50884 | | | | 1 | | 91 | Y | |
| 9 | R1405630-004 | 0.98 | 10134 | | | | 1 | | 92 | Y | |
| 10 | ↓ -007 | 0.89 | 50910 | | | | 1 | | 93 | Y | |
| 11 | R1405662-001 | 0.82 | 10138 | | | | 1 | | 94 | Y | |
| 12 | ↓ -002 | 0.88 | 10120 | | | | 1 | | 95 | Y | |
| 13 | DLCS | - | | | | - | 2 | - | 96 | Y | |
| 14 | Blank | - | | | | - | 1 | - | 97 | - | |
| 15 | ↓ | - | | | | - | 2 | - | 98 | - | |

BW 07/28/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

| | | | |
|---|---|---|---|
| 200 Primary TG | 72623 5uL | 500 Secondary TG | 72050 2uL |
| Primary MBO | 72646 | Secondary MBO | 72455 |
| Primary MSL | 72499 | Secondary MSL | 72663 |
| Primary Ext | 72625 | 200 Secondary Ext | 72454 5uL |
| Primary | | Secondary | |

50uL = CCV

50uL = LCS, DLCS

Combined IS/Surr 250: 72076

Surrogate: —

Internal Std: —

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M
Title : 8270 BNA ANALYSIS
Last Update : Wed Jul 02 10:45:14 2014
Response Via : Initial Calibration

Calibration Files
5 =AV019.D 10 =AV020.D 50 =AV021.D 80 =AV022.D 100 =AV023.D 120 =AV024.D 160 =AV025.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | | |
| 2) | TM | Pyridine | | 1.313 | 1.336 | 1.325 | 1.339 | 1.325 | 1.328 | | 0.79 | |
| 3) | TM | N-Nitrosodimet... | 0.562 | 0.626 | 0.701 | 0.702 | 0.688 | 0.739 | 0.714 | 0.676 | 9.00 | |
| 4) | S | SURR1,2-FLUORO... | 1.111 | 1.124 | 1.180 | 1.192 | 1.190 | 1.211 | 1.227 | 1.177 | 3.67 | |
| 5) | TM | Benzaldehyde | | | 0.365 | 0.335 | 0.290 | 0.249 | 0.152 | 0.278 | 29.94 | AVG |
| 6) | TM | Aniline | 2.025 | 2.073 | 2.049 | 2.024 | 2.043 | 2.133 | 2.040 | 2.055 | 1.85 | |
| 7) | S | SURR2,PHENOL-D6 | 1.357 | 1.418 | 1.590 | 1.570 | 1.542 | 1.636 | 1.595 | 1.530 | 6.71 | |
| 8) | TMC | Phenol | 1.486 | 1.478 | 1.592 | 1.619 | 1.597 | 1.646 | 1.629 | 1.578 | 4.33 | |
| 9) | TM | bis(2-Clethyl)... | 1.160 | 1.156 | 1.182 | 1.188 | 1.071 | 1.125 | 1.138 | 1.146 | 3.45 | |
| 10) | TM | 2-Chlorophenol | 1.284 | 1.300 | 1.374 | 1.376 | 1.348 | 1.418 | 1.400 | 1.357 | 3.66 | |
| 11) | TM | 1,3-Diclbenzene | 1.604 | 1.610 | 1.579 | 1.583 | 1.559 | 1.563 | 1.567 | 1.581 | 1.26 | |
| 12) | TMC | 1,4-Dichlorobe... | 1.732 | 1.623 | 1.646 | 1.620 | 1.603 | 1.641 | 1.632 | 1.642 | 2.55 | |
| 13) | TM | 1,2-Diclbenzene | 1.641 | 1.535 | 1.529 | 1.519 | 1.507 | 1.543 | 1.525 | 1.543 | 2.92 | |
| 14) | TM | Benzyl Alcohol | 0.916 | 0.856 | 0.999 | 1.008 | 1.021 | 1.063 | 1.026 | 0.984 | 7.33 | |
| 15) | TM | 2,2'-oxybis(1-... | 1.663 | 1.681 | 1.648 | 1.622 | 1.626 | 1.665 | 1.647 | 1.650 | 1.29 | |
| 16) | TM | 2-Methylphenol | 1.099 | 1.184 | 1.257 | 1.230 | 1.246 | 1.298 | 1.272 | 1.226 | 5.44 | |
| 17) | TM | Acetophenone | 1.847 | 1.781 | 1.777 | 1.780 | 1.770 | 1.836 | 1.795 | 1.798 | 1.72 | |
| 18) | TMP | N-Nitroso-Di-n... | 0.896 | 0.918 | 0.937 | 0.931 | 0.903 | 0.958 | 0.964 | 0.929 | 2.77 | |
| 19) | TM | Hexachloroethane | 0.526 | 0.601 | 0.604 | 0.611 | 0.601 | 0.603 | 0.607 | 0.593 | 5.03 | |
| 20) | TM | 3+4-Methylphenol | 1.199 | 1.193 | 1.304 | 1.307 | 1.286 | 1.375 | 1.343 | 1.287 | 5.31 | |
| 21) | T | 1-Methyl-2-pyr... | | 0.870 | 0.921 | 0.891 | 0.885 | 0.939 | 0.867 | 0.896 | 3.21 | |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.240 | 0.320 | 0.328 | 0.334 | 0.346 | 0.363 | 0.317 | 0.321 | 12.17 | |
| 24) | TM | Nitrobenzene | 0.252 | 0.280 | 0.291 | 0.316 | 0.316 | 0.331 | 0.331 | 0.302 | 9.75 | |
| 25) | TM | Isophorone | 0.580 | 0.597 | 0.592 | 0.606 | 0.614 | 0.640 | 0.623 | 0.607 | 3.31 | |
| 26) | TCM | 2-Nitrophenol | 0.120 | 0.126 | 0.141 | 0.156 | 0.161 | 0.174 | 0.178 | 0.151 | 14.96 | |
| 27) | TM | Benzoic Acid | | 0.144 | 0.225 | 0.269 | 0.284 | 0.314 | 0.317 | 0.259 | 25.32 | QA |
| 28) | TM | 2,4-Dimethylph... | 0.276 | 0.331 | 0.312 | 0.327 | 0.326 | 0.339 | 0.336 | 0.321 | 6.77 | |
| 29) | TM | bis(-2-Chloroe... | 0.373 | 0.369 | 0.356 | 0.362 | 0.370 | 0.373 | 0.368 | 0.367 | 1.65 | |
| 30) | TCM | 2,4-Dichloroph... | 0.261 | 0.261 | 0.291 | 0.306 | 0.306 | 0.323 | 0.322 | 0.296 | 8.82 | |
| 31) | TM | 1,2,4-Trichlor... | 0.374 | 0.356 | 0.349 | 0.354 | 0.359 | 0.364 | 0.364 | 0.360 | 2.35 | |
| 32) | TM | Naphthalene | 1.046 | 1.072 | 1.011 | 1.038 | 1.047 | 1.067 | 1.062 | 1.049 | 1.98 | |
| 33) | TM | 4-Chloroaniline | 0.382 | 0.403 | 0.416 | 0.428 | 0.431 | 0.445 | 0.430 | 0.419 | 5.01 | |
| 34) | TCM | Hexachlorobuta... | 0.206 | 0.205 | 0.205 | 0.207 | 0.200 | 0.208 | 0.212 | 0.206 | 1.72 | |
| 35) | TMC | 4-Chloro-3-met... | 0.223 | 0.245 | 0.258 | 0.264 | 0.271 | 0.284 | 0.279 | 0.260 | 8.09 | |
| 36) | TM | Caprolactam | | 0.087 | 0.086 | 0.087 | 0.089 | 0.096 | 0.076 | 0.087 | 7.06 | |
| 37) | TM | 2-Methylnaphth... | 0.715 | 0.727 | 0.707 | 0.711 | 0.717 | 0.751 | 0.760 | 0.727 | 2.85 | |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.641 | 0.665 | 0.660 | 0.659 | 0.668 | 0.693 | 0.689 | 0.668 | 2.68 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.314 | 0.321 | 0.368 | 0.408 | 0.415 | 0.412 | 0.452 | 0.384 | 13.47 |
| 41) | TCM | 2,4,6-Trichlor... | 0.287 | 0.338 | 0.362 | 0.379 | 0.395 | 0.403 | 0.414 | 0.368 | 11.95 |
| 42) | TM | 2,4,5-Trichlor... | 0.337 | 0.361 | 0.382 | 0.421 | 0.394 | 0.406 | 0.412 | 0.388 | 7.71 |
| 43) | S | SURR5,2-FLUORO... | 1.233 | 1.279 | 1.280 | 1.304 | 1.310 | 1.287 | 1.359 | 1.293 | 2.96 |
| 44) | TM | 1,1'-Biphenyl | 1.382 | 1.411 | 1.414 | 1.470 | 1.437 | 1.433 | 1.507 | 1.436 | 2.87 |
| 45) | TM | 2-Chloronaphth... | 1.107 | 1.079 | 1.091 | 1.137 | 1.130 | 1.113 | 1.168 | 1.118 | 2.67 |
| 46) | TM | 2-Nitroaniline | | | 0.238 | 0.260 | 0.258 | 0.266 | 0.272 | 0.259 | 5.07 |
| 47) | TM | Acenaphthylene | 1.608 | 1.678 | 1.778 | 1.838 | 1.822 | 1.824 | 1.894 | 1.778 | 5.63 |
| 48) | TM | Dimethyl phtha... | 1.182 | 1.218 | 1.199 | 1.174 | 1.149 | 1.145 | 1.144 | 1.173 | 2.46 |
| 49) | TM | 2,6-Dinitrotol... | 0.171 | 0.173 | 0.211 | 0.226 | 0.234 | 0.234 | 0.242 | 0.213 | 13.99 |
| 50) | TMC | Acenaphthene | 1.184 | 1.161 | 1.153 | 1.179 | 1.178 | 1.181 | 1.213 | 1.178 | 1.62 |
| 51) | TM | 3-Nitroaniline | | | 0.239 | 0.272 | 0.270 | 0.284 | 0.291 | 0.271 | 7.29 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.087 | 0.116 | 0.124 | 0.136 | 0.155 | 0.124 | 20.33 |
| 53) | TM | Dibenzofuran | 1.703 | 1.671 | 1.641 | 1.665 | 1.674 | 1.681 | 1.691 | 1.675 | 1.18 |
| 54) | TM | 2,4-Dinitrotol... | 0.189 | 0.213 | 0.252 | 0.286 | 0.308 | 0.312 | 0.334 | 0.271 | 19.99 |
| 55) | TMP | 4-Nitrophenol | | | 0.166 | 0.195 | 0.197 | 0.200 | 0.212 | 0.194 | 8.73 |
| 56) | TM | Fluorene | 1.354 | 1.320 | 1.307 | 1.327 | 1.310 | 1.322 | 1.300 | 1.320 | 1.35 |
| 57) | TM | 4-Chlorophenyl... | 0.668 | 0.648 | 0.654 | 0.673 | 0.661 | 0.664 | 0.657 | 0.661 | 1.29 |
| 58) | TM | Diethylphthalate | 1.149 | 1.080 | 1.035 | 1.102 | 1.101 | 1.132 | 1.177 | 1.111 | 4.23 |
| 59) | TM | 4-Nitroaniline | | | 0.268 | 0.310 | 0.322 | 0.339 | 0.345 | 0.317 | 9.59 |
| 60) | S | SURR3,2,4,6-TR... | 0.163 | 0.144 | 0.163 | 0.177 | 0.192 | 0.204 | 0.208 | 0.179 | 13.27 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.096 | 0.111 | 0.118 | 0.119 | 0.131 | 0.115 | 11.28 |
| 64) | TM | 1,2 Diphenylhy... | 0.720 | 0.735 | 0.792 | 0.723 | 0.707 | 0.689 | 0.677 | 0.720 | 5.15 |
| 65) | TCM | N-Nitrosodiphe... | 0.543 | 0.540 | 0.534 | 0.511 | 0.518 | 0.524 | 0.543 | 0.530 | 2.47 |
| 66) | TM | 4-Bromophenyl-... | 0.241 | 0.249 | 0.249 | 0.234 | 0.232 | 0.227 | 0.236 | 0.238 | 3.51 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.255 | 0.268 | 0.278 | 0.260 | 0.260 | 0.260 | 0.269 | 0.264 | 2.97 |
| 69) | TM | Atrazine | 0.069 | 0.058 | 0.084 | 0.085 | 0.089 | 0.089 | 0.089 | 0.081 | 15.01 |
| 70) | TCM | Pentachlorophenol | | | 0.121 | 0.134 | 0.149 | 0.153 | 0.164 | 0.144 | 11.74 |
| 71) | TM | Phenanthrene | 1.078 | 1.088 | 1.055 | 1.064 | 1.090 | 1.107 | 1.142 | 1.089 | 2.66 |
| 72) | TM | Anthracene | 1.061 | 1.109 | 1.121 | 1.124 | 1.176 | 1.178 | 1.215 | 1.141 | 4.54 |
| 73) | TM | Carbazole | 0.976 | 0.943 | 1.081 | 1.080 | 1.092 | 1.112 | 1.111 | 1.056 | 6.45 |
| 74) | TM | Di-n-butylphth... | 0.898 | 0.940 | 1.214 | 1.252 | 1.288 | 1.274 | 1.331 | 1.171 | 15.04 |
| 75) | TCM | Fluoranthene | 1.060 | 1.047 | 1.312 | 1.331 | 1.341 | 1.354 | 1.374 | 1.260 | 11.30 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.480 | 0.472 | 0.476 | 0.474 | 0.428 | 0.466 | 4.64 |
| 78) | TM | Pyrene | 1.028 | 1.059 | 1.139 | 1.117 | 1.164 | 1.228 | 1.200 | 1.134 | 6.38 |
| 79) | S | SURR6,TERPHENY... | 0.825 | 0.832 | 0.797 | 0.802 | 0.846 | 0.882 | 0.876 | 0.837 | 3.98 |
| 80) | TM | Butyl benzyl p... | 0.361 | 0.402 | 0.454 | 0.471 | 0.498 | 0.494 | 0.508 | 0.455 | 12.06 |
| 81) | TM | 3,3'-Dichlorob... | 0.311 | 0.311 | 0.353 | 0.341 | 0.367 | 0.374 | 0.380 | 0.348 | 8.17 |
| 82) | TM | Benzo(a)anthra... | 1.090 | 1.073 | 1.113 | 1.124 | 1.148 | 1.166 | 1.139 | 1.122 | 2.90 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.185 | 1.167 | 1.121 | 1.116 | 1.142 | 1.159 | 1.151 | 1.149 | 2.15 |
| 84) | TM | bis(2-Ethylhex... | 0.465 | 0.514 | 0.575 | 0.626 | 0.630 | 0.602 | 0.644 | 0.580 | 11.55 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.629 | 0.653 | 0.845 | 0.981 | 1.044 | 1.021 | 1.129 | 0.900 | 21.86 |
| 87) | TM | Benzo(b)Fluora... | 1.015 | 0.994 | 1.026 | 1.047 | 1.081 | 1.103 | 1.155 | 1.060 | 5.32 |
| 88) | TM | Benzo(k)fluora... | 1.149 | 1.006 | 1.143 | 1.156 | 1.177 | 1.190 | 1.212 | 1.148 | 5.82 |
| 89) | TCM | Benzo(a)pyrene | 0.865 | 0.887 | 1.037 | 1.056 | 1.082 | 1.099 | 1.145 | 1.024 | 10.47 |
| 90) | TM | Indeno(1,2,3-c... | 0.723 | 0.685 | 0.940 | 0.921 | 0.967 | 0.930 | 0.970 | 0.876 | 13.66 |
| 91) | TM | Dibenz(a,h)ant... | 0.885 | 0.730 | 0.979 | 1.010 | 1.023 | 1.012 | 1.047 | 0.955 | 11.74 |
| 92) | TM | Benzo(g,h,i)pe... | 0.855 | 0.757 | 0.955 | 0.948 | 0.954 | 0.956 | 0.963 | 0.913 | 8.57 |

(#) = Out of Range

Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.336 | -0.6 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.702 | -3.8 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.192 | -1.3 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.335 | -20.5# | 100 | 0.00 |
| 6 | TM | Aniline | 2.055 | 2.024 | 1.5 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.570 | -2.6 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.619 | -2.6 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.188 | -3.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.376 | -1.4 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.583 | -0.1 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.620 | 1.3 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.519 | 1.6 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.008 | -2.4 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.622 | 1.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.230 | -0.3 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.780 | 1.0 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.931 | -0.2 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.611 | -3.0 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.307 | -1.6 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.891 | 0.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.334 | -4.0 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.316 | -4.6 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.607 | 0.606 | 0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.269 | -3.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.327 | -1.9 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.362 | 1.4 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.354 | 1.7 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.038 | 1.0 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.207 | -0.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.264 | -1.5 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.087 | 0.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.711 | 2.2 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.659 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.408 | -6.2 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.379 | -3.0 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.421 | -8.5 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.304 | -0.9 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.470 | -2.4 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.137 | -1.7 | 100 | 0.00 |

Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 6 | TM | 2-Nitroaniline | 0.259 | 0.260 | -0.4 | 100 | 0.00 |
| 7 | TM | Acenaphthylene | 1.778 | 1.838 | -3.4 | 100 | 0.00 |
| 8 | TM | Dimethyl phthalate | 1.173 | 1.174 | -0.1 | 100 | 0.00 |
| 9 | TM | 2,6-Dinitrotoluene | 0.213 | 0.226 | -6.1 | 100 | 0.00 |
| 0 | TMC | Acenaphthene | 1.178 | 1.179 | -0.1 | 100 | 0.00 |
| 1 | TM | 3-Nitroaniline | 0.271 | 0.272 | -0.4 | 100 | 0.00 |
| 2 | TPM | 2,4-Dinitrophenol | 0.124 | 0.116 | 6.5 | 100 | 0.00 |
| 3 | TM | Dibenzofuran | 1.675 | 1.665 | 0.6 | 100 | 0.00 |
| 4 | TM | 2,4-Dinitrotoluene | 0.271 | 0.286 | -5.5 | 100 | 0.00 |
| 5 | TMP | 4-Nitrophenol | 0.194 | 0.195 | -0.5 | 100 | 0.00 |
| 6 | TM | Fluorene | 1.320 | 1.327 | -0.5 | 100 | 0.00 |
| 7 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.673 | -1.8 | 100 | 0.00 |
| 8 | TM | Diethylphthalate | 1.111 | 1.102 | 0.8 | 100 | 0.00 |
| 9 | TM | 4-Nitroaniline | 0.317 | 0.310 | 2.2 | 100 | 0.00 |
| 0 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.177 | 1.1 | 100 | 0.00 |
| 1 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 3 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.111 | 3.5 | 100 | 0.00 |
| 4 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.723 | -0.4 | 100 | 0.00 |
| 5 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.511 | 3.6 | 100 | 0.00 |
| 6 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 100 | 0.00 |
| 7 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 0# | -10.86# |
| 8 | TM | Hexachlorobenzene | 0.264 | 0.260 | 1.5 | 100 | 0.00 |
| 9 | TM | Atrazine | 0.081 | 0.085 | -4.9 | 100 | 0.00 |
| 0 | TCM | Pentachlorophenol | 0.144 | 0.134 | 6.9 | 100 | 0.00 |
| 1 | TM | Phenanthrene | 1.089 | 1.064 | 2.3 | 100 | 0.00 |
| 2 | TM | Anthracene | 1.141 | 1.124 | 1.5 | 100 | 0.00 |
| 3 | TM | Carbazole | 1.056 | 1.080 | -2.3 | 100 | 0.00 |
| 4 | TM | Di-n-butylphthalate | 1.171 | 1.252 | -6.9 | 100 | 0.00 |
| 5 | TCM | Fluoranthene | 1.260 | 1.331 | -5.6 | 100 | 0.00 |
| 6 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 7 | TM | Benzidine | 0.466 | 0.472 | -1.3 | 100 | 0.00 |
| 8 | TM | Pyrene | 1.134 | 1.117 | 1.5 | 100 | 0.00 |
| 9 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.802 | 4.2 | 100 | 0.00 |
| 0 | TM | Butyl benzyl phthalate | 0.455 | 0.471 | -3.5 | 100 | 0.00 |
| 1 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.341 | 2.0 | 100 | 0.00 |
| 2 | TM | Benzo(a)anthracene | 1.122 | 1.124 | -0.2 | 100 | 0.00 |
| 3 | TM | Chrysene | 1.149 | 1.116 | 2.9 | 100 | 0.00 |
| 4 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.626 | -7.9 | 100 | 0.00 |
| 5 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 6 | TCM | Di-n-octyl phthalate | 0.900 | 0.981 | -9.0 | 100 | 0.00 |
| 7 | TM | Benzo(b)Fluoranthene | 1.060 | 1.047 | 1.2 | 100 | 0.00 |
| 8 | TM | Benzo(k)fluoranthene | 1.148 | 1.156 | -0.7 | 100 | 0.00 |
| 9 | TCM | Benzo(a)pyrene | 1.024 | 1.056 | -3.1 | 100 | 0.00 |

Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 30 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.921 | -5.1 | 100 | 0.00 |
| 31 TM | Dibenz(a,h)anthracene | 0.955 | 1.010 | -5.8 | 100 | 0.00 |
| 32 TM | Benzo(g,h,i)perylene | 0.913 | 0.948 | -3.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

QA: #27, 86
LR: #52

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 136 | -0.01 |
| 2 | TM | Pyridine | 1.328 | 1.391 | -4.7 | 142 | -0.03 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.741 | -9.6 | 144 | -0.02 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.292 | -9.8 | 148 | -0.02 |
| 5 | TM | Benzaldehyde | 0.278 | 0.312 | -12.2 | 127 | -0.01 |
| 6 | TM | Aniline | 2.055 | 1.881 | 8.5 | 127 | -0.02 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.680 | -9.8 | 146 | -0.01 |
| 8 | TMC | Phenol | 1.578 | 1.736 | -10.0 | 146 | -0.01 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.239 | -8.1 | 142 | -0.02 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.470 | -8.3 | 146 | -0.01 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.651 | -4.4 | 142 | -0.02 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.684 | -2.6 | 142 | -0.01 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.606 | -4.1 | 144 | -0.01 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.112 | -13.0 | 151 | -0.01 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.880 | -13.9 | 158 | -0.01 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.340 | -9.3 | 149 | -0.01 |
| 17 | TM | Acetophenone | 1.798 | 1.920 | -6.8 | 147 | -0.01 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.996 | -7.2 | 146 | -0.01 |
| 19 | TM | Hexachloroethane | 0.593 | 0.647 | -9.1 | 144 | -0.02 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.417 | -10.1 | 148 | -0.01 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.976 | -8.9 | 149 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 138 | -0.01 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.353 | -10.0 | 145 | -0.01 |
| 24 | TM | Nitrobenzene | 0.302 | 0.353 | -16.9 | 154 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.654 | -7.7 | 149 | -0.01 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.194 | -28.5 | 171 | -0.01 |
| 27 | TM | Benzoic Acid | 0.259 | 0.348 | -34.4# | 178 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.352 | -9.7 | 148 | -0.01 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.391 | -6.5 | 149 | -0.01 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.328 | -10.8 | 148 | -0.02 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.374 | -3.9 | 145 | -0.02 |
| 32 | TM | Naphthalene | 1.049 | 1.074 | -2.4 | 143 | -0.01 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.437 | -4.3 | 141 | -0.01 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.217 | -5.3 | 145 | -0.02 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.294 | -13.1 | 153 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.104 | -19.5 | 164 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.760 | -4.5 | 147 | -0.01 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.698 | -4.5 | 146 | -0.02 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 145 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.402 | -4.7 | 143 | -0.01 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.405 | -10.1 | 155 | -0.02 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.433 | -11.6 | 149 | -0.01 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.329 | -2.8 | 147 | -0.01 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.475 | -2.7 | 145 | -0.01 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.148 | -2.7 | 146 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.312 | -20.5# | 174 | -0.01 |
| 47 | TM | Acenaphthylene | 1.778 | 1.832 | -3.0 | 144 | -0.01 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.210 | -3.2 | 149 | -0.01 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.272 | -27.7# | 174 | -0.01 |
| 50 | TMC | Acenaphthene | 1.178 | 1.184 | -0.5 | 145 | -0.01 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.310 | -14.4 | 165 | -0.01 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.145 | -16.9 | 180 | -0.01 |
| 53 | TM | Dibenzofuran | 1.675 | 1.721 | -2.7 | 150 | -0.01 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.371 | -36.9# | 188 | -0.01 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.224 | -15.5 | 166 | -0.01 |
| 56 | TM | Fluorene | 1.320 | 1.365 | -3.4 | 149 | -0.02 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.704 | -6.5 | 151 | -0.02 |
| 58 | TM | Diethylphthalate | 1.111 | 1.191 | -7.2 | 156 | -0.01 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.339 | -6.9 | 158 | -0.01 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.202 | -12.8 | 165 | -0.02 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 145 | -0.03 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.139 | -20.9# | 181 | -0.02 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.747 | -3.8 | 150 | -0.02 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.517 | 2.5 | 147 | -0.02 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.232 | 2.5 | 144 | -0.02 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 89 | -0.08 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.253 | 4.2 | 141 | -0.02 |
| 69 | TM | Atrazine | 0.081 | 0.079 | 2.5 | 135 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.173 | -20.1 | 187 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.120 | -2.8 | 153 | -0.03 |
| 72 | TM | Anthracene | 1.141 | 1.176 | -3.1 | 152 | -0.03 |
| 73 | TM | Carbazole | 1.056 | 1.093 | -3.5 | 147 | -0.03 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.372 | -17.2 | 159 | -0.03 |
| 75 | TCM | Fluoranthene | 1.260 | 1.374 | -9.0 | 150 | -0.04 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 139 | -0.04 |
| 77 | TM | Benzidine | 0.466 | 0.362 | 22.3# | 106 | -0.04 |
| 78 | TM | Pyrene | 1.134 | 1.201 | -5.9 | 149 | -0.04 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.877 | -4.8 | 152 | -0.04 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.533 | -17.1 | 157 | -0.04 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.400 | -14.9 | 163 | -0.04 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.180 | -5.2 | 146 | -0.04 |
| 83 | TM | Chrysene | 1.149 | 1.155 | -0.5 | 144 | -0.04 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.725 | -25.0# | 161 | -0.05 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 144 | -0.04 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 1.254 | -39.3# | 184 | -0.04 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.122 | -5.8 | 155 | -0.04 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.190 | -3.7 | 148 | -0.04 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.112 | -8.6 | 152 | -0.03 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.980 | -11.9 | 154 | -0.02 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.052 | -10.2 | 150 | -0.03 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.975 | -6.8 | 148 | -0.02 |

(#) = Out of Range SPCC's out = 0 CCC's out = 1

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 136 | -0.01 |
| 2 | TM | Pyridine | 80.000 | 83.827 | -4.8 | 142 | -0.03 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 87.668 | -9.6 | 144 | -0.02 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 87.841 | -9.8 | 148 | -0.02 |
| 5 | TM | Benzaldehyde | 80.000 | 89.759 | -12.2 | 127 | -0.01 |
| 6 | TM | Aniline | 80.000 | 73.225 | 8.5 | 127 | -0.02 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 87.859 | -9.8 | 146 | -0.01 |
| 8 | TMC | Phenol | 80.000 | 88.013 | -10.0 | 146 | -0.01 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.493 | -8.1 | 142 | -0.02 |
| 10 | TM | 2-Chlorophenol | 80.000 | 86.633 | -8.3 | 146 | -0.01 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.573 | -4.5 | 142 | -0.02 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.026 | -2.5 | 142 | -0.01 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 83.271 | -4.1 | 144 | -0.01 |
| 14 | TM | Benzyl Alcohol | 80.000 | 90.411 | -13.0 | 151 | -0.01 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 91.142 | -13.9 | 158 | -0.01 |
| 16 | TM | 2-Methylphenol | 80.000 | 87.391 | -9.2 | 149 | -0.01 |
| 17 | TM | Acetophenone | 80.000 | 85.426 | -6.8 | 147 | -0.01 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 85.730 | -7.2 | 146 | -0.01 |
| 19 | TM | Hexachloroethane | 80.000 | 87.259 | -9.1 | 144 | -0.02 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 88.060 | -10.1 | 148 | -0.01 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 87.168 | -9.0 | 149 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 138 | -0.01 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 87.842 | -9.8 | 145 | -0.01 |
| 24 | TM | Nitrobenzene | 80.000 | 93.420 | -16.8 | 154 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 86.140 | -7.7 | 149 | -0.01 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 102.743 | -28.4 | 171 | -0.01 |
| 27 | TM | Benzoic Acid | 80.000 | 99.100 | -23.9# | 178 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 87.770 | -9.7 | 148 | -0.01 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 85.065 | -6.3 | 149 | -0.01 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 88.808 | -11.0 | 148 | -0.02 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 82.986 | -3.7 | 145 | -0.02 |
| 32 | TM | Naphthalene | 80.000 | 81.892 | -2.4 | 143 | -0.01 |
| 33 | TM | 4-Chloroaniline | 80.000 | 83.467 | -4.3 | 141 | -0.01 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 84.360 | -5.4 | 145 | -0.02 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 90.325 | -12.9 | 153 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 95.478 | -19.3 | 164 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 83.684 | -4.6 | 147 | -0.01 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 83.582 | -4.5 | 146 | -0.02 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 145 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 83.678 | -4.6 | 143 | -0.01 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 88.109 | -10.1 | 155 | -0.02 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 89.259 | -11.6 | 149 | -0.01 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 82.237 | -2.8 | 147 | -0.01 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 82.168 | -2.7 | 145 | -0.01 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 82.151 | -2.7 | 146 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 96.507 | -20.6# | 174 | -0.01 |
| 47 | TM | Acenaphthylene | 80.000 | 82.437 | -3.0 | 144 | -0.01 |
| 48 | TM | Dimethyl phthalate | 80.000 | 82.547 | -3.2 | 149 | -0.01 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 102.127 | -27.7# | 174 | -0.01 |
| 50 | TMC | Acenaphthene | 80.000 | 80.375 | -0.5 | 145 | -0.01 |
| 51 | TM | 3-Nitroaniline | 80.000 | 91.451 | -14.3 | 165 | -0.01 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 91.602 | -14.5 | 180 | -0.01 |
| 53 | TM | Dibenzofuran | 80.000 | 82.179 | -2.7 | 150 | -0.01 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 109.622 | -37.0# | 188 | -0.01 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 92.370 | -15.5 | 166 | -0.01 |
| 56 | TM | Fluorene | 80.000 | 82.757 | -3.4 | 149 | -0.02 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 85.288 | -6.6 | 151 | -0.02 |
| 58 | TM | Diethylphthalate | 80.000 | 85.797 | -7.2 | 156 | -0.01 |
| 59 | TM | 4-Nitroaniline | 80.000 | 85.450 | -6.8 | 158 | -0.01 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 90.410 | -13.0 | 165 | -0.02 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 145 | -0.03 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 96.303 | -20.4# | 181 | -0.02 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 82.963 | -3.7 | 150 | -0.02 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.018 | 2.5 | 147 | -0.02 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 78.035 | 2.5 | 144 | -0.02 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 89 | -0.08 |
| 68 | TM | Hexachlorobenzene | 80.000 | 76.451 | 4.4 | 141 | -0.02 |
| 69 | TM | Atrazine | 80.000 | 78.243 | 2.2 | 135 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 95.748 | -19.7 | 187 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 82.272 | -2.8 | 153 | -0.03 |
| 72 | TM | Anthracene | 80.000 | 82.481 | -3.1 | 152 | -0.03 |
| 73 | TM | Carbazole | 80.000 | 82.762 | -3.5 | 147 | -0.03 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 93.729 | -17.2 | 159 | -0.03 |
| 75 | TCM | Fluoranthene | 80.000 | 87.284 | -9.1 | 150 | -0.04 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 139 | -0.04 |
| 77 | TM | Benzidine | 80.000 | 62.037 | 22.5# | 106 | -0.04 |
| 78 | TM | Pyrene | 80.000 | 84.745 | -5.9 | 149 | -0.04 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 83.797 | -4.7 | 152 | -0.04 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 93.629 | -17.0 | 157 | -0.04 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 91.986 | -15.0 | 163 | -0.04 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 84.151 | -5.2 | 146 | -0.04 |
| 83 | TM | Chrysene | 80.000 | 80.446 | -0.6 | 144 | -0.04 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 100.010 | -25.0# | 161 | -0.05 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 144 | -0.04 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 99.599 | -24.5 | 184 | -0.04 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 84.648 | -5.8 | 155 | -0.04 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 82.940 | -3.7 | 148 | -0.04 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 86.820 | -8.5 | 152 | -0.03 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072914\
Data File : AV258.D
Acq On : 29 Jul 2014 11:47 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jul 29 12:03:11 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 89.459 | -11.8 | 154 | -0.02 |
| 91 TM | Dibenz(a,h)anthracene | 80.000 | 88.137 | -10.2 | 150 | -0.03 |
| 92 TM | Benzo(g,h,i)perylene | 80.000 | 85.487 | -6.9 | 148 | -0.02 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 213876
**Team:** Semivoa GCMS/SGOLBERG

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 7/28/14 01:12 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408646-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216 | |
| 2 | RQ1408646-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 3 | RQ1408646-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 4 | R1405630-005 [redacted] | 1407220804 200-SB-16 18'/20' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | 8/6 II |
| 5 | RQ1408646-04 | R1405630-005 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 6 | RQ1408646-05 | R1405630-005 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 7 | R1405630-008 | 1407220944 200-SB-16 28'/30' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | |
| 8 | R1405662-003 [redacted] | 1407221139 200-SB-16 48'/50' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | 8/7 II SHV |
| 9 | R1405662-004 | 1407230754 200-SB-16 58'/60' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-brown sand/silt/gravel | 1.0000 mL/72216 | SHV. |
| 10 | R1405753-004 [redacted] | Area D (0-6) | .05 | 30.0g | 8270D/SVO /TCL | | | | 1.00mL | medium brown sandy silt with gravel | 1.0000 mL/72216 | 8/4 I. |

## Spiking Solutions

| Name: | Inventory ID | Logbook Ref: | Expires On: | Lot #: |
|---|---|---|---|---|
| 8270 LCS Mix1: 100 ug/mL | 71908 | | 10/31/2014 | Lc0273 |
| 8270 Soil Surrogate 100-200ppm | 72216 | 8270 Soil Surrogate | 01/07/2015 | |

## Preparation Materials

Eppendorf Pipette Repeater EXT #13 (41092)
Prepared Sodium Sulfate Na2SO4 (72284)
2mL Graduated Vials (72265)
Sand Reagent Grade SVOA (72239)
50:50 Dichloromethane:Acetone (72668)

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
|---|---|---|---|---|---|
| Started: | 7/28/14 13:12 | Started: | 7/28/14 19:30 | Started: | 7/28/14 21:30 |
| Finished: | 7/28/14 19:26 | Finished: | 7/28/14 20:35 | Finished: | 7/28/14 21:30 |
| By: | SGOLBERG | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: [signature] Date: 7/29

Spike Witness: JWU Date:

| Analysis: 8270 | Analyst: ZM | Run Method: 8270070ID.m |
|---|---|---|
| Date: 7/29/14 | Instr. 5973-D | Quant Method: 8270070ID, 360E06BD, Benzo0616D, Hexa0729D. |
| | | LIMS Run#: 404220 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| | Tune 50mg | DFTPP | Tuno-D | AU246 | N | #70613 |
| | Tune | ↓ | ↓ | 57 | YT | |
| 1 | CCV 80 ppm 8270070ID | | zm 7/30/14 | 58 | YC | |
| 2 | CCV 80 ppm ~~8270061BD~~ | | 360E06BD | 59 | YC | Hexa0729D.m |
| 3 | CCV 80 ppm Benzo0616D | | | 60 | YC | |
| 4 | [redacted] R6140864S-01 BLK | | 8270 7/28/14 50ml | 61 | Ym | |
| 5 | -02 LOQ low | | | 62 | Y | |
| 6 | -02 LOQ high | | | 63 | Y | |
| 7 | R 4707-006 LOQV low | | | 64 | Y | |
| 8 | -006 LOQV high | | | 65 | Y | |
| 9 | [redacted] R6 8646-02 LCS | | 7/28/14 50ml 8270BCL | 66 | YC | |
| 10 | -03 LCSD | | | 67 | YC | |
| 11 | R 5753-004 | | | 68 | NO | |
| 12 | [redacted] R 5630-003 | | 8270BEHP | 69 | Y | |
| 13 | -003MS R6 8646-04 | | | 70 | YC | |
| 14 | -003MSD | | -05 | 71 | YC | |
| 15 | -008 | | | 72 | Y | |
| 16 | [redacted] R 5662-003 | | | 73 | Y | |
| 17 | -004 | | | 74 | Y | |

All samples = 1 mL + 10 uL Combined IS/Surr.; #70461

Primary : _____ exp: Secondary : _____ exp:

Primary: _____ exp: Secondary : _____ exp:

Runlog GCEXT r1 12/5/12

July 31, 2014

Service Request No: R1405347

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 11, 2014. For your reference, these analyses have been assigned our service request number **R1405347**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



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Environmental | www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | WSTF | **Project Number:** | |
| **Sample Matrix:** | Soil | **Date Received:** | 07/11/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test.

### Sample Receipt

Samples were collected on 07/09/14 and received on 07/11/14 at a cooler temperature of 3.1° C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

### Inorganics

One soil sample was analyzed for a site specific list of inorganics. Please see attached data pages for method numbers.

The Method Blank associated with this sample for %Solids had a hit at the Method Reporting Limit (MRL).

No analytical or QC problems were encountered.

### Volatile Organics

One soil sample was analyzed for a client specified list of Volatile Organics by method 8260C from SW-846.

All the initial and continuing calibration criteria were met for all analytes except for the CCV for Acetone on the 7/15/14 which was outside the ±20% Difference limits (%D). Any hits for this compound associated with this CCV should be considered as estimated.

Site specific QC was not requested on these samples.

All Internal Standards were within limits.

The Laboratory Control Sample (LCS) recoveries were acceptable.

The Method Blank associated with this sample was free of contamination except for Dichloromethane. No data was affected.

No analytical or QC problems were encountered.

### SemiVolatile Organics

One soil sample was analyzed for a client specified list of SemiVolatile Organics by method 8270D from SW-846.

All the initial and continuing calibration criteria were met for all analytes.

Site specific QC was not requested on these samples.

All Internal Standards were within limits.

The Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable. All RPD's were within limits.

The Method Blank associated with this sample was free of contamination.

No analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405347

| Lab ID | Client ID |
|---|---|
| R1405347-001 | 1407091135 200-SB-18 88'/90' |
| R1405347-002 | 1407091138 200-SB-18 88'/90' |
| R1405347-003 | 1407091141 200-SB-18 88'/90' |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 9/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/11/14 |
| | | **Date Analyzed:** | 7/15/14 15:23 |
| **Sample Name:** | 1407091135 200-SB-18 88'/90' | **Units:** | µg/Kg |
| **Lab Code:** | R1405347-001 | **Basis:** | Basis Adjustment Factor Missing |

**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401785 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071514\K9808.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | **15** | | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | **1.9** | J | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 97 | 51-136 | 7/15/14 15:23 | |
| Dibromofluoromethane | 95 | 63-138 | 7/15/14 15:23 | |
| Toluene-d8 | 102 | 66-138 | 7/15/14 15:23 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407091135 200-SB-18 88'/90' | **Date Collected:** | 7/9/14 |
| **Lab Code:** | R1405347-001 | **Date Received:** | 7/11/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | BWOJTASIEWICZ |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 9/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/11/14 |
| **Sample Name:** | 1407091138 200-SB-18 88'/90' | | |
| **Lab Code:** | R1405347-002 | **Basis:** | As Received |

**General Chemistry Parameters**

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **91.7** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 9/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/11/14 |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 14:57 |
| **Sample Name:** | 1407091138 200-SB-18 88'/90' | **Units:** | µg/Kg |
| **Lab Code:** | R1405347-002 | **Basis:** | Dry |
| | | **Percent Solids:** | 91.7 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV212.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 360 | 47 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 360 | 56 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 64 | 47-126 | 7/23/14 14:57 | |
| Nitrobenzene-d5 | 61 | 39-136 | 7/23/14 14:57 | |
| p-Terphenyl-d14 | 62 | 35-152 | 7/23/14 14:57 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407091138 200-SB-18 88'/90' | **Date Collected:** | 7/9/14 |
| **Lab Code:** | R1405347-002 | **Date Received:** | 7/11/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/ 9/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/11/14 |
| **Sample Name:** | 1407091141 200-SB-18 88'/90' | | |
| **Lab Code:** | R1405347-003 | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.78 | | pH Units | | 1 | NA | 7/14/14 13:20 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407091141 200-SB-18 88'/90' | **Date Collected:** | 7/9/14 |
| **Lab Code:** | R1405347-003 | **Date Received:** | 7/11/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405347-MB | **Basis:** | As Received |

## General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **1.0** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/15/14 14:45 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408164-04 | **Basis:** | Dry |

## Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 401785 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\071514\K9807.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | **0.85** | J | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 100 | 51-136 | 7/15/14 14:45 | |
| Dibromofluoromethane | 99 | 63-138 | 7/15/14 14:45 | |
| Toluene-d8 | 102 | 66-138 | 7/15/14 14:45 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 11:25 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408508-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213008 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV204.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 75 | 47-126 | 7/23/14 11:25 | |
| Nitrobenzene-d5 | 66 | 39-136 | 7/23/14 11:25 | |
| p-Terphenyl-d14 | 73 | 35-152 | 7/23/14 11:25 | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405347
**Date Analyzed:** 7/15/14

**Lab Control Sample Summary**
**Volatile Organic Compounds by GC/MS**

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 401785

| Analyte Name | Lab Control Sample RQ1408164-03 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 17.2 | 20.0 | 86 | 64 - 127 |
| 1,1,2-Trichloroethane | 19.3 | 20.0 | 97 | 76 - 123 |
| 1,1,2-Trichlorotrifluoroethane | 18.9 | 20.0 | 95 | 59 - 146 |
| 1,1-Dichloroethene (1,1-DCE) | 20.9 | 20.0 | 104 | 75 - 151 |
| 1,2-Dichloroethane | 17.8 | 20.0 | 89 | 66 - 123 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 20.6 | 20.0 | 103 | 61 - 138 |
| 2-Butanone (MEK) | 18.6 | 20.0 | 93 | 62 - 128 |
| Isopropanol | 384 | 400 | 96 | 62 - 142 |
| Acetone | 19.6 | 20.0 | 98 | 53 - 143 |
| Benzene | 19.3 | 20.0 | 97 | 74 - 123 |
| Bromodichloromethane | 18.5 | 20.0 | 93 | 77 - 127 |
| Bromoform | 19.2 | 20.0 | 96 | 65 - 133 |
| Chlorobenzene | 19.5 | 20.0 | 98 | 77 - 124 |
| Chloroform | 17.8 | 20.0 | 89 | 73 - 125 |
| Chloromethane | 19.3 | 20.0 | 96 | 56 - 154 |
| Dibromochloromethane | 19.1 | 20.0 | 95 | 77 - 124 |
| Dichlorofluoromethane (CFC 21) | 17.1 | 20.0 | 85 | 79 - 142 |
| Dichloromethane | 19.0 | 20.0 | 95 | 77 - 126 |
| Ethylbenzene | 17.7 | 20.0 | 88 | 73 - 123 |
| Methyl tert-Butyl Ether | 18.7 | 20.0 | 94 | 72 - 131 |
| Tetrachloroethene (PCE) | 19.8 | 20.0 | 99 | 65 - 133 |
| Toluene | 19.3 | 20.0 | 96 | 72 - 127 |
| Trichloroethene (TCE) | 18.0 | 20.0 | 90 | 72 - 129 |
| m,p-Xylenes | 38.6 | 40.0 | 96 | 77 - 125 |
| o-Xylene | 19.5 | 20.0 | 97 | 75 - 124 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.7 | 20.0 | 119 | 56 - 154 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405347
**Date Analyzed:** 7/23/14

**Lab Control Sample Summary**
**Semivolatile Organic Compounds by GC/MS**

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 213008

| | Lab Control Sample RQ1408508-02 | | | Duplicate Lab Control Sample RQ1408508-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2710 | 3330 | 81 | 2940 | 3330 | 88 | 50 - 142 | 8 | 30 |
| Di-n-butyl Phthalate | 2620 | 3330 | 79 | 2650 | 3330 | 80 | 36 - 164 | 1 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

# WSTF CHAIN OF CUSTODY RECORD

Date 7-10-14



Laboratory / PO # [redacted] 14EC009B

Address shipping questions to:

Attn: ✓Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Analytes / Method: VOC | SVOC | pH | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407091135 | 200-SB-18 88'/90' | 3 | X | X | | | | | | | |
| 1407091138 | " | 1 | X | | X | | | | | | |
| 1407091141 | " | 1 | X | | | X | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-10-14 /1100 Hrs. | J Sewell AZS | 7/11/14 0940 |

R1405347 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number AH-5347.

Cooler received on 7/11 by: JS COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were **Custody seals** on outside of cooler? | Y N | 5a | **Perchlorate** samples have required headspace? | Y N ~~NA~~ |
| 2 | **Custody papers** properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk,or Sulfide have sig* **bubbles**? | Y N NA |
| 3 | Did all bottles arrive in good **condition** (unbroken)? | Y N | 6 | Where did the bottles originate? | ALS/ROC CLIENT |
| 4 | Circle: **Wet Ice Dry Ice Gel packs** present? | Y N | 7 | Soil VOA received as: | Bulk Encore 5035set ~~NA~~ |

8. Temperature Readings Date: 7/11 Time: 0957 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 3.1 | | | | | | |
| Correction Factor (°C) | +0.0 | | | | | | |
| Corrected Temp (°C) | 3.1 | | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

**If out of Temperature, note packing/ice condition:** _____ Ice melted Poorly Packed Same Day Rule

**&Client Approval to Run Samples:** _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: Room by JS on 7/11 at 0957
5035 samples placed in storage location: Room by JS on 7/11 at 0957

PC Secondary Review: JMW 7/11/14

Cooler Breakdown: Date: 7/11/14 Time: 1527 by: JS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: client

Other Comments:

* See COC.

PC Secondary Review: JMW 7/25/14

*significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

**ALS Group USA, Corp. dba ALS Environmental**

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405347 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Analyzed:** | 7/15/14 14:45 |
| **Sample Matrix:** | Soil | | |

**Method Blank Summary**
**Volatile Organic Compounds by GC/MS**

| | | | |
|---|---|---|---|
| **Sample Name:** | Method Blank | **Instrument ID:** | R-MS-07 |
| **Lab Code:** | RQ1408164-04 | **File ID:** | I:\ACQUDATA\MSVOA7\DATA\071514\K9807.D\ |
| **Analytical Method:** | 8260C | | |

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408164-03 | I:\ACQUDATA\MSVOA7\DATA\071514\K9805.D\ | 7/15/14 13:28 |
| 1407091135 200-SB-18 88'/90' | R1405347-001 | I:\ACQUDATA\MSVOA7\DATA\071514\K9808.D\ | 7/15/14 15:23 |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405347
**Date Analyzed:** 7/15/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\071514\K9804.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 401785
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 42.7 | 0.7075 | 0.6042 | -14.6 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 47.1 | 0.3414 | 0.3213 | -5.9 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 46.7 | 0.4820 | 0.4501 | -6.6 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 46.1 | 0.4169 | 0.3841 | -7.9 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 44.7 | 0.4920 | 0.4401 | -10.5 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 47.9 | 0.8365 | 0.8009 | -4.3 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 42.7 | 0.7656 | 0.6536 | -14.6 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 978 | 0.08660 | 0.08472 | -2.2 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 37.6 | 0.6020 | 0.4522 | -24.9 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 46.7 | 1.440 | 1.345 | -6.6 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 46.5 | 0.4660 | 0.4329 | -7.1 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 50.0 | 0.2458 | 0.2457 | -0.1 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 48.2 | 0.9166 | 0.8834 | -3.6 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 42.5 | 1.049 | 0.8918 | -15.0 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 45.4 | 1.118 | 1.015 | -9.2 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 48.1 | 0.3859 | 0.3715 | -3.7 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 46.0 | 1.436 | 1.320 | -8.1 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 45.4 | 0.6951 | 0.6305 | -9.3 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 48.0 | 1.608 | 1.543 | -4.1 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 44.9 | 1.847 | 1.659 | -10.2 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 49.5 | 0.3262 | 0.3230 | -1.0 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 47.5 | 1.479 | 1.406 | -5.0 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 46.3 | 0.3311 | 0.3066 | -7.4 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 96.9 | 0.5809 | 0.5630 | -3.1 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 48.1 | 0.5852 | 0.5631 | -3.8 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 48.2 | 0.8761 | 0.8454 | -3.5 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 50.6 | 0.4853 | 0.4912 | 1.2 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 47.3 | 0.3338 | 0.3156 | -5.5 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 51.0 | 1.294 | 1.321 | 2.1 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405347
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405347
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405347
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405347
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 50.000 | 0.4893 | 07 | 50.000 | 0.4775 | 05 | 50.000 | 0.4819 | 04 | 50.000 | 0.4931 |
| 01 | 50.000 | 0.4940 | 03 | 50.000 | 0.4875 | 08 | 50.000 | 0.4756 | 06 | 50.000 | 0.4833 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 50.000 | 0.3368 | 08 | 50.000 | 0.3299 | 03 | 50.000 | 0.3344 | 04 | 50.000 | 0.3406 |
| 05 | 50.000 | 0.3361 | 06 | 50.000 | 0.3295 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 1.276 | 07 | 50.000 | 1.289 | 02 | 50.000 | 1.305 | 08 | 50.000 | 1.289 |
| 03 | 50.000 | 1.291 | 01 | 50.000 | 1.307 | 04 | 50.000 | 1.306 | 05 | 50.000 | 1.291 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405347
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤20 | 1.294 | | |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low **Folder #:** R1405347 **Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10121 | | R1405347-001 | 40.33 | 35.43 | 6/12/2014 | J. Cushman | 4.90 | **1.02** | 7/7/2014 | Field | 7/15/2014 | . Wojtasiewi | |
| 040714-3:10139 | | R1405347-001 | 40.33 | 34.84 | 6/12/2014 | J. Cushman | 5.49 | **0.91** | 7/7/2014 | Field | 7/15/2014 | . Wojtasiewi | |

00027

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium **Folder #:** R1405347 **Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10397 | | R1405347-001 | 41.34 | 36.26 | 4/28/2014 | J. Cushman | 5.08 | | 7/7/2014 | Field | 7/15/2014 | . Wojtasiewi | |

00028

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

| | | | | | |
|---|---|---|---|---|---|
| Analysis: | 8260 Soil | Analyst: | B. Wojtasiewicz | Tune Method: | 5052914 |
| Date: | 7-15-14 | Data Path: | j:\acqudata\msvoa 7\071514 | Run Method: | ↓ |
| Instr. | MS#7 | | | LIMS Run# : | 401785 |

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Failed Startup | | | | | - | | - | K9797 | — | |
| | ↓ | | | | | - | | - | 9802 | — | |
| 2 | Tune | | | | | - | 1 | - | 9803 | Y | |
| 3 | CCV | | | | | - | 1 | - | 04 | Y | |
| 4 | LCS | | | | | - | 1 | - | 05 | Y | |
| 5 | MBLANK | | | | | - | 1 | - | 06 | — | |
| 6 | MBLANK | | | | | - | 2 | - | 07 | Y | |
| 7 | R1405347-001 | 1.02 | 10121 | [redacted] | 11813 | 3 | 1 | NA | 08 | Y | |
| 8 | R1405363-001 | 0.60 | 50391 | [redacted] | | | 1 | | 09 | Y | |
| 9 | R1405365-001 | 0.76 | | [redacted] | | | 1 | | 10 | (Y) | E-Acetone |
| 10 | R1405300-002 | 1 | | [redacted] | 6369 | 2 | 1 | | 11 | Y | |
| 11 | ↓ -001 | 2 | 2.5g | ↓ | ↓ | ↓ | 1 | | 12 | (N) | opt for c/o |
| 12 | R1405411-001 | 1.0 | | [redacted] | 12019 | 4 | 1 | | 13 | Y | |
| 13 | 002 | 1.0 | | | | | 1 | | 14 | Y | |
| 14 | 003 | 1.0 | | | | | 1 | | 15 | (Y) | surr ↓, report + opt as RA |
| 15 | 004 | 1.0 | | | | | 1 | | 16 | (Y) | surr ↓, report + opt as RA |
| 16 | 006 | 1.0 | | | | | 1 | | 17 | Y | |
| 17 | 007 | 1.0 | | | | | 1 | | 18 | Y | |
| 18 | 009 | 1.0 | | | | | 1 | | 19 | Y | |
| 19 | R1405300-002 | 1.0 | MSD | [redacted] | 6368 | 2 | 2 | | 20 | Y | |
| 20 | ↓ -002 | 1.0 | MS | ↓ | ↓ | ↓ | 3 | | 21 | Y | |
| 21 | Blank | | | | | - | 1 | - | 22 | — | |
| 22 | Blank. | | | | | - | 2 | - | 23. | - | |

BW 07/17/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

| | | | | | |
|---|---|---|---|---|---|
| Primary HSL | 72499 5ul/50ml | Secondary FR+ | 72454 5ul/50ml LCS | Combined IS/Surr | 72076 |
| Primary TG | 72049 | Secondary TG | 72050 ↓ | Surrogate | |
| Primary HBO | 72046 ↓ CCV | Secondary HSL | 72064 ↓ 12.5ul MS/MSD +5 ul | Internal Std | |
| Primary FR+ | 72371 | Secondary HBO | 72455 | | |
| Primary | | Secondary | | | |



00029

Response Factor Report 5973D

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M
Title : 8270 BNA ANALYSIS
Last Update : Wed Jul 02 10:45:14 2014
Response Via : Initial Calibration

Calibration Files
5 =AV019.D 10 =AV020.D 50 =AV021.D 80 =AV022.D 100 =AV023.D 120 =AV024.D 160 =AV025.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | | |
| 2) | TM | Pyridine | | 1.313 | 1.336 | 1.325 | 1.339 | 1.325 | 1.328 | | 0.79 | |
| 3) | TM | N-Nitrosodimet... | 0.562 | 0.626 | 0.701 | 0.702 | 0.688 | 0.739 | 0.714 | 0.676 | 9.00 | |
| 4) | S | SURR1,2-FLUORO... | 1.111 | 1.124 | 1.180 | 1.192 | 1.190 | 1.211 | 1.227 | 1.177 | 3.67 | |
| 5) | TM | Benzaldehyde | | | 0.365 | 0.335 | 0.290 | 0.249 | 0.152 | 0.278 | 29.94 | AVG |
| 6) | TM | Aniline | 2.025 | 2.073 | 2.049 | 2.024 | 2.043 | 2.133 | 2.040 | 2.055 | 1.85 | |
| 7) | S | SURR2,PHENOL-D6 | 1.357 | 1.418 | 1.590 | 1.570 | 1.542 | 1.636 | 1.595 | 1.530 | 6.71 | |
| 8) | TMC | Phenol | 1.486 | 1.478 | 1.592 | 1.619 | 1.597 | 1.646 | 1.629 | 1.578 | 4.33 | |
| 9) | TM | bis(2-Clethyl)... | 1.160 | 1.156 | 1.182 | 1.188 | 1.071 | 1.125 | 1.138 | 1.146 | 3.45 | |
| 10) | TM | 2-Chlorophenol | 1.284 | 1.300 | 1.374 | 1.376 | 1.348 | 1.418 | 1.400 | 1.357 | 3.66 | |
| 11) | TM | 1,3-Diclbenzene | 1.604 | 1.610 | 1.579 | 1.583 | 1.559 | 1.563 | 1.567 | 1.581 | 1.26 | |
| 12) | TMC | 1,4-Dichlorobe... | 1.732 | 1.623 | 1.646 | 1.620 | 1.603 | 1.641 | 1.632 | 1.642 | 2.55 | |
| 13) | TM | 1,2-Diclbenzene | 1.641 | 1.535 | 1.529 | 1.519 | 1.507 | 1.543 | 1.525 | 1.543 | 2.92 | |
| 14) | TM | Benzyl Alcohol | 0.916 | 0.856 | 0.999 | 1.008 | 1.021 | 1.063 | 1.026 | 0.984 | 7.33 | |
| 15) | TM | 2,2'-oxybis(1-... | 1.663 | 1.681 | 1.648 | 1.622 | 1.626 | 1.665 | 1.647 | 1.650 | 1.29 | |
| 16) | TM | 2-Methylphenol | 1.099 | 1.184 | 1.257 | 1.230 | 1.246 | 1.298 | 1.272 | 1.226 | 5.44 | |
| 17) | TM | Acetophenone | 1.847 | 1.781 | 1.777 | 1.780 | 1.770 | 1.836 | 1.795 | 1.798 | 1.72 | |
| 18) | TMP | N-Nitroso-Di-n... | 0.896 | 0.918 | 0.937 | 0.931 | 0.903 | 0.958 | 0.964 | 0.929 | 2.77 | |
| 19) | TM | Hexachloroethane | 0.526 | 0.601 | 0.604 | 0.611 | 0.601 | 0.603 | 0.607 | 0.593 | 5.03 | |
| 20) | TM | 3+4-Methylphenol | 1.199 | 1.193 | 1.304 | 1.307 | 1.286 | 1.375 | 1.343 | 1.287 | 5.31 | |
| 21) | T | 1-Methyl-2-pyr... | | 0.870 | 0.921 | 0.891 | 0.885 | 0.939 | 0.867 | 0.896 | 3.21 | |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.240 | 0.320 | 0.328 | 0.334 | 0.346 | 0.363 | 0.317 | 0.321 | 12.17 | |
| 24) | TM | Nitrobenzene | 0.252 | 0.280 | 0.291 | 0.316 | 0.316 | 0.331 | 0.331 | 0.302 | 9.75 | |
| 25) | TM | Isophorone | 0.580 | 0.597 | 0.592 | 0.606 | 0.614 | 0.640 | 0.623 | 0.607 | 3.31 | |
| 26) | TCM | 2-Nitrophenol | 0.120 | 0.126 | 0.141 | 0.156 | 0.161 | 0.174 | 0.178 | 0.151 | 14.96 | |
| 27) | TM | Benzoic Acid | | 0.144 | 0.225 | 0.269 | 0.284 | 0.314 | 0.317 | 0.259 | 25.32 | QA |
| 28) | TM | 2,4-Dimethylph... | 0.276 | 0.331 | 0.312 | 0.327 | 0.326 | 0.339 | 0.336 | 0.321 | 6.77 | |
| 29) | TM | bis(-2-Chloroe... | 0.373 | 0.369 | 0.356 | 0.362 | 0.370 | 0.373 | 0.368 | 0.367 | 1.65 | |
| 30) | TCM | 2,4-Dichloroph... | 0.261 | 0.261 | 0.291 | 0.306 | 0.306 | 0.323 | 0.322 | 0.296 | 8.82 | |
| 31) | TM | 1,2,4-Trichlor... | 0.374 | 0.356 | 0.349 | 0.354 | 0.359 | 0.364 | 0.364 | 0.360 | 2.35 | |
| 32) | TM | Naphthalene | 1.046 | 1.072 | 1.011 | 1.038 | 1.047 | 1.067 | 1.062 | 1.049 | 1.98 | |
| 33) | TM | 4-Chloroaniline | 0.382 | 0.403 | 0.416 | 0.428 | 0.431 | 0.445 | 0.430 | 0.419 | 5.01 | |
| 34) | TCM | Hexachlorobuta... | 0.206 | 0.205 | 0.205 | 0.207 | 0.200 | 0.208 | 0.212 | 0.206 | 1.72 | |
| 35) | TMC | 4-Chloro-3-met... | 0.223 | 0.245 | 0.258 | 0.264 | 0.271 | 0.284 | 0.279 | 0.260 | 8.09 | |
| 36) | TM | Caprolactam | | 0.087 | 0.086 | 0.087 | 0.089 | 0.096 | 0.076 | 0.087 | 7.06 | |
| 37) | TM | 2-Methylnaphth... | 0.715 | 0.727 | 0.707 | 0.711 | 0.717 | 0.751 | 0.760 | 0.727 | 2.85 | |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.641 | 0.665 | 0.660 | 0.659 | 0.668 | 0.693 | 0.689 | 0.668 | 2.68 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.314 | 0.321 | 0.368 | 0.408 | 0.415 | 0.412 | 0.452 | 0.384 | 13.47 |
| 41) | TCM | 2,4,6-Trichlor... | 0.287 | 0.338 | 0.362 | 0.379 | 0.395 | 0.403 | 0.414 | 0.368 | 11.95 |
| 42) | TM | 2,4,5-Trichlor... | 0.337 | 0.361 | 0.382 | 0.421 | 0.394 | 0.406 | 0.412 | 0.388 | 7.71 |
| 43) | S | SURR5,2-FLUORO... | 1.233 | 1.279 | 1.280 | 1.304 | 1.310 | 1.287 | 1.359 | 1.293 | 2.96 |
| 44) | TM | 1,1'-Biphenyl | 1.382 | 1.411 | 1.414 | 1.470 | 1.437 | 1.433 | 1.507 | 1.436 | 2.87 |
| 45) | TM | 2-Chloronaphth... | 1.107 | 1.079 | 1.091 | 1.137 | 1.130 | 1.113 | 1.168 | 1.118 | 2.67 |
| 46) | TM | 2-Nitroaniline | | | 0.238 | 0.260 | 0.258 | 0.266 | 0.272 | 0.259 | 5.07 |
| 47) | TM | Acenaphthylene | 1.608 | 1.678 | 1.778 | 1.838 | 1.822 | 1.824 | 1.894 | 1.778 | 5.63 |
| 48) | TM | Dimethyl phtha... | 1.182 | 1.218 | 1.199 | 1.174 | 1.149 | 1.145 | 1.144 | 1.173 | 2.46 |
| 49) | TM | 2,6-Dinitrotol... | 0.171 | 0.173 | 0.211 | 0.226 | 0.234 | 0.234 | 0.242 | 0.213 | 13.99 |
| 50) | TMC | Acenaphthene | 1.184 | 1.161 | 1.153 | 1.179 | 1.178 | 1.181 | 1.213 | 1.178 | 1.62 |
| 51) | TM | 3-Nitroaniline | | | 0.239 | 0.272 | 0.270 | 0.284 | 0.291 | 0.271 | 7.29 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.087 | 0.116 | 0.124 | 0.136 | 0.155 | 0.124 | 20.33 |
| 53) | TM | Dibenzofuran | 1.703 | 1.671 | 1.641 | 1.665 | 1.674 | 1.681 | 1.691 | 1.675 | 1.18 |
| 54) | TM | 2,4-Dinitrotol... | 0.189 | 0.213 | 0.252 | 0.286 | 0.308 | 0.312 | 0.334 | 0.271 | 19.99 |
| 55) | TMP | 4-Nitrophenol | | | 0.166 | 0.195 | 0.197 | 0.200 | 0.212 | 0.194 | 8.73 |
| 56) | TM | Fluorene | 1.354 | 1.320 | 1.307 | 1.327 | 1.310 | 1.322 | 1.300 | 1.320 | 1.35 |
| 57) | TM | 4-Chlorophenyl... | 0.668 | 0.648 | 0.654 | 0.673 | 0.661 | 0.664 | 0.657 | 0.661 | 1.29 |
| 58) | TM | Diethylphthalate | 1.149 | 1.080 | 1.035 | 1.102 | 1.101 | 1.132 | 1.177 | 1.111 | 4.23 |
| 59) | TM | 4-Nitroaniline | | | 0.268 | 0.310 | 0.322 | 0.339 | 0.345 | 0.317 | 9.59 |
| 60) | S | SURR3,2,4,6-TR... | 0.163 | 0.144 | 0.163 | 0.177 | 0.192 | 0.204 | 0.208 | 0.179 | 13.27 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.096 | 0.111 | 0.118 | 0.119 | 0.131 | 0.115 | 11.28 |
| 64) | TM | 1,2 Diphenylhy... | 0.720 | 0.735 | 0.792 | 0.723 | 0.707 | 0.689 | 0.677 | 0.720 | 5.15 |
| 65) | TCM | N-Nitrosodiphe... | 0.543 | 0.540 | 0.534 | 0.511 | 0.518 | 0.524 | 0.543 | 0.530 | 2.47 |
| 66) | TM | 4-Bromophenyl-... | 0.241 | 0.249 | 0.249 | 0.234 | 0.232 | 0.227 | 0.236 | 0.238 | 3.51 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.255 | 0.268 | 0.278 | 0.260 | 0.260 | 0.260 | 0.269 | 0.264 | 2.97 |
| 69) | TM | Atrazine | 0.069 | 0.058 | 0.084 | 0.085 | 0.089 | 0.089 | 0.089 | 0.081 | 15.01 |
| 70) | TCM | Pentachlorophenol | | | 0.121 | 0.134 | 0.149 | 0.153 | 0.164 | 0.144 | 11.74 |
| 71) | TM | Phenanthrene | 1.078 | 1.088 | 1.055 | 1.064 | 1.090 | 1.107 | 1.142 | 1.089 | 2.66 |
| 72) | TM | Anthracene | 1.061 | 1.109 | 1.121 | 1.124 | 1.176 | 1.178 | 1.215 | 1.141 | 4.54 |
| 73) | TM | Carbazole | 0.976 | 0.943 | 1.081 | 1.080 | 1.092 | 1.112 | 1.111 | 1.056 | 6.45 |
| 74) | TM | Di-n-butylphth... | 0.898 | 0.940 | 1.214 | 1.252 | 1.288 | 1.274 | 1.331 | 1.171 | 15.04 |
| 75) | TCM | Fluoranthene | 1.060 | 1.047 | 1.312 | 1.331 | 1.341 | 1.354 | 1.374 | 1.260 | 11.30 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.480 | 0.472 | 0.476 | 0.474 | 0.428 | 0.466 | 4.64 |
| 78) | TM | Pyrene | 1.028 | 1.059 | 1.139 | 1.117 | 1.164 | 1.228 | 1.200 | 1.134 | 6.38 |
| 79) | S | SURR6,TERPHENY... | 0.825 | 0.832 | 0.797 | 0.802 | 0.846 | 0.882 | 0.876 | 0.837 | 3.98 |
| 80) | TM | Butyl benzyl p... | 0.361 | 0.402 | 0.454 | 0.471 | 0.498 | 0.494 | 0.508 | 0.455 | 12.06 |
| 81) | TM | 3,3'-Dichlorob... | 0.311 | 0.311 | 0.353 | 0.341 | 0.367 | 0.374 | 0.380 | 0.348 | 8.17 |
| 82) | TM | Benzo(a)anthra... | 1.090 | 1.073 | 1.113 | 1.124 | 1.148 | 1.166 | 1.139 | 1.122 | 2.90 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.185 | 1.167 | 1.121 | 1.116 | 1.142 | 1.159 | 1.151 | 1.149 | 2.15 |
| 84) | TM | bis(2-Ethylhex... | 0.465 | 0.514 | 0.575 | 0.626 | 0.630 | 0.602 | 0.644 | 0.580 | 11.55 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.629 | 0.653 | 0.845 | 0.981 | 1.044 | 1.021 | 1.129 | 0.900 | 21.86 |
| 87) | TM | Benzo(b)Fluora... | 1.015 | 0.994 | 1.026 | 1.047 | 1.081 | 1.103 | 1.155 | 1.060 | 5.32 |
| 88) | TM | Benzo(k)fluora... | 1.149 | 1.006 | 1.143 | 1.156 | 1.177 | 1.190 | 1.212 | 1.148 | 5.82 |
| 89) | TCM | Benzo(a)pyrene | 0.865 | 0.887 | 1.037 | 1.056 | 1.082 | 1.099 | 1.145 | 1.024 | 10.47 |
| 90) | TM | Indeno(1,2,3-c... | 0.723 | 0.685 | 0.940 | 0.921 | 0.967 | 0.930 | 0.970 | 0.876 | 13.66 |
| 91) | TM | Dibenz(a,h)ant... | 0.885 | 0.730 | 0.979 | 1.010 | 1.023 | 1.012 | 1.047 | 0.955 | 11.74 |
| 92) | TM | Benzo(g,h,i)pe... | 0.855 | 0.757 | 0.955 | 0.948 | 0.954 | 0.956 | 0.963 | 0.913 | 8.57 |

(#) = Out of Range

00027

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.336 | -0.6 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.702 | -3.8 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.192 | -1.3 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.335 | -20.5# | 100 | 0.00 |
| 6 | TM | Aniline | 2.055 | 2.024 | 1.5 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.570 | -2.6 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.619 | -2.6 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.188 | -3.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.376 | -1.4 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.583 | -0.1 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.620 | 1.3 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.519 | 1.6 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.008 | -2.4 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.622 | 1.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.230 | -0.3 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.780 | 1.0 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.931 | -0.2 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.611 | -3.0 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.307 | -1.6 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.891 | 0.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.334 | -4.0 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.316 | -4.6 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.607 | 0.606 | 0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.269 | -3.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.327 | -1.9 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.362 | 1.4 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.354 | 1.7 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.038 | 1.0 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.207 | -0.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.264 | -1.5 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.087 | 0.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.711 | 2.2 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.659 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.408 | -6.2 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.379 | -3.0 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.421 | -8.5 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.304 | -0.9 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.470 | -2.4 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.137 | -1.7 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.260 | -0.4 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.838 | -3.4 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.174 | -0.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.226 | -6.1 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.178 | 1.179 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.272 | -0.4 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.116 | 6.5 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.665 | 0.6 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.286 | -5.5 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.195 | -0.5 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.327 | -0.5 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.673 | -1.8 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.111 | 1.102 | 0.8 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.310 | 2.2 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.177 | 1.1 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.111 | 3.5 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.723 | -0.4 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.511 | 3.6 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 0# | -10.86# |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.260 | 1.5 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.081 | 0.085 | -4.9 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.134 | 6.9 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.089 | 1.064 | 2.3 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.141 | 1.124 | 1.5 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.056 | 1.080 | -2.3 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.252 | -6.9 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.260 | 1.331 | -5.6 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.466 | 0.472 | -1.3 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.134 | 1.117 | 1.5 | 100 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.802 | 4.2 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.471 | -3.5 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.341 | 2.0 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.124 | -0.2 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.149 | 1.116 | 2.9 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.626 | -7.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.981 | -9.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.047 | 1.2 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.156 | -0.7 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.056 | -3.1 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.921 | -5.1 | 100 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.010 | -5.8 | 100 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.948 | -3.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV
Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

QA: #27, 86

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

LR: #52

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.408 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.752 | -11.2 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.247 | -5.9 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 0.278 | 0.221 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 2.055 | 1.862 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.627 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.686 | -6.8 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.245 | -8.6 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.427 | -5.2 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.644 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.684 | -2.6 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.575 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.045 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.779 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.284 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.868 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.969 | -4.3 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.625 | -5.4 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.343 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.902 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.325 | -1.2 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.336 | -11.3 | 127 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.627 | -3.3 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.240 | 7.3 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.339 | -5.6 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.374 | -1.9 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.360 | 0.0 | 121 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.063 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.422 | -0.7 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.211 | -2.4 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.268 | -3.1 | 121 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.088 | -1.1 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.734 | -1.0 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.677 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.405 | -5.5 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.395 | -7.3 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.415 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.379 | -6.7 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.542 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.196 | -7.0 | 121 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.290 | -12.0 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.862 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.223 | -4.3 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.256 | -20.2# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 1.178 | 1.204 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.290 | -7.0 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.117 | 5.6 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.722 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.333 | -22.9# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.199 | -2.6 | 118 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.394 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.691 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 1.111 | 1.109 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.340 | -7.3 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.180 | -0.6 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.112 | 2.6 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.762 | -5.8 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.521 | 1.7 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.236 | 0.8 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 34# | -0.05 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.263 | 0.4 | 116 | -0.01 |
| 69 | TM | Atrazine | 0.081 | 0.080 | 1.2 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.151 | -4.9 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.106 | -1.6 | 119 | -0.02 |
| 72 | TM | Anthracene | 1.141 | 1.174 | -2.9 | 120 | -0.02 |
| 73 | TM | Carbazole | 1.056 | 1.125 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.272 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 1.260 | 1.370 | -8.7 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 0.466 | 0.000# | 100.0# | 0# | -8.49# |
| 78 | TM | Pyrene | 1.134 | 1.179 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.821 | 1.9 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.466 | -2.4 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.362 | -4.0 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.149 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 1.149 | 1.146 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.612 | -5.5 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.968 | -7.6 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.112 | -4.9 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.186 | -3.3 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.096 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.943 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.030 | -7.9 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.974 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 84.824 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 89.052 | -11.3 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 84.775 | -6.0 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 80.000 | 63.567 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 80.000 | 72.481 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 85.077 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 85.487 | -6.9 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.948 | -8.7 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 80.000 | 84.098 | -5.1 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.219 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.010 | -2.5 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 81.688 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 84.996 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 86.253 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 83.784 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 83.088 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 83.387 | -4.2 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 84.254 | -5.3 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 83.495 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 80.541 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 80.916 | -1.1 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 88.830 | -11.0 | 127 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 82.545 | -3.2 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 82.780 | -3.5 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 74.094 | 7.4 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 84.597 | -5.7 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 81.468 | -1.8 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 82.696 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 79.895 | 0.1 | 121 | -0.01 |
| 32 | TM | Naphthalene | 80.000 | 81.075 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 80.432 | -0.5 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 81.777 | -2.2 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 82.201 | -2.8 | 121 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 81.529 | -1.9 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 80.735 | -0.9 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 81.067 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 84.219 | -5.3 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 85.772 | -7.2 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 85.598 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 85.309 | -6.6 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 85.881 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 85.605 | -7.0 | 121 | 0.00 |

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 89.493 | -11.9 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 83.794 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 83.372 | -4.2 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 96.290 | -20.4# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 80.000 | 81.754 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 85.411 | -6.8 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 79.250 | 0.9 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 82.219 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 98.456 | -23.1# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 81.977 | -2.5 | 118 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 84.490 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 83.618 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 80.000 | 79.879 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 85.915 | -7.4 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 80.584 | -0.7 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 77.596 | 3.0 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 84.596 | -5.7 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.584 | 1.8 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 79.450 | 0.7 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 34 | -0.05 |
| 68 | TM | Hexachlorobenzene | 80.000 | 79.571 | 0.5 | 116 | -0.01 |
| 69 | TM | Atrazine | 80.000 | 79.759 | 0.3 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 83.825 | -4.8 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 81.231 | -1.5 | 119 | -0.02 |
| 72 | TM | Anthracene | 80.000 | 82.380 | -3.0 | 120 | -0.02 |
| 73 | TM | Carbazole | 80.000 | 85.215 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 86.916 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 80.000 | 87.005 | -8.8 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 80.000 | 0.000 | ~~100.0#~~ | ~~0~~ | ~~0.49#~~ |
| 78 | TM | Pyrene | 80.000 | 83.180 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 78.437 | 2.0 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 81.862 | -2.3 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 83.271 | -4.1 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 81.905 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 80.000 | 79.800 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 84.519 | -5.6 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 80.152 | -0.2 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 83.879 | -4.8 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 82.713 | -3.4 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 85.570 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 86.083 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 80.000 | 86.279 | -7.8 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 80.000 | 85.375 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# *Preparation Information Benchsheet*

**Prep Run#:** 213008
**Team:** Semivoa GCMS/SGOLBERG

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 7/22/14 2 :00 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408508-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216 | |
| 2 | RQ1408508-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 3 | RQ1408508-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 4 | R1405137-008 [redacted] | 1407011413 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO /BEHP | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/21 ☑ |
| 5 | R1405137-009 | 1407011606 200-SB-11 8-10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light brown silt/gravel | 1.0000 mL/72216 | |
| 6 | R1405347-002 | 1407091138 200-SB-18 88'/90' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/25 ☑ S+V |
| 7 | R1405421-004 | 1407111416 200-SB-15 8'/10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 7/29 ☑. |
| 8 | RQ1408508-04 | R1405421-004 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 9 | RQ1408508-05 | R1405421-004 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 10 | R1405[illegible]-002 | 1407161203 200-SB-15 98/100' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light red-brown silt/gravel | 1.0000 mL/72216 | 8/1 ☑ |

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 71908 | Logbook Ref: | | Expires On: | 10/31/2014 | Lot #: | Lc02739 |
| Name: | 8270 Soil Surrogate 100-200ppm | Inventory ID | 72216 | Logbook Ref: | 8270 Soil Surrogate | Expires On: | 01/07/2015 | | |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #15 (67588) | 50:50 Dichloromethane:Acetone | (72668) | Prepared Sodium Sulfate Na2SO4 | (72600) |
| Sand Reagent Grade | SVOA (72239) | | | | |

## Preparation Steps

| | | | | | |
|---|---|---|---|---|---|
| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
| Started: | 7/22/14 14:00 | Started: | 7/22/14 18:00 | Started: | 7/23/14 10:56 |
| Finished: | 7/22/14 17:00 | Finished: | 7/22/14 18:30 | Finished: | 7/23/14 10:56 |
| By: | ~~MPEDRO~~ SGolberg | By: | ~~MPEDRO~~ S.Golberg | By: | ~~MPEDRO~~ SGolberg |
| Comments | | Comments | | Comments | |

Comments:

Reviewed By: [signature] Date: 7/23/14 Spike Witness: MPEDRO Date:

Analysis: 8270/625 Analyst: LM Run Method: 8270010D.m
Date: 7/23/14 Instr. 5973-D Quant Method: 8270010D.m Beg 0616D.m
LIMS Run#: 403293

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| 1 | Tune 50ng | DFTPP | Tune-D.m | AV201 | NT | 10:00AM 0613 |
| 2 | CCV 80 ppm | 8270010D.m | | 02 | YC | |
| 3 | CCV 80 PPB | Beg 0616D.m | | AV203 | YC | |
| 4 | [redacted] R6146508-01 B/N | 7/22/14 Soxh 8270BEHP | | 04 | Ym | |
| 5 | -02 N | | | 05 | YQ | |
| 6 | -03 N sp | | | 06 | YQ | |
| 7 | [redacted] R6 8515-01 B/N | 7/22 8270TCL W | | 07 | Ym | |
| 8 | -02 N | | | 08 | YQ | |
| 9 | -03 N sp | | | 09 | YQ | |
| 10 | [redacted] R 5137-008 | 8270BEHP Soxh | | 10 | Y | |
| 11 | -009 | | | 11 | Y | |
| 12 | [redacted] R 5347-002 | | | 12 | Y | |
| 13 | [redacted] R 5421-004 | | | 13 | Y | |
| 14 | -004mL | R6 8505-04 | | 14 | YQ | |
| 15 | -004mSD | -05 | | 15 | Y | |
| 16 | [redacted] R 5541-002 | | | 16 | Y | |
| 17 | [redacted] R 5562-001 | 8270TCL W | | 17 | Y | |
| 18 | -002 | | | 18 | Y | |
| 19 | [redacted] 5586-003 | 8270BEHP | | 19 | Y | |
| 20 | [redacted] R 5590-002 | 625 PPL | | 20 | Y | 6:27pm |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary: exp: Secondary: exp:
Primary: exp: Secondary: exp:

Runlog GCEXT r1 12/5/12

August 07, 2014

Service Request No: R1405586

Ms. Carlyn Tufts
NASA/WSTF/Navarro
P.O. Box 20
Las Cruces, NM 88004

**Laboratory Results for: White Sands Test Facility/14EC009B**

Dear Ms. Tufts:

Enclosed are the results of the sample(s) submitted to our laboratory on July 22, 2014. For your reference, these analyses have been assigned our service request number **R1405586**.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAP standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and ALS Environmental is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s) for analysis of these samples, and represented by Laboratory Control Sample control limits. Any events, such as QC failures, which may add to the uncertainty are explained in the report narrative.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

**ALS Group USA Corp. dba ALS Environmental**

Janice Jaeger
Client Services Manager



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## CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility | **Project Number:** | |
| **Sample Matrix:** | Soil/Water | **Date Received:** | 07/22/14 |

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II deliverables. When appropriate to the method, method blank and LCS results have been reported with each analytical test. A review of the EDD to the signed report has been performed and the EDD is correct and complete.

**Sample Receipt**

Samples were collected on 07/20/14 and received on 07/22/14 at a cooler temperature of 4.2°C in good condition except as noted on the cooler receipt and preservation check form. The samples were stored in a refrigerator at 1 - 6 °C upon receipt at the laboratory.

**Inorganics**

Soil samples were analyzed for pH by method 9045D from SW-846.

Site specific QC was not requested on these samples.

No other analytical or QC issues were encountered.

**Volatile Organics**

Soil and water samples were analyzed for a site list of Volatile Organics by Method 5030/5035/8260C from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for BFB were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination except for a low level detection of Dichloromethane on the 07/29/14 blank. No data was affected.

No other analytical or QC problems were encountered.

**Semivolatile Organics**

Soil and water samples were analyzed for a site list of Semivolatile Organics by Method 8270D from SW-846. Values detected between the MDL and MRL have been flagged with a "J" as estimated.

All Tuning criteria for DFTPP were within QC limits.

All the initial calibration criteria were met for all analytes. All Continuing Calibration Verification (CCV) standards were within 20% Difference (D) except as noted on the attached CCV summaries. All detected concentrations for these compounds associated with these CCV's should be considered as estimated.

All Internal Standard Areas and surrogate standard recoveries were within QC limits.

All Surrogate Standard Recoveries were within acceptance limits.

All Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries and RPD's were acceptable.

Site specific QC was not requested on these samples.

The Method Blanks associated with these samples were free of contamination.

No other analytical or QC problems were encountered.

# CASE NARRATIVE

This report contains analytical results for the following samples:
Service Request Number: R1405586

| Lab ID | Client ID |
|---|---|
| R1405586-001 | 1407200630 200-SB-19 |
| R1405586-002 | 1407200755 200-SB-19 |
| R1405586-003 | 1407200759 200-SB-19 |
| R1405586-004 | 1407200845 200-SB-19 8'/10' |
| R1405586-005 | 1407200846 200-SB-19 8'/10' |
| R1405586-006 | 1407200853 200-SB-19 8'/10' |
| R1405586-007 | 1407200854 200-SB-19 8'/10' |
| R1405586-008 | 1407200859 200-SB-19 8'/10' |
| R1405586-009 | 1407200900 200-SB-19 8'/10' |

ALS Environmental

# REPORT QUALIFIERS AND DEFINITIONS

U Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.

J Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Arclors).

B Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.

E Inorganics- Concentration is estimated due to the serial dilution was outside control limits.

E Organics- Concentration has exceeded the calibration range for that specific analysis.

D Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.

* Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.

H Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.

\# Spike was diluted out.

\+ Correlation coefficient for MSA is <0.995.

N Inorganics- Matrix spike recovery was outside laboratory limits.

N Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.

S Concentration has been determined using Method of Standard Additions (MSA).

W Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.

P Concentration >40% (25% for CLP) difference between the two GC columns.

C Confirmed by GC/MS

Q DoD reports: indicates a pesticide/Aroclor is not confirmed (≥100% Difference between two GC columns).

X See Case Narrative for discussion.

MRL Method Reporting Limit. Also known as:
LOQ Limit of Quantitation (LOQ)
The lowest concentration at which the method analyte may be reliably quantified under the method conditions.

MDL Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).

LOD Limit of Detection. A value at or above the MDL which has been verified to be detectable.

ND Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.

ACCREDITED IN ACCORDANCE WITH nelac

## Rochester Lab ID # for State Certifications[1]

| | | |
|---|---|---|
| NELAP Accredited | Maine ID #NY0032 | New Hampshire ID # 294100 A/B |
| Connecticut ID # PH0556 | Nebraska Accredited | |
| Delaware Accredited | Nevada ID # NY-00032 | North Carolina #676 |
| DoD ELAP #65817 | New Jersey ID # NY004 | Pennsylvania ID# 68-786 |
| Florida ID # E87674 | New York ID # 10145 | Rhode Island ID # 158 |
| Illinois ID #200047 | | Virginia #460167 |

[1] Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the laboratory case narrative provided. For a specific list of accredited analytes, refer to http://www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads/North-America-Downloads

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/22/14 |
| | | **Date Analyzed:** | 7/29/14 16:16 |
| **Sample Name:** | 1407200630 200-SB-19 | **Units:** | µg/L |
| **Lab Code:** | R1405586-001 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403996 |
| **Data File Name:** | I:\ACQUDATA\msvoa10\data\072914\A0733.D\ | **Instrument Name:** | R-MS-10 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 105 | 85-122 | 7/29/14 16:16 | |
| Dibromofluoromethane | 98 | 89-119 | 7/29/14 16:16 | |
| Toluene-d8 | 103 | 87-121 | 7/29/14 16:16 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200630 200-SB-19 | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-001 | **Date Received:** | 7/22/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | FNAEGLER |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/22/14 |
| | | **Date Analyzed:** | 7/29/14 16:47 |
| **Sample Name:** | 1407200755 200-SB-19 | **Units:** | µg/L |
| **Lab Code:** | R1405586-002 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403996 |
| **Data File Name:** | I:\ACQUDATA\msvoa10\data\072914\A0734.D\ | **Instrument Name:** | R-MS-10 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | **2.4** | J | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | ND | U | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 106 | 85-122 | 7/29/14 16:47 | |
| Dibromofluoromethane | 99 | 89-119 | 7/29/14 16:47 | |
| Toluene-d8 | 102 | 87-121 | 7/29/14 16:47 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200755 200-SB-19 | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-002 | **Date Received:** | 7/22/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8260C | | FNAEGLER |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Water | **Date Received:** | 7/22/14 |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 18:00 |
| **Sample Name:** | 1407200759 200-SB-19 | **Units:** | µg/L |
| **Lab Code:** | R1405586-003 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 213575 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV219.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | **16** | | 9.4 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 9.4 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 97 | 39-119 | 7/23/14 18:00 | |
| Nitrobenzene-d5 | 91 | 37-117 | 7/23/14 18:00 | |
| p-Terphenyl-d14 | 104 | 40-133 | 7/23/14 18:00 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200759 200-SB-19 | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-003 | **Date Received:** | 7/22/14 |
| **Matrix:** | Water | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 8270D | DMURPHY | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| **Sample Name:** | 1407200845 200-SB-19 8'/10' | | |
| **Lab Code:** | R1405586-004 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **95.1** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| | | **Date Analyzed:** | 7/25/14 11:11 |
| **Sample Name:** | 1407200845 200-SB-19 8'/10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405586-004 | **Basis:** | Dry |
| | | **Percent Solids:** | 95.1 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9990.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.46 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 7.7 | 1.2 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 7.7 | 1.2 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 7.7 | 2.0 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 7.7 | 2.0 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 7.7 | 0.94 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 7.7 | 2.2 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 7.7 | 3.6 | |
| 67-63-0 | Isopropanol | ND | U | 150 | 43 | |
| 67-64-1 | Acetone | **4.5** | J | 7.7 | 4.4 | |
| 71-43-2 | Benzene | ND | U | 7.7 | 0.45 | |
| 75-27-4 | Bromodichloromethane | ND | U | 7.7 | 0.94 | |
| 75-25-2 | Bromoform | ND | U | 7.7 | 1.5 | |
| 108-90-7 | Chlorobenzene | ND | U | 7.7 | 0.45 | |
| 67-66-3 | Chloroform | ND | U | 7.7 | 2.0 | |
| 74-87-3 | Chloromethane | ND | U | 7.7 | 0.62 | |
| 124-48-1 | Dibromochloromethane | ND | U | 7.7 | 1.2 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 7.7 | 2.4 | |
| 75-09-2 | Dichloromethane | ND | U | 7.7 | 0.88 | |
| 100-41-4 | Ethylbenzene | ND | U | 7.7 | 0.36 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 7.7 | 1.5 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 7.7 | 1.4 | |
| 108-88-3 | Toluene | ND | U | 7.7 | 1.6 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 7.7 | 1.6 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 15 | 1.7 | |
| 95-47-6 | o-Xylene | ND | U | 7.7 | 0.74 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 7.7 | 2.1 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 7/25/14 11:11 | |
| Dibromofluoromethane | 97 | 63-138 | 7/25/14 11:11 | |
| Toluene-d8 | 103 | 66-138 | 7/25/14 11:11 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200845 200-SB-19 8'/10' | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-004 | **Date Received:** | 7/22/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| **Sample Name:** | 1407200846 200-SB-19 8'/10' | | |
| **Lab Code:** | R1405586-005 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **94.9** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| | | **Date Analyzed:** | 7/25/14 11:48 |
| **Sample Name:** | 1407200846 200-SB-19 8'/10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405586-005 | **Basis:** | Dry |
| | | **Percent Solids:** | 94.9 |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9991.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1.22 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 6.4 | 0.94 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 6.4 | 0.94 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 6.4 | 1.6 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 6.4 | 1.7 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 6.4 | 0.79 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 6.4 | 1.8 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 6.4 | 3.0 | |
| 67-63-0 | Isopropanol | ND | U | 130 | 36 | |
| 67-64-1 | Acetone | **4.4** | J | 6.4 | 3.7 | |
| 71-43-2 | Benzene | ND | U | 6.4 | 0.38 | |
| 75-27-4 | Bromodichloromethane | ND | U | 6.4 | 0.79 | |
| 75-25-2 | Bromoform | ND | U | 6.4 | 1.2 | |
| 108-90-7 | Chlorobenzene | ND | U | 6.4 | 0.38 | |
| 67-66-3 | Chloroform | ND | U | 6.4 | 1.7 | |
| 74-87-3 | Chloromethane | ND | U | 6.4 | 0.52 | |
| 124-48-1 | Dibromochloromethane | ND | U | 6.4 | 0.94 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 6.4 | 2.0 | |
| 75-09-2 | Dichloromethane | ND | U | 6.4 | 0.74 | |
| 100-41-4 | Ethylbenzene | ND | U | 6.4 | 0.30 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 6.4 | 1.3 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 6.4 | 1.2 | |
| 108-88-3 | Toluene | **1.3** | J | 6.4 | 1.3 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 6.4 | 1.3 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 13 | 1.5 | |
| 95-47-6 | o-Xylene | ND | U | 6.4 | 0.62 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 6.4 | 1.8 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 99 | 51-136 | 7/25/14 11:48 | |
| Dibromofluoromethane | 97 | 63-138 | 7/25/14 11:48 | |
| Toluene-d8 | 102 | 66-138 | 7/25/14 11:48 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200846 200-SB-19 8'/10' | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-005 | **Date Received:** | 7/22/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8260C | | BWOJTASIEWICZ |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| **Sample Name:** | 1407200853 200-SB-19 8'/10' | | |
| **Lab Code:** | R1405586-006 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **95.1** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| | | **Date Extracted:** | 7/23/14 |
| | | **Date Analyzed:** | 7/24/14 15:20 |
| **Sample Name:** | 1407200853 200-SB-19 8'/10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405586-006 | **Basis:** | Dry |
| | | **Percent Solids:** | 95.1 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403373 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213729 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\072414\CZ469.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 350 | 45 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 350 | 54 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 70 | 47-126 | 7/24/14 15:20 | |
| Nitrobenzene-d5 | 59 | 39-136 | 7/24/14 15:20 | |
| p-Terphenyl-d14 | 64 | 35-152 | 7/24/14 15:20 | |

**ALS ENVIRONMENTAL**

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200853 200-SB-19 8'/10' | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-006 | **Date Received:** | 7/22/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| **Sample Name:** | 1407200854 200-SB-19 8'/10' | | |
| **Lab Code:** | R1405586-007 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **94.9** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| | | **Date Extracted:** | 7/23/14 |
| | | **Date Analyzed:** | 7/24/14 16:13 |
| **Sample Name:** | 1407200854 200-SB-19 8'/10' | **Units:** | µg/Kg |
| **Lab Code:** | R1405586-007 | **Basis:** | Dry |
| | | **Percent Solids:** | 94.9 |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403373 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213729 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\072414\CZ472.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 350 | 45 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 350 | 54 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 70 | 47-126 | 7/24/14 16:13 | |
| Nitrobenzene-d5 | 57 | 39-136 | 7/24/14 16:13 | |
| p-Terphenyl-d14 | 65 | 35-152 | 7/24/14 16:13 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200854 200-SB-19 8'/10' | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-007 | **Date Received:** | 7/22/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 160.3 Modified | | MKSMITH |
| 8270D | SGOLBERG | ZMIAO |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | 7/20/14 |
| **Sample Matrix:** | Soil | **Date Received:** | 7/22/14 |
| **Sample Name:** | 1407200859 200-SB-19 8'/10' | | |
| **Lab Code:** | R1405586-008 | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.31 | | pH Units | | 1 | NA | 7/23/14 16:52 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200859 200-SB-19 8'/10' | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-008 | **Date Received:** | 7/22/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405586
**Date Collected:** 7/20/14
**Date Received:** 7/22/14

**Sample Name:** 1407200900 200-SB-19 8'/10'
**Lab Code:** R1405586-009

**Basis:** As Received

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| pH | 9045D | 8.17 | | pH Units | | 1 | NA | 7/23/14 16:52 | |

# ALS ENVIRONMENTAL

Analyst Summary Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | | |
| **Sample Name:** | 1407200900 200-SB-19 8'/10' | **Date Collected:** | 7/20/14 |
| **Lab Code:** | R1405586-009 | **Date Received:** | 7/22/14 |
| **Matrix:** | Soil | | |

| Analysis Method | Extracted/Digested By | Analyzed By |
|---|---|---|
| 9045D | | DWARD |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| **Sample Name:** | Method Blank | | |
| **Lab Code:** | R1405586-MB | **Basis:** | As Received |

### General Chemistry Parameters

| Analyte Name | Method | Result | Q | Units | MRL | Dilution Factor | Date Extracted | Date Analyzed | Note |
|---|---|---|---|---|---|---|---|---|---|
| Solids, Total | 160.3 Modified | **1.0** | | Percent | 1.0 | 1 | NA | 7/23/14 09:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/25/14 09:33 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408705-05 | **Basis:** | Dry |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403534 |
| **Data File Name:** | I:\ACQUDATA\MSVOA7\DATA\072514\K9988.D\ | **Instrument Name:** | R-MS-07 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 5.0 | 0.73 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 5.0 | 0.73 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 5.0 | 1.3 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 5.0 | 1.3 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 5.0 | 0.61 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 5.0 | 1.4 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 2.3 | |
| 67-63-0 | Isopropanol | ND | U | 100 | 28 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 2.9 | |
| 71-43-2 | Benzene | ND | U | 5.0 | 0.29 | |
| 75-27-4 | Bromodichloromethane | ND | U | 5.0 | 0.61 | |
| 75-25-2 | Bromoform | ND | U | 5.0 | 0.93 | |
| 108-90-7 | Chlorobenzene | ND | U | 5.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 5.0 | 1.3 | |
| 74-87-3 | Chloromethane | ND | U | 5.0 | 0.40 | |
| 124-48-1 | Dibromochloromethane | ND | U | 5.0 | 0.73 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 5.0 | 1.5 | |
| 75-09-2 | Dichloromethane | ND | U | 5.0 | 0.57 | |
| 100-41-4 | Ethylbenzene | ND | U | 5.0 | 0.23 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 5.0 | 0.94 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 5.0 | 0.88 | |
| 108-88-3 | Toluene | ND | U | 5.0 | 1.0 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 5.0 | 1.1 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 10 | 1.1 | |
| 95-47-6 | o-Xylene | ND | U | 5.0 | 0.48 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 5.0 | 1.4 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 98 | 51-136 | 7/25/14 09:33 | |
| Dibromofluoromethane | 96 | 63-138 | 7/25/14 09:33 | |
| Toluene-d8 | 99 | 66-138 | 7/25/14 09:33 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Analyzed:** | 7/29/14 11:42 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1408864-01 | **Basis:** | NA |

### Volatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8260C | **Analysis Lot:** | 403996 |
| **Data File Name:** | I:\ACQUDATA\msvoa10\data\072914\A0724.D\ | **Instrument Name:** | R-MS-10 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 71-55-6 | 1,1,1-Trichloroethane (TCA) | ND | U | 1.0 | 0.36 | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | U | 1.0 | 0.34 | |
| 76-13-1 | 1,1,2-Trichlorotrifluoroethane | ND | U | 1.0 | 0.31 | |
| 75-35-4 | 1,1-Dichloroethene (1,1-DCE) | ND | U | 1.0 | 0.57 | |
| 107-06-2 | 1,2-Dichloroethane | ND | U | 1.0 | 0.36 | |
| 306-83-2 | 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | ND | U | 1.0 | 0.32 | |
| 78-93-3 | 2-Butanone (MEK) | ND | U | 5.0 | 0.81 | |
| 67-63-0 | Isopropanol | ND | U | 40 | 8.6 | |
| 67-64-1 | Acetone | ND | U | 5.0 | 1.3 | |
| 71-43-2 | Benzene | ND | U | 1.0 | 0.20 | |
| 75-27-4 | Bromodichloromethane | ND | U | 1.0 | 0.32 | |
| 75-25-2 | Bromoform | ND | U | 1.0 | 0.42 | |
| 108-90-7 | Chlorobenzene | ND | U | 1.0 | 0.29 | |
| 67-66-3 | Chloroform | ND | U | 1.0 | 0.25 | |
| 74-87-3 | Chloromethane | ND | U | 1.0 | 0.21 | |
| 124-48-1 | Dibromochloromethane | ND | U | 1.0 | 0.31 | |
| 75-43-4 | Dichlorofluoromethane (CFC 21) | ND | U | 1.0 | 0.24 | |
| 75-09-2 | Dichloromethane | **0.51** | J | 1.0 | 0.32 | |
| 100-41-4 | Ethylbenzene | ND | U | 1.0 | 0.20 | |
| 1634-04-4 | Methyl tert-Butyl Ether | ND | U | 1.0 | 0.29 | |
| 127-18-4 | Tetrachloroethene (PCE) | ND | U | 1.0 | 0.30 | |
| 108-88-3 | Toluene | ND | U | 1.0 | 0.20 | |
| 79-01-6 | Trichloroethene (TCE) | ND | U | 1.0 | 0.22 | |
| 179601-23-1 | m,p-Xylenes | ND | U | 2.0 | 0.33 | |
| 95-47-6 | o-Xylene | ND | U | 1.0 | 0.20 | |
| 354-23-4 | 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | ND | U | 1.0 | 0.21 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 4-Bromofluorobenzene | 107 | 85-122 | 7/29/14 11:42 | |
| Dibromofluoromethane | 98 | 89-119 | 7/29/14 11:42 | |
| Toluene-d8 | 104 | 87-121 | 7/29/14 11:42 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Water | **Date Received:** | NA |
| | | **Date Extracted:** | 7/22/14 |
| | | **Date Analyzed:** | 7/23/14 12:44 |
| **Sample Name:** | Method Blank | **Units:** | µg/L |
| **Lab Code:** | RQ1408515-01 | **Basis:** | NA |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403293 |
| **Prep Method:** | EPA 3510C | **Extraction Lot:** | 213575 |
| **Data File Name:** | I:\ACQUDATA\5973D\Data\072314\AV207.D\ | **Instrument Name:** | R-MS-54 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 10 | 1.2 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 10 | 1.0 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 86 | 39-119 | 7/23/14 12:44 | |
| Nitrobenzene-d5 | 84 | 37-117 | 7/23/14 12:44 | |
| p-Terphenyl-d14 | 116 | 40-133 | 7/23/14 12:44 | |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

| | | | |
|---|---|---|---|
| **Client:** | NASA/WSTF/Navarro | **Service Request:** | R1405586 |
| **Project:** | White Sands Test Facility/14EC009B | **Date Collected:** | NA |
| **Sample Matrix:** | Soil | **Date Received:** | NA |
| | | **Date Extracted:** | 7/23/14 |
| | | **Date Analyzed:** | 7/24/14 10:25 |
| **Sample Name:** | Method Blank | **Units:** | µg/Kg |
| **Lab Code:** | RQ1408573-01 | **Basis:** | Dry |

### Semivolatile Organic Compounds by GC/MS

| | | | |
|---|---|---|---|
| **Analytical Method:** | 8270D | **Analysis Lot:** | 403373 |
| **Prep Method:** | EPA 3541 | **Extraction Lot:** | 213729 |
| **Data File Name:** | I:\ACQUDATA\5973A\DATA\072414\CZ459.D\ | **Instrument Name:** | R-MS-51 |
| | | **Dilution Factor:** | 1 |

| CAS No. | Analyte Name | Result | Q | MRL | MDL | Note |
|---|---|---|---|---|---|---|
| 117-81-7 | Bis(2-ethylhexyl) Phthalate | ND | U | 330 | 43 | |
| 84-74-2 | Di-n-butyl Phthalate | ND | U | 330 | 51 | |

| Surrogate Name | %Rec | Control Limits | Date Analyzed | Q |
|---|---|---|---|---|
| 2-Fluorobiphenyl | 49 | 47-126 | 7/24/14 10:25 | |
| Nitrobenzene-d5 | 42 | 39-136 | 7/24/14 10:25 | |
| p-Terphenyl-d14 | 49 | 35-152 | 7/24/14 10:25 | |

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405586
**Date Analyzed:** 7/25/14

### Lab Control Sample Summary
### Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**Units:** µg/Kg
**Basis:** Dry

**Analysis Lot:** 403534

| | Lab Control Sample RQ1408705-03 | | | Duplicate Lab Control Sample RQ1408705-04 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| 1,1,1-Trichloroethane (TCA) | 18.5 | 20.0 | 93 | 16.7 | 20.0 | 83 | 64 - 127 | 11 | 30 |
| 1,1,2-Trichloroethane | 19.0 | 20.0 | 95 | 19.1 | 20.0 | 96 | 76 - 123 | 1 | 30 |
| 1,1,2-Trichlorotrifluoroethane | 20.6 | 20.0 | 103 | 16.5 | 20.0 | 83 | 59 - 146 | 22 | 30 |
| 1,1-Dichloroethene (1,1-DCE) | 22.5 | 20.0 | 113 | 20.7 | 20.0 | 103 | 75 - 151 | 9 | 30 |
| 1,2-Dichloroethane | 18.7 | 20.0 | 94 | 18.2 | 20.0 | 91 | 66 - 123 | 3 | 30 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.2 | 20.0 | 106 | 21.4 | 20.0 | 107 | 61 - 138 | <1 | 30 |
| 2-Butanone (MEK) | 16.5 | 20.0 | 82 | 19.2 | 20.0 | 96 | 62 - 128 | 16 | 30 |
| Isopropanol | 361 | 400 | 90 | 411 | 400 | 103 | 62 - 142 | 13 | 30 |
| Acetone | 15.3 | 20.0 | 76 | 19.9 | 20.0 | 99 | 53 - 143 | 26 | 30 |
| Benzene | 19.5 | 20.0 | 97 | 19.3 | 20.0 | 96 | 74 - 123 | 1 | 30 |
| Bromodichloromethane | 18.9 | 20.0 | 95 | 19.0 | 20.0 | 95 | 77 - 127 | <1 | 30 |
| Bromoform | 18.6 | 20.0 | 93 | 18.5 | 20.0 | 92 | 65 - 133 | 1 | 30 |
| Chlorobenzene | 20.7 | 20.0 | 104 | 18.6 | 20.0 | 93 | 77 - 124 | 11 | 30 |
| Chloroform | 18.1 | 20.0 | 90 | 17.9 | 20.0 | 89 | 73 - 125 | 1 | 30 |
| Chloromethane | 18.9 | 20.0 | 95 | 19.2 | 20.0 | 96 | 56 - 154 | 1 | 30 |
| Dibromochloromethane | 18.7 | 20.0 | 94 | 19.2 | 20.0 | 96 | 77 - 124 | 2 | 30 |
| Dichlorofluoromethane (CFC 21) | 17.1 | 20.0 | 86 | 17.4 | 20.0 | 87 | 79 - 142 | 1 | 30 |
| Dichloromethane | 20.2 | 20.0 | 101 | 20.2 | 20.0 | 101 | 77 - 126 | <1 | 30 |
| Ethylbenzene | 18.7 | 20.0 | 94 | 16.0 | 20.0 | 80 | 73 - 123 | 16 | 30 |
| Methyl tert-Butyl Ether | 18.8 | 20.0 | 94 | 19.4 | 20.0 | 97 | 72 - 131 | 3 | 30 |
| Tetrachloroethene (PCE) | 20.4 | 20.0 | 102 | 17.6 | 20.0 | 88 | 65 - 133 | 15 | 30 |
| Toluene | 20.0 | 20.0 | 100 | 18.4 | 20.0 | 92 | 72 - 127 | 8 | 30 |
| Trichloroethene (TCE) | 18.8 | 20.0 | 94 | 17.8 | 20.0 | 89 | 72 - 129 | 5 | 30 |
| m,p-Xylenes | 40.8 | 40.0 | 102 | 35.1 | 40.0 | 88 | 77 - 125 | 15 | 30 |
| o-Xylene | 20.1 | 20.0 | 100 | 17.8 | 20.0 | 89 | 75 - 124 | 12 | 30 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 23.8 | 20.0 | 119 | 25.1 | 20.0 | 125 | 56 - 154 | 5 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405586
**Date Analyzed:** 7/29/14

### Lab Control Sample Summary
### Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**Units:** µg/L
**Basis:** NA

**Analysis Lot:** 403996

| Analyte Name | Lab Control Sample RQ1408864-02 Result | Spike Amount | % Rec | % Rec Limits |
|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 19.0 | 20.0 | 95 | 71 - 123 |
| 1,1,2-Trichloroethane | 18.2 | 20.0 | 91 | 79 - 117 |
| 1,1,2-Trichlorotrifluoroethane | 18.3 | 20.0 | 91 | 64 - 136 |
| 1,1-Dichloroethene (1,1-DCE) | 20.6 | 20.0 | 103 | 74 - 135 |
| 1,2-Dichloroethane | 20.0 | 20.0 | 100 | 72 - 130 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 21.0 | 20.0 | 105 | 62 - 138 |
| 2-Butanone (MEK) | 22.0 | 20.0 | 110 | 66 - 129 |
| Isopropanol | 389 | 400 | 97 | 57 - 137 |
| Acetone | 20.8 | 20.0 | 104 | 51 - 146 |
| Benzene | 19.4 | 20.0 | 97 | 76 - 118 |
| Bromodichloromethane | 19.6 | 20.0 | 98 | 79 - 122 |
| Bromoform | 17.2 | 20.0 | 86 | 65 - 138 |
| Chlorobenzene | 18.4 | 20.0 | 92 | 80 - 121 |
| Chloroform | 19.5 | 20.0 | 97 | 76 - 120 |
| Chloromethane | 20.7 | 20.0 | 103 | 64 - 140 |
| Dibromochloromethane | 18.5 | 20.0 | 93 | 79 - 125 |
| Dichlorofluoromethane (CFC 21) | 18.1 | 20.0 | 91 | 79 - 144 |
| Dichloromethane | 20.0 | 20.0 | 100 | 73 - 122 |
| Ethylbenzene | 17.3 | 20.0 | 87 | 76 - 120 |
| Methyl tert-Butyl Ether | 20.0 | 20.0 | 100 | 73 - 131 |
| Tetrachloroethene (PCE) | 18.2 | 20.0 | 91 | 69 - 124 |
| Toluene | 19.3 | 20.0 | 96 | 77 - 120 |
| Trichloroethene (TCE) | 18.8 | 20.0 | 94 | 76 - 123 |
| m,p-Xylenes | 38.4 | 40.0 | 96 | 78 - 123 |
| o-Xylene | 19.2 | 20.0 | 96 | 77 - 131 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | 24.7 | 20.0 | 124 | 65 - 143 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405586
**Date Analyzed:** 7/23/14

### Lab Control Sample Summary
### Semivolatile Organic Compounds by GC/MS

**Analytical Method:** 8270D
**Prep Method:** EPA 3510C

**Units:** µg/L
**Basis:** NA

**Extraction Lot:** 213575

| | Lab Control Sample RQ1408515-02 | | | Duplicate Lab Control Sample RQ1408515-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 118 | 100 | 118 | 114 | 100 | 114 | 62 - 124 | 3 | 30 |
| Di-n-butyl Phthalate | 112 | 100 | 112 | 110 | 100 | 110 | 57 - 139 | 2 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

## ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405586
**Date Analyzed:** 7/24/14

### Lab Control Sample Summary
### Semivolatile Organic Compounds by GC/MS

**Analytical Method:** 8270D
**Prep Method:** EPA 3541

**Units:** µg/Kg
**Basis:** Dry

**Extraction Lot:** 213729

| | Lab Control Sample RQ1408573-02 | | | Duplicate Lab Control Sample RQ1408573-03 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Result** | **Spike Amount** | **% Rec** | **Result** | **Spike Amount** | **% Rec** | **% Rec Limits** | **RPD** | **RPD Limit** |
| Bis(2-ethylhexyl) Phthalate | 2490 | 3330 | 75 | 2050 | 3330 | 61 | 50 - 142 | 19 | 30 |
| Di-n-butyl Phthalate | 2630 | 3330 | 79 | 2080 | 3330 | 62 | 36 - 164 | 23 | 30 |

**Results flagged with an asterisk (*) indicate values outside control criteria.**

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

# WSTF CHAIN OF CUSTODY RECORD

Date 7-21-14

Page 1 of 1

Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (A/S) | Analysis Requirements: Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407200630 | 200-SB-19 | 3 | A | X | | | | | | | | 3 vials w/ Bubbles. |
| 1407200755 | " | 3 | A | X | | | | | | | | |
| 1407200759 | " | 2 | A | | X | | | | | | | |
| 1407200845 | " 8'/10' | 3 | S | X | | | | | | | | |
| 1407200846 | " " | 3 | S | X | | | | | | | | |
| 1407200853 | " " | 1 | S | | X | | | | | | | |
| 1407200854 | " " | 1 | S | | X | | | | | | | |
| 1407200859 | " " | 1 | S | | | X | | | | | | |
| 1407200900 | " " | 1 | S | | | X | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-21-14 / 1100 HRS. | [illegible] NAS 7/22/14 1000 | |
| | | | |
| | | | |

R1405586 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# Cooler Receipt and Preservation Check Form

Project/Client NASA Folder Number 44-5586

Cooler received on 7/22/14 by: JKS COURIER: ALS UPS FEDEX VELOCITY CLIENT

| | | | | | |
|---|---|---|---|---|---|
| 1 | Were Custody seals on outside of cooler? | Y N | 5a | Perchlorate samples have required headspace? | Y N NA |
| 2 | Custody papers properly completed (ink, signed)? | Y N | 5b | Did VOA vials, Alk,or Sulfide have sig* bubbles? | Y N NA |
| 3 | Did all bottles arrive in good condition (unbroken)? | Y N | 6 | Where did the bottles originate? | ALS/ROC CLIENT |
| 4 | Circle: Wet Ice Dry Ice Gel packs present? | Y N | 7 | Soil VOA received as: Bulk Encore 5035set NA | |

8. Temperature Readings Date: 7/22/14 Time: 1018 ID: IR#3 IR#4 From: Temp Blank Sample Bottle

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Observed Temp (°C) | 4.8 | | | | | | |
| Correction Factor (°C) | - | | | | | | |
| Corrected Temp (°C) | 4.2 | | | | | | |
| Within 0-6°C? | Y N | Y N | Y N | Y N | Y N | Y N | Y N |

If out of Temperature, note packing/ice condition: _____ Ice melted Poorly Packed Same Day Rule

&Client Approval to Run Samples: _____ Standing Approval Client aware at drop-off Client notified by: _____

All samples held in storage location: ROC by JKS on 7/22/14 at 1018
5035 samples placed in storage location: ROC by JKS on 7/22/14 at 1026

PC Secondary Review: JMJ 7/22/14

Cooler Breakdown: Date: 7/22/14 Time: 1327 by: JKS

1. Were all bottle labels complete (*i.e.* analysis, preservation, etc.)? YES NO
2. Did all bottle labels and tags agree with custody papers? YES NO
3. Were correct containers used for the tests indicated? YES NO
4. Air Samples: Cassettes / Tubes Intact Canisters Pressurized Tedlar® Bags Inflated N/A

Explain any discrepancies:

| pH | Reagent | Yes | No | Lot Received | Exp | Sample ID | Vol. Added | Lot Added | Final pH |
|---|---|---|---|---|---|---|---|---|---|
| ≥12 | NaOH | | | | | | | | |
| ≤2 | $HNO_3$ | | | | | | | | |
| ≤2 | $H_2SO_4$ | | | | | | | | |
| <4 | $NaHSO_4$ | | | | | | | | |
| Residual Chlorine (-) | For CN Phenol and 522 | | | If +, contact PM to add $Na_2S_2O_3$ (CN), ascorbic (phenol). | | | | | |
| | $Na_2S_2O_3$ | - | - | | | | | | |
| | ZnAcetate | - | - | | | | | | |
| | HCl | ** | ** | other | | | | | |

Yes=All samples OK

No=Samples were preserved at The lab as listed

PM OK to Adjust: _____

**Not to be tested before analysis – pH tested and recorded by VOAs on a separate worksheet

Bottle lot numbers: other

Other Comments:

See COC.

PC Secondary Review: JMJ 8/6/14 *significant air bubbles: VOA > 5-6 mm : WC >1 in. diameter

ALS Environmental

# SUPPORTING DOCUMENTATION

**ALS Environmental - Rochester, NY**
1565 Jefferson Rd, Bldg. 300, Suite 360, Rochester, NY 14623
Phone (585) 288-5380 Fax (585) 288-8475
www.alsglobal.com

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Soil

**Service Request:** R1405586
**Date Analyzed:** 7/25/14 09:33

### Method Blank Summary
### Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408705-05
**Instrument ID:** R-MS-07
**File ID:** I:\ACQUDATA\MSVOA7\DATA\072514\K9988.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408705-03 | I:\ACQUDATA\MSVOA7\DATA\072514\K9986.D\ | 7/25/14 08:16 |
| 1407200845 200-SB-19 8'/10' | R1405586-004 | I:\ACQUDATA\MSVOA7\DATA\072514\K9990.D\ | 7/25/14 11:11 |
| 1407200846 200-SB-19 8'/10' | R1405586-005 | I:\ACQUDATA\MSVOA7\DATA\072514\K9991.D\ | 7/25/14 11:48 |
| Duplicate Lab Control Sample | RQ1408705-04 | I:\ACQUDATA\MSVOA7\DATA\072514\K9996.D\ | 7/25/14 15:12 |

## ALS Group USA, Corp. dba ALS Environmental

Analytical Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B
**Sample Matrix:** Water

**Service Request:** R1405586
**Date Analyzed:** 7/29/14 11:42

### Method Blank Summary
### Volatile Organic Compounds by GC/MS

**Sample Name:** Method Blank
**Lab Code:** RQ1408864-01
**Instrument ID:** R-MS-10
**File ID:** I:\ACQUDATA\msvoa10\data\072914\A0724.D\

**Analytical Method:** 8260C

This Method Blank applies to the following analyses:

| Sample Name | Lab Code | File ID | Date Analyzed |
|---|---|---|---|
| Lab Control Sample | RQ1408864-02 | I:\ACQUDATA\msvoa10\data\072914\A0722.D\ | 7/29/14 10:42 |
| 1407200630 200-SB-19 | R1405586-001 | I:\ACQUDATA\msvoa10\data\072914\A0733.D\ | 7/29/14 16:16 |
| 1407200755 200-SB-19 | R1405586-002 | I:\ACQUDATA\msvoa10\data\072914\A0734.D\ | 7/29/14 16:47 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Date Analyzed:** 7/25/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\MSVOA7\DATA\072514\K9985.D\

**Calibration Date:** 5/29/14
**Calibration ID:** RC1400043
**Analysis Lot:** 403534
**Units:** ppb

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 48.1 | 0.7075 | 0.6801 | -3.9 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 48.7 | 0.3414 | 0.3325 | -2.6 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 57.6 | 0.4820 | 0.5555 | 15.2 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 52.3 | 0.4169 | 0.4356 | 4.5 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 45.3 | 0.4920 | 0.4455 | -9.5 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 51.6 | 0.8365 | 0.8625 | 3.1 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 40.0 | 0.7656 | 0.6129 | -20.0 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 874 | 0.08660 | 0.07572 | -12.6 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 33.0 | 0.6020 | 0.3978 | -33.9 * | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 50.9 | 1.440 | 1.467 | 1.9 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 48.6 | 0.4660 | 0.4526 | -2.9 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 50.8 | 0.2458 | 0.2498 | 1.6 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 52.9 | 0.9166 | 0.9696 | 5.8 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 45.4 | 1.049 | 0.9526 | -9.2 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 50.5 | 1.118 | 1.128 | 0.9 | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 50.1 | 0.3859 | 0.3863 | 0.1 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 50.2 | 1.436 | 1.441 | 0.3 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 48.7 | 0.6951 | 0.6771 | -2.6 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 53.3 | 1.608 | 1.713 | 6.5 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 47.1 | 1.847 | 1.738 | -5.9 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 56.2 | 0.3262 | 0.3665 | 12.4 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 52.4 | 1.479 | 1.549 | 4.8 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 51.4 | 0.3311 | 0.3405 | 2.8 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 108 | 0.5809 | 0.6284 | 8.2 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 52.9 | 0.5852 | 0.6191 | 5.8 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 51.0 | 0.8761 | 0.8939 | 2.0 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 48.8 | 0.4853 | 0.4735 | -2.4 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 48.0 | 0.3338 | 0.3202 | -4.1 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 50.9 | 1.294 | 1.318 | 1.8 | NA | ± 20 % | Average RF |

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Date Analyzed:** 7/29/14

## Continuing Calibration Verification Summary
## Volatile Organic Compounds by GC/MS

**Analytical Method:** 8260C

**File ID:** I:\ACQUDATA\msvoa10\data\072914\A0721.D\

**Calibration Date:** 7/21/14
**Calibration ID:** RC1400062
**Analysis Lot:** 403996
**Units:** µg/L

| Analyte Name | Expected | Result | Average RF | CCV RF | %D | %Drift | Criteria | Curve Fit |
|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (TCA) | 50.0 | 53.6 | 0.6850 | 0.7337 | 7.1 | NA | ± 20 % | Average RF |
| 1,1,2-Trichloroethane | 50.0 | 51.9 | 0.2259 | 0.2347 | 3.9 | NA | ± 20 % | Average RF |
| 1,1,2-Trichlorotrifluoroethane | 50.0 | 57.2 | 0.4403 | 0.5037 | 14.4 | NA | ± 20 % | Average RF |
| 1,1-Dichloroethene (1,1-DCE) | 50.0 | 56.3 | 0.3485 | 0.3924 | 12.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloroethane | 50.0 | 54.9 | 0.4240 | 0.4658 | 9.8 | NA | ± 20 % | Average RF |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | 50.0 | 53.4 | 0.6180 | 0.6602 | 6.8 | NA | ± 20 % | Average RF |
| 2-Butanone (MEK) | 50.0 | 51.8 | 0.2007 | 0.2078 | 3.6 | NA | ± 20 % | Average RF |
| Isopropanol | 1000 | 972 | 0.02153 | 0.02092 | -2.8 | NA | ± 20 % | Average RF |
| Acetone | 50.0 | 44.5 | 0.1523 | 0.1354 | -11.1 | NA | ± 20 % | Average RF |
| Benzene | 50.0 | 56.5 | 1.222 | 1.381 | 13.0 | NA | ± 20 % | Average RF |
| Bromodichloromethane | 50.0 | 55.4 | 0.3900 | 0.4320 | 10.8 | NA | ± 20 % | Average RF |
| Bromoform | 50.0 | 49.6 | 0.1754 | 0.1740 | -0.8 | NA | ± 20 % | Average RF |
| Chlorobenzene | 50.0 | 51.9 | 0.9640 | 1.001 | 3.9 | NA | ± 20 % | Average RF |
| Chloroform | 50.0 | 53.7 | 0.8279 | 0.8890 | 7.4 | NA | ± 20 % | Average RF |
| Chloromethane | 50.0 | 61.3 | 0.7175 | 0.8802 | 22.7 * | NA | ± 20 % | Average RF |
| Dibromochloromethane | 50.0 | 51.7 | 0.3054 | 0.3157 | 3.4 | NA | ± 20 % | Average RF |
| Dichlorofluoromethane (CFC 21) | 50.0 | 55.1 | 0.9222 | 1.015 | 10.1 | NA | ± 20 % | Average RF |
| Dichloromethane | 50.0 | 54.0 | 0.4573 | 0.4941 | 8.0 | NA | ± 20 % | Average RF |
| Ethylbenzene | 50.0 | 53.9 | 0.4804 | 0.5174 | 7.7 | NA | ± 20 % | Average RF |
| Methyl tert-Butyl Ether | 50.0 | 52.4 | 0.9984 | 1.047 | 4.8 | NA | ± 20 % | Average RF |
| Tetrachloroethene (PCE) | 50.0 | 49.1 | 0.2891 | 0.2842 | -1.7 | NA | ± 20 % | Average RF |
| Toluene | 50.0 | 55.5 | 1.281 | 1.421 | 11.0 | NA | ± 20 % | Average RF |
| Trichloroethene (TCE) | 50.0 | 53.8 | 0.3407 | 0.3667 | 7.6 | NA | ± 20 % | Average RF |
| m,p-Xylenes | 100 | 108 | 0.5924 | 0.6390 | 7.9 | NA | ± 20 % | Average RF |
| o-Xylene | 50.0 | 54.8 | 0.5792 | 0.6347 | 9.6 | NA | ± 20 % | Average RF |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC | 50.0 | 56.0 | 0.5807 | 0.6499 | 11.9 | NA | ± 20 % | Average RF |
| 4-Bromofluorobenzene | 50.0 | 54.4 | 0.4419 | 0.4810 | 8.9 | NA | ± 20 % | Average RF |
| Dibromofluoromethane | 50.0 | 50.6 | 0.3188 | 0.3227 | 1.2 | NA | ± 20 % | Average RF |
| Toluene-d8 | 50.0 | 52.6 | 1.123 | 1.180 | 5.1 | NA | ± 20 % | Average RF |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\MSVOA7\DATA\052914\K9081 | 5/29/14 13:54 | 02 | I:\ACQUDATA\MSVOA7\DATA\052914\K9082 | 5/29/14 14:31 |
| 03 | I:\ACQUDATA\MSVOA7\DATA\052914\K9083 | 5/29/14 15:09 | 04 | I:\ACQUDATA\MSVOA7\DATA\052914\K9084 | 5/29/14 15:47 |
| 05 | I:\ACQUDATA\MSVOA7\DATA\052914\K9085 | 5/29/14 16:24 | 06 | I:\ACQUDATA\MSVOA7\DATA\052914\K9086 | 5/29/14 17:02 |
| 07 | I:\ACQUDATA\MSVOA7\DATA\052914\K9087 | 5/29/14 17:39 | 08 | I:\ACQUDATA\MSVOA7\DATA\052914\K9088 | 5/29/14 18:16 |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.7839 | 02 | 5.000 | 0.7509 | 03 | 10.000 | 0.7284 | 04 | 20.000 | 0.6127 |
| 05 | 50.000 | 0.6606 | 06 | 100.000 | 0.6772 | 07 | 150.000 | 0.7145 | 08 | 200.000 | 0.7320 |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.3874 | 02 | 5.000 | 0.3495 | 03 | 10.000 | 0.3341 | 04 | 20.000 | 0.3176 |
| 05 | 50.000 | 0.3329 | 06 | 100.000 | 0.3427 | 07 | 150.000 | 0.3360 | 08 | 200.000 | 0.3308 |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5947 | 02 | 5.000 | 0.5106 | 03 | 10.000 | 0.4949 | 04 | 20.000 | 0.4003 |
| 05 | 50.000 | 0.4170 | 06 | 100.000 | 0.4406 | 07 | 150.000 | 0.5023 | 08 | 200.000 | 0.4958 |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4287 | 02 | 5.000 | 0.4345 | 03 | 10.000 | 0.4227 | 04 | 20.000 | 0.4036 |
| 05 | 50.000 | 0.4110 | 06 | 100.000 | 0.3927 | 07 | 150.000 | 0.4180 | 08 | 200.000 | 0.4236 |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5482 | 02 | 5.000 | 0.5030 | 03 | 10.000 | 0.5071 | 04 | 20.000 | 0.4618 |
| 05 | 50.000 | 0.4971 | 06 | 100.000 | 0.4830 | 07 | 150.000 | 0.4706 | 08 | 200.000 | 0.4654 |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9132 | 02 | 5.000 | 0.8478 | 03 | 10.000 | 0.8259 | 04 | 20.000 | 0.8460 |
| 05 | 50.000 | 0.8658 | 06 | 100.000 | 0.7603 | 07 | 150.000 | 0.8231 | 08 | 200.000 | 0.8096 |

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.8520 | 02 | 5.000 | 0.8114 | 03 | 10.000 | 0.8282 | 04 | 20.000 | 0.6699 |
| 05 | 50.000 | 0.7465 | 06 | 100.000 | 0.7626 | 07 | 150.000 | 0.7310 | 08 | 200.000 | 0.7234 |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 20.000 | 0.09561 | 02 | 100.000 | 0.08746 | 03 | 200.000 | 0.08773 | 04 | 400.000 | 0.08729 |
| 05 | 1000.000 | 0.08880 | 06 | 2000.000 | 0.08603 | 07 | 3000.000 | 0.08103 | 08 | 4000.000 | 0.07884 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7647 | 03 | 10.000 | 0.7579 | 04 | 20.000 | 0.5490 | 05 | 50.000 | 0.5746 |
| 06 | 100.000 | 0.5454 | 07 | 150.000 | 0.5177 | 08 | 200.000 | 0.5047 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.596 | 02 | 5.000 | 1.535 | 03 | 10.000 | 1.466 | 04 | 20.000 | 1.318 |
| 05 | 50.000 | 1.382 | 06 | 100.000 | 1.388 | 07 | 150.000 | 1.402 | 08 | 200.000 | 1.431 |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4916 | 02 | 5.000 | 0.4571 | 03 | 10.000 | 0.4730 | 04 | 20.000 | 0.4355 |
| 05 | 50.000 | 0.4643 | 06 | 100.000 | 0.4670 | 07 | 150.000 | 0.4646 | 08 | 200.000 | 0.4746 |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.2226 | 02 | 5.000 | 0.2401 | 03 | 10.000 | 0.2401 | 04 | 20.000 | 0.2204 |
| 05 | 50.000 | 0.2512 | 06 | 100.000 | 0.2653 | 07 | 150.000 | 0.2634 | 08 | 200.000 | 0.2633 |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.046 | 02 | 5.000 | 0.9396 | 03 | 10.000 | 0.9567 | 04 | 20.000 | 0.7815 |
| 05 | 50.000 | 0.8522 | 06 | 100.000 | 0.8984 | 07 | 150.000 | 0.9364 | 08 | 200.000 | 0.9222 |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.206 | 02 | 5.000 | 1.120 | 03 | 10.000 | 1.016 | 04 | 20.000 | 1.017 |
| 05 | 50.000 | 1.023 | 06 | 100.000 | 0.9987 | 07 | 150.000 | 1.003 | 08 | 200.000 | 1.006 |

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.395 | 02 | 5.000 | 1.091 | 03 | 10.000 | 1.020 | 04 | 20.000 | 1.109 |
| 05 | 50.000 | 1.074 | 06 | 100.000 | 1.055 | 07 | 150.000 | 1.105 | 08 | 200.000 | 1.093 |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4190 | 02 | 5.000 | 0.3982 | 03 | 10.000 | 0.3683 | 04 | 20.000 | 0.3414 |
| 05 | 50.000 | 0.3785 | 06 | 100.000 | 0.3915 | 07 | 150.000 | 0.3938 | 08 | 200.000 | 0.3963 |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.487 | 02 | 5.000 | 1.460 | 03 | 10.000 | 1.400 | 04 | 20.000 | 1.420 |
| 05 | 50.000 | 1.497 | 06 | 100.000 | 1.357 | 07 | 150.000 | 1.436 | 08 | 200.000 | 1.432 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 02 | 5.000 | 0.7799 | 03 | 10.000 | 0.7323 | 04 | 20.000 | 0.6584 | 05 | 50.000 | 0.6868 |
| 06 | 100.000 | 0.6674 | 07 | 150.000 | 0.6625 | 08 | 200.000 | 0.6782 | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.782 | 02 | 5.000 | 1.803 | 03 | 10.000 | 1.701 | 04 | 20.000 | 1.348 |
| 05 | 50.000 | 1.426 | 06 | 100.000 | 1.560 | 07 | 150.000 | 1.647 | 08 | 200.000 | 1.599 |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.982 | 02 | 5.000 | 1.860 | 03 | 10.000 | 1.863 | 04 | 20.000 | 1.734 |
| 05 | 50.000 | 1.877 | 06 | 100.000 | 1.843 | 07 | 150.000 | 1.812 | 08 | 200.000 | 1.801 |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4071 | 02 | 5.000 | 0.3694 | 03 | 10.000 | 0.3436 | 04 | 20.000 | 0.2614 |
| 05 | 50.000 | 0.2735 | 06 | 100.000 | 0.3000 | 07 | 150.000 | 0.3294 | 08 | 200.000 | 0.3249 |

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 1.670 | 02 | 5.000 | 1.584 | 03 | 10.000 | 1.537 | 04 | 20.000 | 1.282 |
| 05 | 50.000 | 1.376 | 06 | 100.000 | 1.432 | 07 | 150.000 | 1.484 | 08 | 200.000 | 1.468 |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.4316 | 02 | 5.000 | 0.3414 | 03 | 10.000 | 0.3265 | 04 | 20.000 | 0.2828 |
| 05 | 50.000 | 0.2997 | 06 | 100.000 | 0.3152 | 07 | 150.000 | 0.3251 | 08 | 200.000 | 0.3265 |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 2.000 | 0.6838 | 02 | 10.000 | 0.6233 | 03 | 20.000 | 0.6206 | 04 | 40.000 | 0.4834 |
| 05 | 100.000 | 0.5118 | 06 | 200.000 | 0.5540 | 07 | 300.000 | 0.5902 | 08 | 400.000 | 0.5802 |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.6621 | 02 | 5.000 | 0.6233 | 03 | 10.000 | 0.6266 | 04 | 20.000 | 0.4869 |
| 05 | 50.000 | 0.5256 | 06 | 100.000 | 0.5698 | 07 | 150.000 | 0.5983 | 08 | 200.000 | 0.5890 |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.9808 | 02 | 5.000 | 0.8778 | 03 | 10.000 | 0.8576 | 04 | 20.000 | 0.8867 |
| 05 | 50.000 | 0.9405 | 06 | 100.000 | 0.7860 | 07 | 150.000 | 0.8413 | 08 | 200.000 | 0.8382 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 5/29/14

**Initial Calibration Summary**
**Volatile Organic Compounds by GC/MS**

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

**Analyte**

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.4833 | 07 | 50.000 | 0.4775 | 02 | 50.000 | 0.4893 | 05 | 50.000 | 0.4819 |
| 01 | 50.000 | 0.4940 | 04 | 50.000 | 0.4931 | 08 | 50.000 | 0.4756 | 03 | 50.000 | 0.4875 |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.3295 | 07 | 50.000 | 0.3245 | 02 | 50.000 | 0.3390 | 04 | 50.000 | 0.3406 |
| 01 | 50.000 | 0.3368 | 08 | 50.000 | 0.3299 | 03 | 50.000 | 0.3344 | 05 | 50.000 | 0.3361 |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 05 | 50.000 | 1.291 | 06 | 50.000 | 1.276 | 07 | 50.000 | 1.289 | 02 | 50.000 | 1.305 |
| 04 | 50.000 | 1.306 | 01 | 50.000 | 1.307 | 03 | 50.000 | 1.291 | 08 | 50.000 | 1.289 |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 5/29/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400043
**Instrument ID:** R-MS-07

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| **Analyte Name** | **Compound Type** | **Fit Type** | **Eval.** | **Eval. Result** | **Q** | **Control Criteria** | **Average RRF** | **Q** | **Minimum RRF** |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 7.7 | | ≤20 | 0.7075 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.3414 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.4820 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.4169 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 5.8 | | ≤20 | 0.4920 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.8365 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 8.0 | | ≤20 | 0.7656 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.08660 | | |
| Acetone | TRG | Average RF | % RSD | 18.5 | | ≤20 | 0.6020 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 6.2 | | ≤20 | 1.440 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 3.4 | | ≤20 | 0.4660 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 7.3 | | ≤20 | 0.2458 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 8.4 | | ≤20 | 0.9166 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 7.1 | | ≤20 | 1.049 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 10.4 | | ≤20 | 1.118 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.3859 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 3.2 | | ≤20 | 1.436 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.5 | | ≤20 | 0.6951 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 10.0 | | ≤20 | 1.608 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 3.9 | | ≤20 | 1.847 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 14.8 | | ≤20 | 0.3262 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 8.2 | | ≤20 | 1.479 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 13.4 | | ≤20 | 0.3311 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 11.1 | | ≤20 | 0.5809 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 9.7 | | ≤20 | 0.5852 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 7.0 | | ≤20 | 0.8761 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 1.4 | | ≤20 | 0.4853 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 1.6 | | ≤20 | 0.3338 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 0.8 | | ≤20 | 1.294 | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

| # | File Location | Acquisition Date | # | File Location | Acquisition Date |
|---|---|---|---|---|---|
| 01 | I:\ACQUDATA\msvoa10\data\072114\A0510.D | 7/21/14 11:52 | 02 | I:\ACQUDATA\msvoa10\data\072114\A0511.D | 7/21/14 12:22 |
| 03 | I:\ACQUDATA\msvoa10\data\072114\A0512.D | 7/21/14 12:52 | 04 | I:\ACQUDATA\msvoa10\data\072114\A0513.D | 7/21/14 13:23 |
| 05 | I:\ACQUDATA\msvoa10\data\072114\A0514.D | 7/21/14 13:53 | 06 | I:\ACQUDATA\msvoa10\data\072114\A0515.D | 7/21/14 14:23 |
| 07 | I:\ACQUDATA\msvoa10\data\072114\A0516.D | 7/21/14 14:54 | 08 | I:\ACQUDATA\msvoa10\data\072114\A0517.D | 7/21/14 15:24 |
| 09 | I:\ACQUDATA\msvoa10\data\072114\A0518.D | 7/21/14 15:55 | | | |

**Analyte**

1,1,1-Trichloroethane (TCA)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6918 | 02 | 1.000 | 0.6746 | 03 | 2.000 | 0.6764 | 04 | 5.000 | 0.6882 |
| 05 | 10.000 | 0.6552 | 06 | 50.000 | 0.6704 | 07 | 100.000 | 0.7039 | 08 | 150.000 | 0.7085 |
| 09 | 200.000 | 0.6956 | | | | | | | | | |

1,1,2-Trichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2138 | 02 | 1.000 | 0.2359 | 03 | 2.000 | 0.2210 | 04 | 5.000 | 0.2135 |
| 05 | 10.000 | 0.2275 | 06 | 50.000 | 0.2228 | 07 | 100.000 | 0.2310 | 08 | 150.000 | 0.2371 |
| 09 | 200.000 | 0.2308 | | | | | | | | | |

1,1,2-Trichlorotrifluoroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4656 | 02 | 1.000 | 0.4831 | 03 | 2.000 | 0.4314 | 04 | 5.000 | 0.4561 |
| 05 | 10.000 | 0.3916 | 06 | 50.000 | 0.4226 | 07 | 100.000 | 0.4432 | 08 | 150.000 | 0.4463 |
| 09 | 200.000 | 0.4225 | | | | | | | | | |

1,1-Dichloroethene (1,1-DCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3739 | 02 | 1.000 | 0.3370 | 03 | 2.000 | 0.3731 | 04 | 5.000 | 0.3533 |
| 05 | 10.000 | 0.3186 | 06 | 50.000 | 0.3314 | 07 | 100.000 | 0.3493 | 08 | 150.000 | 0.3586 |
| 09 | 200.000 | 0.3409 | | | | | | | | | |

1,2-Dichloroethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4372 | 02 | 1.000 | 0.4170 | 03 | 2.000 | 0.4057 | 04 | 5.000 | 0.4372 |
| 05 | 10.000 | 0.4297 | 06 | 50.000 | 0.4205 | 07 | 100.000 | 0.4269 | 08 | 150.000 | 0.4293 |
| 09 | 200.000 | 0.4129 | | | | | | | | | |

2,2-Dichloro-1,1,1-trifluoroethane (CFC 123)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.6609 | 02 | 1.000 | 0.6670 | 03 | 2.000 | 0.6452 | 04 | 5.000 | 0.6070 |
| 05 | 10.000 | 0.5678 | 06 | 50.000 | 0.6230 | 07 | 100.000 | 0.5875 | 08 | 150.000 | 0.6055 |
| 09 | 200.000 | 0.5982 | | | | | | | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

**Analyte**

2-Butanone (MEK)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 2.000 | 0.1904 | 04 | 5.000 | 0.1834 | 05 | 10.000 | 0.2011 | 06 | 50.000 | 0.2201 |
| 07 | 100.000 | 0.2046 | 08 | 150.000 | 0.2073 | 09 | 200.000 | 0.1978 | | | |

Isopropanol

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 10.000 | 0.02303 | 02 | 20.000 | 0.02185 | 03 | 40.000 | 0.01792 | 04 | 100.000 | 0.01762 |
| 05 | 200.000 | 0.02212 | 06 | 1000.000 | 0.02231 | 07 | 2000.000 | 0.02181 | 08 | 3000.000 | 0.02375 |
| 09 | 4000.000 | 0.02334 | | | | | | | | | |

Acetone

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 03 | 2.000 | 0.2006 | 04 | 5.000 | 0.1539 | 05 | 10.000 | 0.1637 | 06 | 50.000 | 0.1371 |
| 07 | 100.000 | 0.1269 | 08 | 150.000 | 0.1454 | 09 | 200.000 | 0.1382 | | | |

Benzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.122 | 02 | 1.000 | 1.210 | 03 | 2.000 | 1.194 | 04 | 5.000 | 1.219 |
| 05 | 10.000 | 1.246 | 06 | 50.000 | 1.220 | 07 | 100.000 | 1.266 | 08 | 150.000 | 1.279 |
| 09 | 200.000 | 1.244 | | | | | | | | | |

Bromodichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3485 | 02 | 1.000 | 0.3826 | 03 | 2.000 | 0.4034 | 04 | 5.000 | 0.3794 |
| 05 | 10.000 | 0.3860 | 06 | 50.000 | 0.3881 | 07 | 100.000 | 0.4057 | 08 | 150.000 | 0.4125 |
| 09 | 200.000 | 0.4038 | | | | | | | | | |

Bromoform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.1633 | 02 | 1.000 | 0.1361 | 03 | 2.000 | 0.1570 | 04 | 5.000 | 0.1730 |
| 05 | 10.000 | 0.1680 | 06 | 50.000 | 0.1789 | 07 | 100.000 | 0.1952 | 08 | 150.000 | 0.2049 |
| 09 | 200.000 | 0.2022 | | | | | | | | | |

Chlorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9164 | 02 | 1.000 | 0.9520 | 03 | 2.000 | 0.9738 | 04 | 5.000 | 0.9784 |
| 05 | 10.000 | 0.9472 | 06 | 50.000 | 0.9474 | 07 | 100.000 | 0.9968 | 08 | 150.000 | 0.9973 |
| 09 | 200.000 | 0.9671 | | | | | | | | | |

Chloroform

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.8897 | 02 | 1.000 | 0.8677 | 03 | 2.000 | 0.8333 | 04 | 5.000 | 0.8272 |
| 05 | 10.000 | 0.8452 | 06 | 50.000 | 0.7861 | 07 | 100.000 | 0.8012 | 08 | 150.000 | 0.8076 |
| 09 | 200.000 | 0.7930 | | | | | | | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

**Analyte**

Chloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.7430 | 02 | 1.000 | 0.6897 | 03 | 2.000 | 0.6771 | 04 | 5.000 | 0.6806 |
| 05 | 10.000 | 0.7672 | 06 | 50.000 | 0.7395 | 07 | 100.000 | 0.7395 | 08 | 150.000 | 0.7240 |
| 09 | 200.000 | 0.6966 | | | | | | | | | |

Dibromochloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.2648 | 02 | 1.000 | 0.2699 | 03 | 2.000 | 0.2753 | 04 | 5.000 | 0.2994 |
| 05 | 10.000 | 0.2882 | 06 | 50.000 | 0.3186 | 07 | 100.000 | 0.3388 | 08 | 150.000 | 0.3461 |
| 09 | 200.000 | 0.3473 | | | | | | | | | |

Dichlorofluoromethane (CFC 21)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9548 | 02 | 1.000 | 0.9324 | 03 | 2.000 | 0.9495 | 04 | 5.000 | 0.9206 |
| 05 | 10.000 | 0.9227 | 06 | 50.000 | 0.9412 | 07 | 100.000 | 0.8810 | 08 | 150.000 | 0.9108 |
| 09 | 200.000 | 0.8868 | | | | | | | | | |

Dichloromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4871 | 02 | 1.000 | 0.5054 | 03 | 2.000 | 0.4849 | 04 | 5.000 | 0.4477 |
| 05 | 10.000 | 0.4457 | 06 | 50.000 | 0.4347 | 07 | 100.000 | 0.4408 | 08 | 150.000 | 0.4399 |
| 09 | 200.000 | 0.4298 | | | | | | | | | |

Ethylbenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.4418 | 02 | 1.000 | 0.4433 | 03 | 2.000 | 0.4482 | 04 | 5.000 | 0.4733 |
| 05 | 10.000 | 0.4752 | 06 | 50.000 | 0.4852 | 07 | 100.000 | 0.5209 | 08 | 150.000 | 0.5243 |
| 09 | 200.000 | 0.5112 | | | | | | | | | |

Methyl tert-Butyl Ether

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.9383 | 02 | 1.000 | 0.9448 | 03 | 2.000 | 0.9733 | 04 | 5.000 | 0.9997 |
| 05 | 10.000 | 0.9967 | 06 | 50.000 | 1.010 | 07 | 100.000 | 1.034 | 08 | 150.000 | 1.052 |
| 09 | 200.000 | 1.037 | | | | | | | | | |

Tetrachloroethene (PCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3021 | 02 | 1.000 | 0.2880 | 03 | 2.000 | 0.2711 | 04 | 5.000 | 0.2832 |
| 05 | 10.000 | 0.2704 | 06 | 50.000 | 0.2850 | 07 | 100.000 | 0.3031 | 08 | 150.000 | 0.3024 |
| 09 | 200.000 | 0.2970 | | | | | | | | | |

**ALS Group USA, Corp. dba ALS Environmental**

QA/QC Report

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 7/21/14

**Initial Calibration Summary**
**Volatile Organic Compounds by GC/MS**

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

**Analyte**

Toluene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 1.246 | 02 | 1.000 | 1.295 | 03 | 2.000 | 1.260 | 04 | 5.000 | 1.262 |
| 05 | 10.000 | 1.253 | 06 | 50.000 | 1.270 | 07 | 100.000 | 1.323 | 08 | 150.000 | 1.338 |
| 09 | 200.000 | 1.279 | | | | | | | | | |

Trichloroethene (TCE)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.3247 | 02 | 1.000 | 0.3409 | 03 | 2.000 | 0.3377 | 04 | 5.000 | 0.3364 |
| 05 | 10.000 | 0.3286 | 06 | 50.000 | 0.3323 | 07 | 100.000 | 0.3515 | 08 | 150.000 | 0.3619 |
| 09 | 200.000 | 0.3526 | | | | | | | | | |

m,p-Xylenes

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 1.000 | 0.5081 | 02 | 2.000 | 0.5402 | 03 | 4.000 | 0.5776 | 04 | 10.000 | 0.6066 |
| 05 | 20.000 | 0.5903 | 06 | 100.000 | 0.6045 | 07 | 200.000 | 0.6497 | 08 | 300.000 | 0.6474 |
| 09 | 400.000 | 0.6075 | | | | | | | | | |

o-Xylene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5477 | 02 | 1.000 | 0.4764 | 03 | 2.000 | 0.5469 | 04 | 5.000 | 0.5779 |
| 05 | 10.000 | 0.5754 | 06 | 50.000 | 0.6051 | 07 | 100.000 | 0.6320 | 08 | 150.000 | 0.6378 |
| 09 | 200.000 | 0.6138 | | | | | | | | | |

1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a)

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 0.500 | 0.5669 | 02 | 1.000 | 0.5967 | 03 | 2.000 | 0.6050 | 04 | 5.000 | 0.5828 |
| 05 | 10.000 | 0.5599 | 06 | 50.000 | 0.6101 | 07 | 100.000 | 0.5673 | 08 | 150.000 | 0.5765 |
| 09 | 200.000 | 0.5612 | | | | | | | | | |

4-Bromofluorobenzene

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.4506 | 04 | 60.000 | 0.4320 | 05 | 70.000 | 0.4485 | 07 | 100.000 | 0.4524 |
| 08 | 125.000 | 0.4462 | 09 | 150.000 | 0.4215 | | | | | | |

Dibromofluoromethane

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 0.3253 | 04 | 60.000 | 0.3151 | 05 | 70.000 | 0.3253 | 07 | 100.000 | 0.3250 |
| 08 | 125.000 | 0.3112 | 09 | 150.000 | 0.3110 | | | | | | |

Toluene-d8

| # | Amount | RF | # | Amount | RF | # | Amount | RF | # | Amount | RF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 06 | 50.000 | 1.159 | 04 | 60.000 | 1.105 | 05 | 70.000 | 1.140 | 07 | 100.000 | 1.133 |
| 08 | 125.000 | 1.106 | 09 | 150.000 | 1.094 | | | | | | |

**Client:** NASA/WSTF/Navarro
**Project:** White Sands Test Facility/14EC009B

**Service Request:** R1405586
**Calibration Date:** 7/21/14

## Initial Calibration Summary
## Volatile Organic Compounds by GC/MS

**Calibration ID:** RC1400062
**Instrument ID:** R-MS-10

**Signal ID:** 1

| | | Calibration Evaluation | | | | | RRF Evaluation | | |
|---|---|---|---|---|---|---|---|---|---|
| Analyte Name | Compound Type | Fit Type | Eval. | Eval. Result | Q | Control Criteria | Average RRF | Q | Minimum RRF |
| 1,1,1-Trichloroethane (TCA) | TRG | Average RF | % RSD | 2.5 | | ≤20 | 0.6850 | | 0.100 |
| 1,1,2-Trichloroethane | TRG | Average RF | % RSD | 3.9 | | ≤20 | 0.2259 | | 0.100 |
| 1,1,2-Trichlorotrifluoroethane | TRG | Average RF | % RSD | 6.1 | | ≤20 | 0.4403 | | 0.100 |
| 1,1-Dichloroethene (1,1-DCE) | TRG | Average RF | % RSD | 5.3 | | ≤20 | 0.3485 | | 0.100 |
| 1,2-Dichloroethane | TRG | Average RF | % RSD | 2.6 | | ≤20 | 0.4240 | | 0.100 |
| 2,2-Dichloro-1,1,1-trifluoroethane (CFC 123) | TRG | Average RF | % RSD | 5.5 | | ≤20 | 0.6180 | | |
| 2-Butanone (MEK) | TRG | Average RF | % RSD | 5.9 | | ≤20 | 0.2007 | | 0.05 |
| Isopropanol | TRG | Average RF | % RSD | 10.4 | | ≤20 | 0.02153 | | |
| Acetone | TRG | Average RF | % RSD | 16.0 | | ≤20 | 0.1523 | | 0.05 |
| Benzene | TRG | Average RF | % RSD | 3.8 | | ≤20 | 1.222 | | 0.500 |
| Bromodichloromethane | TRG | Average RF | % RSD | 5.0 | | ≤20 | 0.3900 | | 0.200 |
| Bromoform | TRG | Average RF | % RSD | 12.9 | | ≤20 | 0.1754 | | 0.100 |
| Chlorobenzene | TRG | Average RF | % RSD | 2.7 | | ≤20 | 0.9640 | | 0.500 |
| Chloroform | TRG | Average RF | % RSD | 4.2 | | ≤20 | 0.8279 | | 0.200 |
| Chloromethane | TRG | Average RF | % RSD | 4.5 | | ≤20 | 0.7175 | | 0.100 |
| Dibromochloromethane | TRG | Average RF | % RSD | 10.9 | | ≤20 | 0.3054 | | 0.100 |
| Dichlorofluoromethane (CFC 21) | TRG | Average RF | % RSD | 2.8 | | ≤20 | 0.9222 | | |
| Dichloromethane | TRG | Average RF | % RSD | 6.0 | | ≤20 | 0.4573 | | 0.100 |
| Ethylbenzene | TRG | Average RF | % RSD | 6.8 | | ≤20 | 0.4804 | | 0.100 |
| Methyl tert-Butyl Ether | TRG | Average RF | % RSD | 4.0 | | ≤20 | 0.9984 | | 0.100 |
| Tetrachloroethene (PCE) | TRG | Average RF | % RSD | 4.5 | | ≤20 | 0.2891 | | 0.200 |
| Toluene | TRG | Average RF | % RSD | 2.5 | | ≤20 | 1.281 | | 0.400 |
| Trichloroethene (TCE) | TRG | Average RF | % RSD | 3.6 | | ≤20 | 0.3407 | | 0.200 |
| m,p-Xylenes | TRG | Average RF | % RSD | 7.8 | | ≤20 | 0.5924 | | 0.100 |
| o-Xylene | TRG | Average RF | % RSD | 8.8 | | ≤20 | 0.5792 | | 0.300 |
| 1,2-Dichloro-1,1,2-trifluoroethane (CFC 123a) | TRG | Average RF | % RSD | 3.3 | | ≤20 | 0.5807 | | |
| 4-Bromofluorobenzene | SURR | Average RF | % RSD | 2.8 | | ≤20 | 0.4419 | | |
| Dibromofluoromethane | SURR | Average RF | % RSD | 2.2 | | ≤20 | 0.3188 | | |
| Toluene-d8 | SURR | Average RF | % RSD | 2.2 | | ≤20 | 1.123 | | |

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Low **Folder #:** R1405586 **Instrument:** Ohaus AV412

**Lot # MeOH:**

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 110413-3:50862 | | R1405586-004 | 38.33 | 34.90 | 5/14/2014 | J. Cushman | 3.43 | **1.46** | 7/20/2014 | Field | 7/25/2014 | . Wojtasiewi | |
| 110413-3:50867 | | R1405586-004 | 38.38 | 34.89 | 5/14/2014 | J. Cushman | 3.49 | **1.43** | 7/20/2014 | Field | 7/25/2014 | . Wojtasiewi | |
| 110413-3:50884 | | R1405586-005 | 39.32 | 35.21 | 5/14/2014 | J. Cushman | 4.11 | **1.22** | 7/20/2014 | Field | 7/25/2014 | . Wojtasiewi | |
| 110413-3:50885 | | R1405586-005 | 38.98 | 35.34 | 5/14/2014 | J. Cushman | 3.64 | **1.37** | 7/20/2014 | Field | 7/25/2014 | . Wojtasiewi | |

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

# Method 5035 Tare Extraction Log

ALS Environmental - Rochester

**Level:** Medium **Folder #:** R1405586 **Instrument:** Ohaus AV412

**Lot # MeOH:** DI421

**Lot # Sodium Bisulfate:**

**Comments:**

| Serial # | Sample ID | Order # | Final WT (g) | Tare WT (g) | Bottle Prep/Tare Date | Tare Analyst | Sample WT (g) | DIL | Extraction Date | Extraction Analyst | Final WT Date | Final WT | % Solid |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 040714-3:10341 | | R1405586-004 | 40.38 | 36.61 | 4/28/2014 | J. Cushman | 3.77 | | 7/20/2014 | Field | 7/25/2014 | . Wojtasiewi | |
| 040714-3:10347 | | R1405586-005 | 39.71 | 36.18 | 4/28/2014 | J. Cushman | 3.53 | | 7/20/2014 | Field | 7/25/2014 | . Wojtasiewi | |

55660

Med Level based on 10 mLs MeOH
Low Level based on 5 mL DI

Analysis: 8260-soil
Date: 07/25/14
Instr. MS#7

Analyst: Ben Wojtasiewicz
Data Path: j:\acqudata\msvoa7\DATA\072514

Tune Method: T052914.M
Run Method: S052914.M
LIMS Run#: 403534

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Tune | - | | | | - | 1 | - | K9984 | YT | |
| 2 | CCV | - | | | | - | 1 | - | 85 | YC | |
| 3 | LCS | - | | | | - | 1 | - | 86 | YL | |
| 4 | MBlank | - | | | | - | 1 | - | 87 | Ⓝ | ok for c/o |
| 5 | MBlank | - | | | | - | 2 | - | 88 | YB | |
| 6 | R1405572-007 | 1 | | [redacted] | 6730 | 1 | 1 | NA | 89 | Y | |
| 7 | R1405586-004 | 1.46 | 50862 | [redacted] | 11913 | 3 | 1 | ↓ | 90 | Y | |
| 8 | ↓ -005 | 1.22 | 50884 | ↓ | ↓ | ↓ | 1 | ↓ | 91 | Y | |
| 9 | R1405630-004 | 0.98 | 10134 | | | | 1 | | 92 | Y | |
| 10 | ↓ -007 | 0.89 | 50910 | | | | 1 | | 93 | Y | |
| 11 | R1405662-001 | 0.82 | 10138 | | | | 1 | | 94 | Y | |
| 12 | ↓ -002 | 0.88 | 10120 | | | | 1 | | 95 | Y | |
| 13 | DLCS | - | | | | - | 2 | - | 96 | Y | |
| 14 | Blank | - | | | | - | 1 | - | 97 | - | |
| 15 | ↓ | - | | | | - | 2 | - | 98 | - | |

BW 07/28/14

All samples = 5 mL + 1 uL combined IS/Surr. 10 mL purged

500 Primary TG : 72423 5uL
Primary MBO : 72046
Primary MSL : 72499
Primary Ext : 72625
Primary :
50mL = CCV

500 Secondary TG : 72050 2uL
Secondary MBO : 72455
Secondary MSL : 72663
200 Secondary Ext : 72454 5uL
Secondary :
50g = LCS, DLCS

Combined IS/Surr 250: 72076
Surrogate : -
Internal Std : -

Analysis: 8260C
Date: 7/29/14
Instr. MS #10

Analyst: F. Naegler
Data Path: j:\acqudata\msvoa10\072914

Tune Method: T072114.M
Run Method: W072114.M
LIMS Run#: LL-403995 / 403996

| Pos. | Sample | Diln. | Diln. Prep. | Client | RL | Tier | Vial | pH | File# | OK? | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TUNE | | | | | | | | A0720 | Y | |
| 2 | CCV | | | | | | | | 21 | Y | |
| 3 | LCS | | | | | | | | 22 | Y | |
| 4 | MBLK | | | | | | | | 23 | N | LL |
| 5 | MBLK | | | | | | | | 24 | Y | BQ1408862-01 / 864-01 |
| 6 | R1405581-001 | 1.0 | | [redacted] | 6656 | 3 | 1 | <2 | 25 | Y | |
| 7 | ↓ -002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 26 | Y | |
| 8 | R1405752-004 | 1.0 | | [redacted] | 12017 | 4 | 1 | <2 | 27 | Y | |
| 9 | -001 | 500.0 | 1/5mL → 5/5mL | | | | 1 | <2 | 28 | N | Rpt 1/250 |
| 10 | -002 | 500.0 | | | | | 1 | <2 | 29 | N | Rpt 1/250 |
| 11 | ↓ -003 | 500.0 | ↓ | ↓ | ↓ | ↓ | 1 | <2 | 30 | N | Rpt 1/250 |
| 12 | R1405614-001 | 1.0 | | [redacted] | 9145 | 2 | 1 | <2 | 31 | Y | |
| 13 | ↓ -003 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 32 | Y | |
| 14 | R1405586-001 | 1.0 | | [redacted] | 11813 | 3 | 1 | <2 | 33 | Y | |
| 15 | ↓ -002 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 34 | Y | |
| 16 | R1405665-001 | 1.0 | | [redacted] | 6656 | 3 | 1 | <2 | 35 | Y | |
| 17 | ↓ -002 | 1.0 | | | | | 1 | <2 | 36 | Y | |
| 18 | ↓ -003 | 1.0 | | ↓ | ↓ | ↓ | 1 | <2 | 37 | Y | |
| 19 | R1405800-001 | 1.0 | | [redacted] | 6693 | 2 | 1 | <2 | 38 | Y | |
| 20 | R1405752-001 | 250.0 | 1/5mL → 10/5mL | [redacted] | 12017 | 4 | 1 | <2 | 39 | Y | |
| 21 | ↓ -002 | 250.0 | ↓ | ↓ | ↓ | ↓ | 1 | <2 | 40 | Y | |
| 22 | -003 | 250.0 | | | | | 1 | <2 | 41 | Y | |
| 23 | -003MS | 250.0 | | | | | 1 | <2 | 42 | Y | |
| 24 | ↓ -003MSD | 250.0 | ↓ | ↓ | ↓ | ↓ | 1 | <2 | 43 | Y | |
| 25 | BLK | | | | | | | | 44 | Y | |
| 26 | BLK | | | | | | | | ↓ 45 | Y | |

FJ 7/29/14

All samples = 10 mL + 1 uL combined IS/Surr. 10 mL purged

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| T/G Primary 500 | 72623 - 5mL / 5mL | Fr Secondary 200 | 72454 - 5mL | -12.5mL | 50mL | Combined IS/Surr 500 | 72621 |
| HSL Primary | 72499 - | T/G Secondary 500 | 72866 - 2mL | -5mL | | Surrogate | — |
| Fr Primary | 72625 - | HSL Secondary | 72663 - | | | Internal Std | — |
| HBo Primary | 72865 - (CCV) | HBo Secondary | 72455 - | (LCS) | (blk) | | |
| OCC Primary | 72130 - | OCC Secondary | 72140 - | | | | |

# Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files

| | | | | | |
|---|---|---|---|---|---|
| 5 | =CZ377.D | 10 | =CZ378.D | 50 | =CZ379.D |
| 80 | =CZ380.D | 100 | =CZ381.D | 120 | =CZ382.D |

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichlorobenzen | ISTD | | | | | | | |
| 2) | TM | Pyridine | | | 1.368 | 1.349 | 1.412 | 1.432 | 1.390 | 2.38 |
| 3) | TM | N-Nitrosodimethylam | 0.635 | 0.802 | 0.714 | 0.776 | 0.801 | 0.776 | 0.753 | 7.95 |
| 4) | S | SURR1,2-FLUOROPHENO | 1.204 | 1.171 | 1.224 | 1.261 | 1.297 | 1.268 | 1.240 | 3.45 |
| 5) | TM | Benzaldehyde | | | 0.362 | 0.271 | 0.241 | 0.206 | 0.245 | 32.53 AVG |
| 6) | TM | Aniline | 2.071 | 1.992 | 1.969 | 1.813 | 1.897 | 1.863 | 1.921 | 4.83 |
| 7) | S | SURR2,PHENOL-D6 | 1.589 | 1.734 | 1.655 | 1.582 | 1.655 | 1.631 | 1.636 | 3.18 |
| 8) | TMC | Phenol | 1.822 | 1.734 | 1.579 | 1.728 | 1.642 | 1.708 | 1.676 | 6.11 |
| 9) | TM | bis(2-Clethyl)Ether | 1.321 | 1.151 | 1.269 | 1.278 | 1.167 | 1.205 | 1.214 | 6.43 |
| 10) | TM | 2-Chlorophenol | 1.315 | 1.468 | 1.402 | 1.351 | 1.388 | 1.377 | 1.375 | 3.80 |
| 11) | TM | 1,3-Diclbenzene | 1.628 | 1.630 | 1.483 | 1.470 | 1.493 | 1.472 | 1.514 | 5.38 |
| 12) | TMC | 1,4-Dichlorobenzene | 1.571 | 1.653 | 1.511 | 1.451 | 1.519 | 1.482 | 1.523 | 4.55 |
| 13) | TM | 1,2-Diclbenzene | 1.543 | 1.524 | 1.456 | 1.420 | 1.411 | 1.370 | 1.446 | 4.53 |
| 14) | TM | Benzyl Alcohol | 1.109 | 1.049 | 1.141 | 1.150 | 1.132 | 1.107 | 1.113 | 2.99 |
| 15) | TM | 2,2'-oxybis(1-Chlor | 1.404 | 1.338 | 1.271 | 1.271 | 1.240 | 1.221 | 1.280 | 5.38 |
| 16) | TM | 2-Methylphenol | 1.124 | 1.268 | 1.190 | 1.219 | 1.242 | 1.192 | 1.204 | 3.82 |
| 17) | TM | Acetophenone | 1.903 | 1.944 | 1.810 | 1.771 | 1.804 | 1.749 | 1.809 | 4.94 |
| 18) | TMP | N-Nitroso-Di-n-prop | 1.085 | 1.077 | 0.956 | 0.928 | 0.953 | 0.923 | 0.977 | 7.45 |
| 19) | TM | Hexachloroethane | 0.670 | 0.639 | 0.610 | 0.633 | 0.642 | 0.611 | 0.629 | 3.86 |
| 20) | TM | 3+4-Methylphenol | 1.310 | 1.309 | 1.229 | 1.288 | 1.267 | 1.279 | 1.275 | 2.47 |
| 21) | T | 1-Methyl-2-pyrrolid | | 0.860 | 0.866 | 0.859 | 0.921 | 0.827 | 0.865 | 3.54 |
| 22) | IR | d8-Naphthalene | ISTD | | | | | | | |
| 23) | S | SURR4,NITROBENZENE- | 0.397 | 0.454 | 0.421 | 0.418 | 0.414 | 0.418 | 0.413 | 6.27 |
| 24) | TM | Nitrobenzene | 0.393 | 0.408 | 0.379 | 0.369 | 0.362 | 0.358 | 0.373 | 5.74 |
| 25) | TM | Isophorone | 0.722 | 0.712 | 0.664 | 0.664 | 0.672 | 0.643 | 0.673 | 4.82 |
| 26) | TCM | 2-Nitrophenol | 0.197 | 0.204 | 0.192 | 0.199 | 0.207 | 0.208 | 0.201 | 2.81 |
| 27) | TM | Benzoic Acid | | 0.289 | 0.362 | 0.392 | 0.417 | 0.407 | 0.381 | 12.97 |
| 28) | TM | 2,4-Dimethylphenol | 0.424 | 0.392 | 0.362 | 0.372 | 0.366 | 0.358 | 0.375 | 6.61 |
| 29) | TM | bis(-2-Chloroethoxy | 0.428 | 0.395 | 0.379 | 0.379 | 0.390 | 0.378 | 0.389 | 4.84 |
| 30) | TCM | 2,4-Dichlorophenol | 0.723 | 0.724 | 0.645 | 0.619 | 0.647 | 0.623 | 0.658 | 7.06 |
| 31) | TM | 1,2,4-Trichlorobenz | 0.354 | 0.349 | 0.326 | 0.325 | 0.323 | 0.333 | 0.333 | 3.88 |
| 32) | TM | Naphthalene | 1.043 | 1.061 | 0.949 | 0.944 | 0.984 | 0.971 | 0.977 | 6.17 |
| 33) | TM | 4-Chloroaniline | 0.415 | 0.436 | 0.426 | 0.411 | 0.414 | 0.396 | 0.413 | 3.72 |
| 34) | TCM | Hexachlorobutadiene | 0.241 | 0.179 | 0.188 | 0.187 | 0.188 | 0.188 | 0.194 | 10.69 |
| 35) | TMC | 4-Chloro-3-methylph | 0.301 | 0.292 | 0.288 | 0.308 | 0.309 | 0.293 | 0.298 | 2.77 |
| 36) | TM | Caprolactam | | 0.104 | 0.100 | 0.111 | 0.111 | 0.109 | 0.107 | 4.15 |
| 37) | TM | 2-Methylnaphthalene | 0.758 | 0.731 | 0.696 | 0.675 | 0.688 | 0.671 | 0.696 | 5.40 |
| 38) | TM | 1-Methylnaphthalene | 0.677 | 0.705 | 0.627 | 0.632 | 0.638 | 0.613 | 0.643 | 5.44 |
| 39) | IR | d10-Acenaphthene | ISTD | | | | | | | |
| 40) | TPM | Hexachlorocyclopent | 0.095 | 0.140 | 0.234 | 0.256 | 0.260 | 0.287 | 0.222 | 33.59 OA |
| 41) | TCM | 2,4,6-Trichlorophen | 0.334 | 0.376 | 0.372 | 0.363 | 0.361 | 0.356 | 0.361 | 3.84 |

(#) = Out of Range ### Number of calibration levels exceeded format ###



00059

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files
5 =CZ377.D 10 =CZ378.D 50 =CZ379.D
80 =CZ380.D 100 =CZ381.D 120 =CZ382.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 42) | TM | 2,4,5-Trichlorophen | 0.349 | 0.410 | 0.379 | 0.395 | 0.372 | 0.390 | 0.381 | 5.17 | |
| 43) | S | SURR5,2-FLUOROBIPHE | 1.337 | 1.262 | 1.234 | 1.207 | 1.162 | 1.136 | 1.211 | 6.07 | |
| 44) | TM | 1,1'-Biphenyl | 1.438 | 1.473 | 1.382 | 1.341 | 1.306 | 1.282 | 1.352 | 6.22 | |
| 45) | TM | 2-Chloronaphthalene | 1.197 | 1.162 | 1.086 | 1.039 | 1.035 | 1.046 | 1.083 | 6.43 | |
| 46) | TM | 2-Nitroaniline | | | 0.313 | 0.314 | 0.314 | 0.315 | 0.311 | 2.21 | |
| 47) | TM | Acenaphthylene | 1.753 | 1.780 | 1.703 | 1.615 | 1.608 | 1.544 | 1.640 | 6.79 | |
| 48) | TM | Dimethyl phthalate | 1.375 | 1.316 | 1.211 | 1.186 | 1.123 | 1.127 | 1.199 | 9.43 | |
| 49) | TM | 2,6-Dinitrotoluene | 0.252 | 0.300 | 0.298 | 0.296 | 0.298 | 0.296 | 0.291 | 5.95 | |
| 50) | TMC | Acenaphthene | 1.063 | 1.113 | 1.056 | 1.038 | 1.027 | 0.987 | 1.037 | 4.48 | |
| 51) | TM | 3-Nitroaniline | | | 0.314 | 0.306 | 0.311 | 0.311 | 0.309 | 1.43 | |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.111 | 0.157 | 0.170 | 0.186 | 0.164 | 20.11 | LR |
| 53) | TM | Dibenzofuran | 1.742 | 1.622 | 1.550 | 1.466 | 1.473 | 1.422 | 1.516 | 8.93 | |
| 54) | TM | 2,4-Dinitrotoluene | 0.388 | 0.380 | 0.371 | 0.399 | 0.411 | 0.395 | 0.390 | 3.32 | |
| 55) | TMP | 4-Nitrophenol | | | 0.205 | 0.211 | 0.225 | 0.218 | 0.215 | 3.57 | |
| 56) | TM | Fluorene | 1.413 | 1.405 | 1.240 | 1.219 | 1.172 | 1.166 | 1.243 | 9.92 | |
| 57) | TM | 4-Chlorophenyl-phen | 0.666 | 0.669 | 0.606 | 0.595 | 0.596 | 0.586 | 0.610 | 7.00 | |
| 58) | TM | Diethylphthalate | 1.349 | 1.287 | 1.106 | 1.164 | 1.149 | 1.135 | 1.181 | 8.41 | |
| 59) | TM | 4-Nitroaniline | | | 0.287 | 0.317 | 0.320 | 0.336 | 0.317 | 5.83 | |
| 60) | S | SURR3,2,4,6-TRIBROM | 0.133 | 0.139 | 0.120 | 0.138 | 0.129 | 0.139 | 0.134 | 5.48 | |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-methyl | | | | | | | 0.000# | -1.00 | |
| 63) | TM | 4,6-Dinitro-2-methy | | | 0.151 | 0.169 | 0.173 | 0.164 | 0.164 | 5.12 | |
| 64) | TM | 1,2 Diphenylhydrazi | 0.841 | 0.849 | 0.792 | 0.743 | 0.731 | 0.698 | 0.756 | 10.20 | |
| 65) | TCM | N-Nitrosodiphenylam | 0.560 | 0.575 | 0.571 | 0.526 | 0.543 | 0.532 | 0.546 | 4.35 | |
| 66) | TM | 4-Bromophenyl-pheny | 0.222 | 0.218 | 0.212 | 0.199 | 0.209 | 0.204 | 0.208 | 4.60 | |
| 67) | T | 1-Phenyl-1(2,4-dime | | | | | | | 0.000# | -1.00 | |
| 68) | TM | Hexachlorobenzene | 0.226 | 0.217 | 0.211 | 0.210 | 0.215 | 0.211 | 0.214 | 2.75 | |
| 69) | TM | Atrazine | 0.069 | 0.095 | 0.089 | 0.095 | 0.095 | 0.089 | 0.088 | 10.33 | |
| 70) | TCM | Pentachlorophenol | | | 0.122 | 0.141 | 0.154 | 0.146 | 0.143 | 8.71 | |
| 71) | TM | Phenanthrene | 1.108 | 1.114 | 0.988 | 0.996 | 1.009 | 0.968 | 1.014 | 7.17 | |
| 72) | TM | Anthracene | 1.264 | 1.214 | 1.091 | 1.051 | 1.072 | 1.011 | 1.095 | 9.92 | |
| 73) | TM | Carbazole | 1.073 | 1.080 | 1.065 | 1.054 | 1.081 | 1.017 | 1.045 | 4.66 | |
| 74) | TM | Di-n-butylphthalate | 1.276 | 1.357 | 1.359 | 1.330 | 1.303 | 1.250 | 1.287 | 6.08 | |
| 75) | TCM | Fluoranthene | 1.146 | 1.179 | 1.208 | 1.204 | 1.223 | 1.150 | 1.169 | 4.40 | |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.561 | 0.526 | 0.487 | 0.492 | 0.503 | 8.41 | |
| 78) | TM | Pyrene | 1.380 | 1.403 | 1.327 | 1.272 | 1.244 | 1.234 | 1.295 | 5.88 | |
| 79) | S | SURR6,TERPHENYL-D14 | 0.897 | 0.920 | 0.855 | 0.850 | 0.851 | 0.854 | 0.870 | 3.15 | |
| 80) | TM | Butyl benzyl phthal | 0.719 | 0.681 | 0.664 | 0.652 | 0.660 | 0.670 | 0.671 | 3.55 | |
| 81) | TM | 3,3'-Dichlorobenzid | 0.430 | 0.444 | 0.443 | 0.414 | 0.412 | 0.398 | 0.422 | 4.02 | |
| 82) | TM | Benzo(a)anthracene | 1.277 | 1.313 | 1.218 | 1.217 | 1.215 | 1.214 | 1.239 | 3.19 | |
| 83) | TM | Chrysene | 1.271 | 1.253 | 1.148 | 1.153 | 1.156 | 1.137 | 1.177 | 5.05 | |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Response Factor Report 5973-A

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Initial Calibration

Calibration Files

| | | | | | |
|---|---|---|---|---|---|
| 5 | =CZ377.D | 10 | =CZ378.D | 50 | =CZ379.D |
| 80 | =CZ380.D | 100 | =CZ381.D | 120 | =CZ382.D |

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | Avg | %RSD |
|---|---|---|---|---|---|---|---|---|---|---|
| 84) | TM | bis(2-Ethylhexyl)ph | 0.879 | 0.952 | 0.909 | 0.894 | 0.863 | 0.863 | 0.886 | 4.09 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | |
| 86) | TCM | Di-n-octyl phthalat | 1.702 | 1.639 | 1.560 | 1.502 | 1.472 | 1.444 | 1.533 | 6.92 |
| 87) | TM | Benzo(b)Fluoranthen | 1.083 | 1.188 | 1.070 | 1.080 | 1.114 | 1.066 | 1.094 | 4.12 |
| 88) | TM | Benzo(k)fluoranthen | 1.284 | 1.207 | 1.108 | 1.123 | 1.108 | 1.077 | 1.140 | 6.75 |
| 89) | TCM | Benzo(a)pyrene | 1.182 | 1.194 | 1.066 | 1.081 | 1.106 | 1.081 | 1.112 | 4.78 |
| 90) | TM | Indeno(1,2,3-cd)Pyr | 1.132 | 0.800 | 0.934 | 0.951 | 0.965 | 0.953 | 0.958 | 10.10 |
| 91) | TM | Dibenz(a,h)anthrace | 0.961 | 0.868 | 0.944 | 0.946 | 0.954 | 0.947 | 0.937 | 3.35 |
| 92) | TM | Benzo(g,h,i)perylen | 0.946 | 0.829 | 0.907 | 0.875 | 0.908 | 0.869 | 0.887 | 4.19 |

(#) = Out of Range ### Number of calibration levels exceeded format ###

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D  Vial: 6
Acq On : 9 Jul 2014 12:43 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.390 | 1.349 | 2.9 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.753 | 0.776 | -3.1 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.240 | 1.261 | -1.7 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.245 | 0.271 | -10.6 | 100 | 0.00 |
| 6 | TM | Aniline | 1.921 | 1.813 | 5.6 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.636 | 1.582 | 3.3 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.676 | 1.728 | -3.1 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.214 | 1.278 | -5.3 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.375 | 1.351 | 1.7 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.514 | 1.470 | 2.9 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.523 | 1.451 | 4.7 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.446 | 1.420 | 1.8 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.113 | 1.150 | -3.3 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.280 | 1.271 | 0.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.204 | 1.219 | -1.2 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.809 | 1.771 | 2.1 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.977 | 0.928 | 5.0 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.629 | 0.633 | -0.6 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.275 | 1.288 | -1.0 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.865 | 0.859 | 0.7 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.413 | 0.418 | -1.2 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.373 | 0.369 | 1.1 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.673 | 0.664 | 1.3 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.201 | 0.199 | 1.0 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.381 | 0.392 | -2.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.375 | 0.372 | 0.8 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.389 | 0.379 | 2.6 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.658 | 0.619 | 5.9 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.333 | 0.325 | 2.4 | 100 | 0.00 |
| 32 | TM | Naphthalene | 0.977 | 0.944 | 3.4 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.413 | 0.411 | 0.5 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.194 | 0.187 | 3.6 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.298 | 0.308 | -3.4 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.107 | 0.111 | -3.7 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.696 | 0.675 | 3.0 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.643 | 0.632 | 1.7 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D  Vial: 6
Acq On : 9 Jul 2014 12:43 pm  Operator: Z.Miao
Sample : SSTD080  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 0.222 | 0.256 | -15.3 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.361 | 0.363 | -0.6 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.381 | 0.395 | -3.7 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.211 | 1.207 | 0.3 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.352 | 1.341 | 0.8 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.083 | 1.039 | 4.1 | 100 | 0.00 |
| 46 | TM | 2-Nitroaniline | 0.311 | 0.314 | -1.0 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.640 | 1.615 | 1.5 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.199 | 1.186 | 1.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.291 | 0.296 | -1.7 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.037 | 1.038 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.309 | 0.306 | 1.0 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.164 | 0.157 | 4.3 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.516 | 1.466 | 3.3 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.390 | 0.399 | -2.3 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.215 | 0.211 | 1.9 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.243 | 1.219 | 1.9 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.610 | 0.595 | 2.5 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.181 | 1.164 | 1.4 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.317 | 0.0 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.134 | 0.138 | -3.0 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.164 | 0.169 | -3.0 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.756 | 0.743 | 1.7 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.546 | 0.526 | 3.7 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.208 | 0.199 | 4.3 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 100 | 0.00 |
| 68 | TM | Hexachlorobenzene | 0.214 | 0.210 | 1.9 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.088 | 0.095 | -8.0 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.143 | 0.141 | 1.4 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.014 | 0.996 | 1.8 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.095 | 1.051 | 4.0 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.045 | 1.054 | -0.9 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.287 | 1.330 | -3.3 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.169 | 1.204 | -3.0 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.503 | 0.526 | -4.6 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.295 | 1.272 | 1.8 | 100 | 0.00 |

(#) = Out of Range

Data File : I:\ACQUDATA\5973A\DATA\070914\CZ380.D Vial: 6
Acq On : 9 Jul 2014 12:43 pm Operator: Z.Miao
Sample : SSTD080 Inst : 5973-A
Misc : 80 PPM STD 8270/625 Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 0.870 | 0.850 | 2.3 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.671 | 0.652 | 2.8 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.422 | 0.414 | 1.9 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.239 | 1.217 | 1.8 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.177 | 1.153 | 2.0 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.886 | 0.894 | -0.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 1.533 | 1.502 | 2.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.094 | 1.080 | 1.3 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.140 | 1.123 | 1.5 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.112 | 1.081 | 2.8 | 100 | 0.00 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 0.958 | 0.951 | 0.7 | 100 | 0.00 |
| 91 | TM | Dibenz(a,h)anthracene | 0.937 | 0.946 | -1.0 | 100 | 0.00 |
| 92 | TM | Benzo(g,h,i)perylene | 0.887 | 0.875 | 1.4 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Response Factor Report 5973D

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M
Title : 8270 BNA ANALYSIS
Last Update : Wed Jul 02 10:45:14 2014
Response Via : Initial Calibration

Calibration Files
5 =AV019.D 10 =AV020.D 50 =AV021.D 80 =AV022.D 100 =AV023.D 120 =AV024.D 160 =AV025.D

| | | Compound | 5 | 10 | 50 | 80 | 100 | 120 | 160 | Avg | %RSD | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1) | IR | d4-1,4-Dichloroben... | ----------ISTD---------- | | | | | | | | | |
| 2) | TM | Pyridine | | 1.313 | 1.336 | 1.325 | 1.339 | 1.325 | 1.328 | | 0.79 | |
| 3) | TM | N-Nitrosodimet... | 0.562 | 0.626 | 0.701 | 0.702 | 0.688 | 0.739 | 0.714 | 0.676 | 9.00 | |
| 4) | S | SURR1,2-FLUORO... | 1.111 | 1.124 | 1.180 | 1.192 | 1.190 | 1.211 | 1.227 | 1.177 | 3.67 | |
| 5) | TM | Benzaldehyde | | | 0.365 | 0.335 | 0.290 | 0.249 | 0.152 | 0.278 | 29.94 | AVG |
| 6) | TM | Aniline | 2.025 | 2.073 | 2.049 | 2.024 | 2.043 | 2.133 | 2.040 | 2.055 | 1.85 | |
| 7) | S | SURR2,PHENOL-D6 | 1.357 | 1.418 | 1.590 | 1.570 | 1.542 | 1.636 | 1.595 | 1.530 | 6.71 | |
| 8) | TMC | Phenol | 1.486 | 1.478 | 1.592 | 1.619 | 1.597 | 1.646 | 1.629 | 1.578 | 4.33 | |
| 9) | TM | bis(2-Clethyl)... | 1.160 | 1.156 | 1.182 | 1.188 | 1.071 | 1.125 | 1.138 | 1.146 | 3.45 | |
| 10) | TM | 2-Chlorophenol | 1.284 | 1.300 | 1.374 | 1.376 | 1.348 | 1.418 | 1.400 | 1.357 | 3.66 | |
| 11) | TM | 1,3-Diclbenzene | 1.604 | 1.610 | 1.579 | 1.583 | 1.559 | 1.563 | 1.567 | 1.581 | 1.26 | |
| 12) | TMC | 1,4-Dichlorobe... | 1.732 | 1.623 | 1.646 | 1.620 | 1.603 | 1.641 | 1.632 | 1.642 | 2.55 | |
| 13) | TM | 1,2-Diclbenzene | 1.641 | 1.535 | 1.529 | 1.519 | 1.507 | 1.543 | 1.525 | 1.543 | 2.92 | |
| 14) | TM | Benzyl Alcohol | 0.916 | 0.856 | 0.999 | 1.008 | 1.021 | 1.063 | 1.026 | 0.984 | 7.33 | |
| 15) | TM | 2,2'-oxybis(1-... | 1.663 | 1.681 | 1.648 | 1.622 | 1.626 | 1.665 | 1.647 | 1.650 | 1.29 | |
| 16) | TM | 2-Methylphenol | 1.099 | 1.184 | 1.257 | 1.230 | 1.246 | 1.298 | 1.272 | 1.226 | 5.44 | |
| 17) | TM | Acetophenone | 1.847 | 1.781 | 1.777 | 1.780 | 1.770 | 1.836 | 1.795 | 1.798 | 1.72 | |
| 18) | TMP | N-Nitroso-Di-n... | 0.896 | 0.918 | 0.937 | 0.931 | 0.903 | 0.958 | 0.964 | 0.929 | 2.77 | |
| 19) | TM | Hexachloroethane | 0.526 | 0.601 | 0.604 | 0.611 | 0.601 | 0.603 | 0.607 | 0.593 | 5.03 | |
| 20) | TM | 3+4-Methylphenol | 1.199 | 1.193 | 1.304 | 1.307 | 1.286 | 1.375 | 1.343 | 1.287 | 5.31 | |
| 21) | T | 1-Methyl-2-pyr... | | 0.870 | 0.921 | 0.891 | 0.885 | 0.939 | 0.867 | 0.896 | 3.21 | |
| 22) | IR | d8-Naphthalene | ----------ISTD---------- | | | | | | | | | |
| 23) | S | SURR4,NITROBEN... | 0.240 | 0.320 | 0.328 | 0.334 | 0.346 | 0.363 | 0.317 | 0.321 | 12.17 | |
| 24) | TM | Nitrobenzene | 0.252 | 0.280 | 0.291 | 0.316 | 0.316 | 0.331 | 0.331 | 0.302 | 9.75 | |
| 25) | TM | Isophorone | 0.580 | 0.597 | 0.592 | 0.606 | 0.614 | 0.640 | 0.623 | 0.607 | 3.31 | |
| 26) | TCM | 2-Nitrophenol | 0.120 | 0.126 | 0.141 | 0.156 | 0.161 | 0.174 | 0.178 | 0.151 | 14.96 | |
| 27) | TM | Benzoic Acid | | 0.144 | 0.225 | 0.269 | 0.284 | 0.314 | 0.317 | 0.259 | 25.32 | QA |
| 28) | TM | 2,4-Dimethylph... | 0.276 | 0.331 | 0.312 | 0.327 | 0.326 | 0.339 | 0.336 | 0.321 | 6.77 | |
| 29) | TM | bis(-2-Chloroe... | 0.373 | 0.369 | 0.356 | 0.362 | 0.370 | 0.373 | 0.368 | 0.367 | 1.65 | |
| 30) | TCM | 2,4-Dichloroph... | 0.261 | 0.261 | 0.291 | 0.306 | 0.306 | 0.323 | 0.322 | 0.296 | 8.82 | |
| 31) | TM | 1,2,4-Trichlor... | 0.374 | 0.356 | 0.349 | 0.354 | 0.359 | 0.364 | 0.364 | 0.360 | 2.35 | |
| 32) | TM | Naphthalene | 1.046 | 1.072 | 1.011 | 1.038 | 1.047 | 1.067 | 1.062 | 1.049 | 1.98 | |
| 33) | TM | 4-Chloroaniline | 0.382 | 0.403 | 0.416 | 0.428 | 0.431 | 0.445 | 0.430 | 0.419 | 5.01 | |
| 34) | TCM | Hexachlorobuta... | 0.206 | 0.205 | 0.205 | 0.207 | 0.200 | 0.208 | 0.212 | 0.206 | 1.72 | |
| 35) | TMC | 4-Chloro-3-met... | 0.223 | 0.245 | 0.258 | 0.264 | 0.271 | 0.284 | 0.279 | 0.260 | 8.09 | |
| 36) | TM | Caprolactam | | 0.087 | 0.086 | 0.087 | 0.089 | 0.096 | 0.076 | 0.087 | 7.06 | |
| 37) | TM | 2-Methylnaphth... | 0.715 | 0.727 | 0.707 | 0.711 | 0.717 | 0.751 | 0.760 | 0.727 | 2.85 | |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 38) | TM | 1-Methylnaphth... | 0.641 | 0.665 | 0.660 | 0.659 | 0.668 | 0.693 | 0.689 | 0.668 | 2.68 |
| 39) | IR | d10-Acenaphthene | ----------ISTD---------- | | | | | | | | |
| 40) | TPM | Hexachlorocycl... | 0.314 | 0.321 | 0.368 | 0.408 | 0.415 | 0.412 | 0.452 | 0.384 | 13.47 |
| 41) | TCM | 2,4,6-Trichlor... | 0.287 | 0.338 | 0.362 | 0.379 | 0.395 | 0.403 | 0.414 | 0.368 | 11.95 |
| 42) | TM | 2,4,5-Trichlor... | 0.337 | 0.361 | 0.382 | 0.421 | 0.394 | 0.406 | 0.412 | 0.388 | 7.71 |
| 43) | S | SURR5,2-FLUORO... | 1.233 | 1.279 | 1.280 | 1.304 | 1.310 | 1.287 | 1.359 | 1.293 | 2.96 |
| 44) | TM | 1,1'-Biphenyl | 1.382 | 1.411 | 1.414 | 1.470 | 1.437 | 1.433 | 1.507 | 1.436 | 2.87 |
| 45) | TM | 2-Chloronaphth... | 1.107 | 1.079 | 1.091 | 1.137 | 1.130 | 1.113 | 1.168 | 1.118 | 2.67 |
| 46) | TM | 2-Nitroaniline | | | 0.238 | 0.260 | 0.258 | 0.266 | 0.272 | 0.259 | 5.07 |
| 47) | TM | Acenaphthylene | 1.608 | 1.678 | 1.778 | 1.838 | 1.822 | 1.824 | 1.894 | 1.778 | 5.63 |
| 48) | TM | Dimethyl phtha... | 1.182 | 1.218 | 1.199 | 1.174 | 1.149 | 1.145 | 1.144 | 1.173 | 2.46 |
| 49) | TM | 2,6-Dinitrotol... | 0.171 | 0.173 | 0.211 | 0.226 | 0.234 | 0.234 | 0.242 | 0.213 | 13.99 |
| 50) | TMC | Acenaphthene | 1.184 | 1.161 | 1.153 | 1.179 | 1.178 | 1.181 | 1.213 | 1.178 | 1.62 |
| 51) | TM | 3-Nitroaniline | | | 0.239 | 0.272 | 0.270 | 0.284 | 0.291 | 0.271 | 7.29 |
| 52) | TPM | 2,4-Dinitrophenol | | | 0.087 | 0.116 | 0.124 | 0.136 | 0.155 | 0.124 | 20.33 |
| 53) | TM | Dibenzofuran | 1.703 | 1.671 | 1.641 | 1.665 | 1.674 | 1.681 | 1.691 | 1.675 | 1.18 |
| 54) | TM | 2,4-Dinitrotol... | 0.189 | 0.213 | 0.252 | 0.286 | 0.308 | 0.312 | 0.334 | 0.271 | 19.99 |
| 55) | TMP | 4-Nitrophenol | | | 0.166 | 0.195 | 0.197 | 0.200 | 0.212 | 0.194 | 8.73 |
| 56) | TM | Fluorene | 1.354 | 1.320 | 1.307 | 1.327 | 1.310 | 1.322 | 1.300 | 1.320 | 1.35 |
| 57) | TM | 4-Chlorophenyl... | 0.668 | 0.648 | 0.654 | 0.673 | 0.661 | 0.664 | 0.657 | 0.661 | 1.29 |
| 58) | TM | Diethylphthalate | 1.149 | 1.080 | 1.035 | 1.102 | 1.101 | 1.132 | 1.177 | 1.111 | 4.23 |
| 59) | TM | 4-Nitroaniline | | | 0.268 | 0.310 | 0.322 | 0.339 | 0.345 | 0.317 | 9.59 |
| 60) | S | SURR3,2,4,6-TR... | 0.163 | 0.144 | 0.163 | 0.177 | 0.192 | 0.204 | 0.208 | 0.179 | 13.27 |
| 61) | IR | d10-Phenanthrene | ----------ISTD---------- | | | | | | | | |
| 62) | T | 1-Phenyl-1(4-m... | | | | | | | | 0.000# | -1.00 |
| 63) | TM | 4,6-Dinitro-2-... | | | 0.096 | 0.111 | 0.118 | 0.119 | 0.131 | 0.115 | 11.28 |
| 64) | TM | 1,2 Diphenylhy... | 0.720 | 0.735 | 0.792 | 0.723 | 0.707 | 0.689 | 0.677 | 0.720 | 5.15 |
| 65) | TCM | N-Nitrosodiphe... | 0.543 | 0.540 | 0.534 | 0.511 | 0.518 | 0.524 | 0.543 | 0.530 | 2.47 |
| 66) | TM | 4-Bromophenyl-... | 0.241 | 0.249 | 0.249 | 0.234 | 0.232 | 0.227 | 0.236 | 0.238 | 3.51 |
| 67) | T | 1-Phenyl-1(2,4... | | | | | | | | 0.000# | -1.00 |
| 68) | TM | Hexachlorobenzene | 0.255 | 0.268 | 0.278 | 0.260 | 0.260 | 0.260 | 0.269 | 0.264 | 2.97 |
| 69) | TM | Atrazine | 0.069 | 0.058 | 0.084 | 0.085 | 0.089 | 0.089 | 0.089 | 0.081 | 15.01 |
| 70) | TCM | Pentachlorophenol | | | 0.121 | 0.134 | 0.149 | 0.153 | 0.164 | 0.144 | 11.74 |
| 71) | TM | Phenanthrene | 1.078 | 1.088 | 1.055 | 1.064 | 1.090 | 1.107 | 1.142 | 1.089 | 2.66 |
| 72) | TM | Anthracene | 1.061 | 1.109 | 1.121 | 1.124 | 1.176 | 1.178 | 1.215 | 1.141 | 4.54 |
| 73) | TM | Carbazole | 0.976 | 0.943 | 1.081 | 1.080 | 1.092 | 1.112 | 1.111 | 1.056 | 6.45 |
| 74) | TM | Di-n-butylphth... | 0.898 | 0.940 | 1.214 | 1.252 | 1.288 | 1.274 | 1.331 | 1.171 | 15.04 |
| 75) | TCM | Fluoranthene | 1.060 | 1.047 | 1.312 | 1.331 | 1.341 | 1.354 | 1.374 | 1.260 | 11.30 |
| 76) | IR | d12-Chrysene | ----------ISTD---------- | | | | | | | | |
| 77) | TM | Benzidine | | | 0.480 | 0.472 | 0.476 | 0.474 | 0.428 | 0.466 | 4.64 |
| 78) | TM | Pyrene | 1.028 | 1.059 | 1.139 | 1.117 | 1.164 | 1.228 | 1.200 | 1.134 | 6.38 |
| 79) | S | SURR6,TERPHENY... | 0.825 | 0.832 | 0.797 | 0.802 | 0.846 | 0.882 | 0.876 | 0.837 | 3.98 |
| 80) | TM | Butyl benzyl p... | 0.361 | 0.402 | 0.454 | 0.471 | 0.498 | 0.494 | 0.508 | 0.455 | 12.06 |
| 81) | TM | 3,3'-Dichlorob... | 0.311 | 0.311 | 0.353 | 0.341 | 0.367 | 0.374 | 0.380 | 0.348 | 8.17 |
| 82) | TM | Benzo(a)anthra... | 1.090 | 1.073 | 1.113 | 1.124 | 1.148 | 1.166 | 1.139 | 1.122 | 2.90 |

Method Path : I:\ACQUDATA\5973D\METHODS\
Method File : 82700701D.M

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 83) | TM | Chrysene | 1.185 | 1.167 | 1.121 | 1.116 | 1.142 | 1.159 | 1.151 | 1.149 | 2.15 |
| 84) | TM | bis(2-Ethylhex... | 0.465 | 0.514 | 0.575 | 0.626 | 0.630 | 0.602 | 0.644 | 0.580 | 11.55 |
| 85) | IR | d12-Perylene | ----------ISTD---------- | | | | | | | | |
| 86) | TCM | Di-n-octyl pht... | 0.629 | 0.653 | 0.845 | 0.981 | 1.044 | 1.021 | 1.129 | 0.900 | 21.86 |
| 87) | TM | Benzo(b)Fluora... | 1.015 | 0.994 | 1.026 | 1.047 | 1.081 | 1.103 | 1.155 | 1.060 | 5.32 |
| 88) | TM | Benzo(k)fluora... | 1.149 | 1.006 | 1.143 | 1.156 | 1.177 | 1.190 | 1.212 | 1.148 | 5.82 |
| 89) | TCM | Benzo(a)pyrene | 0.865 | 0.887 | 1.037 | 1.056 | 1.082 | 1.099 | 1.145 | 1.024 | 10.47 |
| 90) | TM | Indeno(1,2,3-c... | 0.723 | 0.685 | 0.940 | 0.921 | 0.967 | 0.930 | 0.970 | 0.876 | 13.66 |
| 91) | TM | Dibenz(a,h)ant... | 0.885 | 0.730 | 0.979 | 1.010 | 1.023 | 1.012 | 1.047 | 0.955 | 11.74 |
| 92) | TM | Benzo(g,h,i)pe... | 0.855 | 0.757 | 0.955 | 0.948 | 0.954 | 0.956 | 0.963 | 0.913 | 8.57 |

(#) = Out of Range

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.336 | -0.6 | 100 | 0.00 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.702 | -3.8 | 100 | 0.00 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.192 | -1.3 | 100 | 0.00 |
| 5 | TM | Benzaldehyde | 0.278 | 0.335 | -20.5# | 100 | 0.00 |
| 6 | TM | Aniline | 2.055 | 2.024 | 1.5 | 100 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.570 | -2.6 | 100 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.619 | -2.6 | 100 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.188 | -3.7 | 100 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.376 | -1.4 | 100 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.583 | -0.1 | 100 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.620 | 1.3 | 100 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.519 | 1.6 | 100 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.008 | -2.4 | 100 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.622 | 1.7 | 100 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.230 | -0.3 | 100 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.780 | 1.0 | 100 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.931 | -0.2 | 100 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.611 | -3.0 | 100 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.307 | -1.6 | 100 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.891 | 0.6 | 100 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.334 | -4.0 | 100 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.316 | -4.6 | 100 | 0.00 |
| 25 | TM | Isophorone | 0.607 | 0.606 | 0.2 | 100 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 100 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.269 | -3.9 | 100 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.327 | -1.9 | 100 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.362 | 1.4 | 100 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 100 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.354 | 1.7 | 100 | 0.00 |
| 32 | TM | Naphthalene | 1.049 | 1.038 | 1.0 | 100 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.428 | -2.1 | 100 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.207 | -0.5 | 100 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.264 | -1.5 | 100 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.087 | 0.0 | 100 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.711 | 2.2 | 100 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.659 | 1.3 | 100 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.408 | -6.2 | 100 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.379 | -3.0 | 100 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.421 | -8.5 | 100 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.304 | -0.9 | 100 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.470 | -2.4 | 100 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.137 | -1.7 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.260 | -0.4 | 100 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.838 | -3.4 | 100 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.174 | -0.1 | 100 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.226 | -6.1 | 100 | 0.00 |
| 50 | TMC | Acenaphthene | 1.178 | 1.179 | -0.1 | 100 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.272 | -0.4 | 100 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.116 | 6.5 | 100 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.665 | 0.6 | 100 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.286 | -5.5 | 100 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.195 | -0.5 | 100 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.327 | -0.5 | 100 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.673 | -1.8 | 100 | 0.00 |
| 58 | TM | Diethylphthalate | 1.111 | 1.102 | 0.8 | 100 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.310 | 2.2 | 100 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.177 | 1.1 | 100 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.111 | 3.5 | 100 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.723 | -0.4 | 100 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.511 | 3.6 | 100 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.234 | 1.7 | 100 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 0# | -10.86# |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.260 | 1.5 | 100 | 0.00 |
| 69 | TM | Atrazine | 0.081 | 0.085 | -4.9 | 100 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.134 | 6.9 | 100 | 0.00 |
| 71 | TM | Phenanthrene | 1.089 | 1.064 | 2.3 | 100 | 0.00 |
| 72 | TM | Anthracene | 1.141 | 1.124 | 1.5 | 100 | 0.00 |
| 73 | TM | Carbazole | 1.056 | 1.080 | -2.3 | 100 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.252 | -6.9 | 100 | 0.00 |
| 75 | TCM | Fluoranthene | 1.260 | 1.331 | -5.6 | 100 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 77 | TM | Benzidine | 0.466 | 0.472 | -1.3 | 100 | 0.00 |
| 78 | TM | Pyrene | 1.134 | 1.117 | 1.5 | 100 | 0.00 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.802 | 4.2 | 100 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.471 | -3.5 | 100 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.341 | 2.0 | 100 | 0.00 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.124 | -0.2 | 100 | 0.00 |
| 83 | TM | Chrysene | 1.149 | 1.116 | 2.9 | 100 | 0.00 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.626 | -7.9 | 100 | 0.00 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 100 | 0.00 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.981 | -9.0 | 100 | 0.00 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.047 | 1.2 | 100 | 0.00 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.156 | -0.7 | 100 | 0.00 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.056 | -3.1 | 100 | 0.00 |

Data Path : I:\ACQUDATA\5973D\Data\070114\
Data File : AV022.D
Acq On : 1 Jul 2014 3:47 pm
Operator : Z.Miao
Sample : SSTD080
Misc : 80 PPM STD 8270/625
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 02 09:11:12 2014
Quant Method : I:\ACQUDATA\5973D\METHODS\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 09:11:05 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.921 | -5.1 | 100 | 0.00 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.010 | -5.8 | 100 | 0.00 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.948 | -3.8 | 100 | 0.00 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Inst : 5973D

QA : #27.86
LR : #52

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 1.328 | 1.408 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 0.676 | 0.752 | -11.2 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.177 | 1.247 | -5.9 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 0.278 | 0.221 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 2.055 | 1.862 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 1.530 | 1.627 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 1.578 | 1.686 | -6.8 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.146 | 1.245 | -8.6 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 1.357 | 1.427 | -5.2 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.581 | 1.644 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.642 | 1.684 | -2.6 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.543 | 1.575 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 0.984 | 1.045 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.650 | 1.779 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.226 | 1.284 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 1.798 | 1.868 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.929 | 0.969 | -4.3 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 0.593 | 0.625 | -5.4 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 1.287 | 1.343 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.896 | 0.902 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.321 | 0.325 | -1.2 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 0.302 | 0.336 | -11.3 | 127 | -0.01 |
| 25 | TM | Isophorone | 0.607 | 0.627 | -3.3 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.151 | 0.156 | -3.3 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 0.259 | 0.240 | 7.3 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.321 | 0.339 | -5.6 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.367 | 0.374 | -1.9 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.296 | 0.306 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.360 | 0.360 | 0.0 | 121 | -0.01 |
| 32 | TM | Naphthalene | 1.049 | 1.063 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.419 | 0.422 | -0.7 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.206 | 0.211 | -2.4 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.260 | 0.268 | -3.1 | 121 | 0.00 |
| 36 | TM | Caprolactam | 0.087 | 0.088 | -1.1 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.727 | 0.734 | -1.0 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.668 | 0.677 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 0.384 | 0.405 | -5.5 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.368 | 0.395 | -7.3 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.388 | 0.415 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.293 | 1.379 | -6.7 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.436 | 1.542 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.118 | 1.196 | -7.0 | 121 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 0.259 | 0.290 | -12.0 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 1.778 | 1.862 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.173 | 1.223 | -4.3 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.213 | 0.256 | -20.2# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 1.178 | 1.204 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.271 | 0.290 | -7.0 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.124 | 0.117 | 5.6 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 1.675 | 1.722 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.271 | 0.333 | -22.9# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.194 | 0.199 | -2.6 | 118 | 0.00 |
| 56 | TM | Fluorene | 1.320 | 1.394 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.661 | 0.691 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 1.111 | 1.109 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.340 | -7.3 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.179 | 0.180 | -0.6 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 0# | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.115 | 0.112 | 2.6 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.720 | 0.762 | -5.8 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.530 | 0.521 | 1.7 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.238 | 0.236 | 0.8 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 34# | -0.05 |
| 68 | TM | Hexachlorobenzene | 0.264 | 0.263 | 0.4 | 116 | -0.01 |
| 69 | TM | Atrazine | 0.081 | 0.080 | 1.2 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 0.144 | 0.151 | -4.9 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 1.089 | 1.106 | -1.6 | 119 | -0.02 |
| 72 | TM | Anthracene | 1.141 | 1.174 | -2.9 | 120 | -0.02 |
| 73 | TM | Carbazole | 1.056 | 1.125 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 1.171 | 1.272 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 1.260 | 1.370 | -8.7 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 0.466 | 0.000# | 100.0# | 0# | -8.49# |
| 78 | TM | Pyrene | 1.134 | 1.179 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 0.837 | 0.821 | 1.9 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 0.455 | 0.466 | -2.4 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.348 | 0.362 | -4.0 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 1.122 | 1.149 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 1.149 | 1.146 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.580 | 0.612 | -5.5 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 0.900 | 0.968 | -7.6 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 1.060 | 1.112 | -4.9 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.148 | 1.186 | -3.3 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.024 | 1.096 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 0.876 | 0.943 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 0.955 | 1.030 | -7.9 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 0.913 | 0.974 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 84.824 | -6.0 | 126 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 89.052 | -11.3 | 128 | -0.01 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 84.775 | -6.0 | 125 | -0.01 |
| 5 | TM | Benzaldehyde | 80.000 | 63.567 | 20.5# | 79 | 0.00 |
| 6 | TM | Aniline | 80.000 | 72.481 | 9.4 | 110 | -0.01 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 85.077 | -6.3 | 124 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 85.487 | -6.9 | 124 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.948 | -8.7 | 125 | -0.01 |
| 10 | TM | 2-Chlorophenol | 80.000 | 84.098 | -5.1 | 124 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 83.219 | -4.0 | 124 | -0.01 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 82.010 | -2.5 | 124 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 81.688 | -2.1 | 124 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 84.996 | -6.2 | 124 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 86.253 | -7.8 | 131 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 83.784 | -4.7 | 125 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 83.088 | -3.9 | 125 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 83.387 | -4.2 | 124 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 84.254 | -5.3 | 122 | -0.01 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 83.495 | -4.4 | 123 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 80.541 | -0.7 | 121 | -0.01 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | 0.0 | 119 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 80.916 | -1.1 | 116 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 88.830 | -11.0 | 127 | -0.01 |
| 25 | TM | Isophorone | 80.000 | 82.545 | -3.2 | 124 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 82.780 | -3.5 | 120 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 74.094 | 7.4 | 107 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 84.597 | -5.7 | 124 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 81.468 | -1.8 | 123 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 82.696 | -3.4 | 119 | -0.01 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 79.895 | 0.1 | 121 | -0.01 |
| 32 | TM | Naphthalene | 80.000 | 81.075 | -1.3 | 122 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 80.432 | -0.5 | 118 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 81.777 | -2.2 | 122 | -0.01 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 82.201 | -2.8 | 121 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 81.529 | -1.9 | 122 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 80.735 | -0.9 | 123 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 81.067 | -1.3 | 123 | -0.01 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | 0.0 | 115 | -0.01 |
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 84.219 | -5.3 | 114 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 85.772 | -7.2 | 120 | -0.01 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 85.598 | -7.0 | 114 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 85.309 | -6.6 | 122 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 85.881 | -7.4 | 121 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 85.605 | -7.0 | 121 | 0.00 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 46 | TM | 2-Nitroaniline | 80.000 | 89.493 | -11.9 | 129 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 83.794 | -4.7 | 117 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 83.372 | -4.2 | 120 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 96.290 | -20.4# | 131 | -0.01 |
| 50 | TMC | Acenaphthene | 80.000 | 81.754 | -2.2 | 118 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 85.411 | -6.8 | 123 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 79.250 | 0.9 | 116 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 82.219 | -2.8 | 119 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 98.456 | -23.1# | 135 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 81.977 | -2.5 | 118 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 84.490 | -5.6 | 121 | -0.01 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 83.618 | -4.5 | 118 | -0.01 |
| 58 | TM | Diethylphthalate | 80.000 | 79.879 | 0.2 | 116 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 85.915 | -7.4 | 127 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 80.584 | -0.7 | 117 | -0.01 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 114 | -0.02 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 0 | -11.45# |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 77.596 | 3.0 | 115 | -0.01 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 84.596 | -5.7 | 121 | -0.01 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 78.584 | 1.8 | 117 | -0.01 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 79.450 | 0.7 | 115 | -0.01 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 34 | -0.05 |
| 68 | TM | Hexachlorobenzene | 80.000 | 79.571 | 0.5 | 116 | -0.01 |
| 69 | TM | Atrazine | 80.000 | 79.759 | 0.3 | 108 | -0.02 |
| 70 | TCM | Pentachlorophenol | 80.000 | 83.825 | -4.8 | 129 | -0.02 |
| 71 | TM | Phenanthrene | 80.000 | 81.231 | -1.5 | 119 | -0.02 |
| 72 | TM | Anthracene | 80.000 | 82.380 | -3.0 | 120 | -0.02 |
| 73 | TM | Carbazole | 80.000 | 85.215 | -6.5 | 119 | -0.02 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 86.916 | -8.6 | 116 | -0.02 |
| 75 | TCM | Fluoranthene | 80.000 | 87.005 | -8.8 | 118 | -0.02 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 113 | -0.02 |
| 77 | TM | Benzidine | 80.000 | 0.000 | ~~100.0#~~ | ~~0~~ | ~~-8.49#~~ |
| 78 | TM | Pyrene | 80.000 | 83.180 | -4.0 | 120 | -0.02 |
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 78.437 | 2.0 | 116 | -0.02 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 81.862 | -2.3 | 112 | -0.02 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 83.271 | -4.1 | 120 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 81.905 | -2.4 | 116 | -0.02 |
| 83 | TM | Chrysene | 80.000 | 79.800 | 0.3 | 116 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 84.519 | -5.6 | 111 | -0.03 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 112 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 80.152 | -0.2 | 111 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 83.879 | -4.8 | 119 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 82.713 | -3.4 | 115 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 85.570 | -7.0 | 116 | -0.01 |

Evaluate Continuing Calibration Report

Data Path : I:\ACQUDATA\5973D\Data\072314\
Data File : AV202.D
Acq On : 23 Jul 2014 10:18 am
Operator : Z.Miao
Sample : CCV Inst : 5973D
Misc : 80 PPM STD 8270/625
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jul 23 12:27:16 2014
Quant Method : I:\ACQUDATA\5973D\Methods\82700701D.M
Quant Title : 8270 BNA ANALYSIS
QLast Update : Wed Jul 02 10:45:14 2014
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|
| 90 TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 86.083 | -7.6 | 115 | -0.01 |
| 91 TM | Dibenz(a,h)anthracene | 80.000 | 86.279 | -7.8 | 114 | -0.01 |
| 92 TM | Benzo(g,h,i)perylene | 80.000 | 85.375 | -6.7 | 115 | -0.01 |

(#) = Out of Range SPCC's out = 0 CCC's out = 0

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\072414\CZ458.D  Vial: 1
Acq On : 24 Jul 2014 9:58 am  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

QA #40
LR : #52

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050  Min. Rel. Area : 50%  Max. R.T. Dev 0.50min
Max. RRF Dev : 20%  Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 1.000 | 1.000 | | 0.0 | 116 | 0.00 |
| 2 | TM | Pyridine | 1.390 | 1.438 | | -3.5 | 124 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 0.753 | 0.810 | | -7.6 | 122 | -0.03 |
| 4 | S | SURR1,2-FLUOROPHENOL | 1.240 | 1.380 | | -11.3 | 127 | 0.00 |
| 5 | TM | Benzaldehyde | 0.245 | 0.370 | NT | -51.0# | 159 | 0.00 |
| 6 | TM | Aniline | 1.921 | 1.939 | | -0.9 | 124 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 1.636 | 1.832 | | -12.0 | 135 | 0.00 |
| 8 | TMC | Phenol | 1.676 | 1.861 | | -11.0 | 125 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 1.214 | 1.310 | | -7.9 | 119 | 0.00 |
| 10 | TM | 2-Chlorophenol | 1.375 | 1.551 | | -12.8 | 134 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 1.514 | 1.566 | | -3.4 | 124 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 1.523 | 1.603 | | -5.3 | 129 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 1.446 | 1.498 | | -3.6 | 123 | 0.00 |
| 14 | TM | Benzyl Alcohol | 1.113 | 1.277 | | -14.7 | 129 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 1.280 | 1.147 | | 10.4 | 105 | 0.00 |
| 16 | TM | 2-Methylphenol | 1.204 | 1.367 | | -13.5 | 130 | 0.00 |
| 17 | TM | Acetophenone | 1.809 | 1.953 | | -8.0 | 128 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 0.977 | 0.967 | | 1.0 | 121 | 0.00 |
| 19 | TM | Hexachloroethane | 0.629 | 0.639 | | -1.6 | 118 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 1.275 | 1.461 | | -14.6 | 132 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 0.865 | 1.047 | NT | -21.0# | 142 | 0.00 |
| 22 | IR | d8-Naphthalene | 1.000 | 1.000 | | 0.0 | 126 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 0.413 | 0.406 | | 1.7 | 123 | 0.00 |
| 24 | TM | Nitrobenzene | 0.373 | 0.351 | | 5.9 | 120 | 0.00 |
| 25 | TM | Isophorone | 0.673 | 0.675 | | -0.3 | 128 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 0.201 | 0.212 | | -5.5 | 134 | 0.00 |
| 27 | TM | Benzoic Acid | 0.381 | 0.455 | | -19.4 | 146 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 0.375 | 0.370 | | 1.3 | 125 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 0.389 | 0.401 | | -3.1 | 133 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 0.658 | 0.654 | | 0.6 | 133 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 0.333 | 0.321 | | 3.6 | 125 | 0.00 |
| 32 | TM | Naphthalene | 0.977 | 0.982 | | -0.5 | 131 | 0.00 |
| 33 | TM | 4-Chloroaniline | 0.413 | 0.415 | | -0.5 | 127 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 0.194 | 0.172 | | 11.3 | 116 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 0.298 | 0.334 | | -12.1 | 137 | 0.00 |
| 36 | TM | Caprolactam | 0.107 | 0.125 | | -16.8 | 142 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 0.696 | 0.701 | | -0.7 | 131 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 0.643 | 0.639 | | 0.6 | 127 | 0.00 |
| 39 | IR | d10-Acenaphthene | 1.000 | 1.000 | | 0.0 | 131 | 0.00 |

(#) = Out of Range

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\072414\CZ458.D  Vial: 1
Acq On : 24 Jul 2014 9:58 am  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 0.222 | 0.226 | -1.8 | 115 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 0.361 | 0.366 | -1.4 | 132 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 0.381 | 0.411 | -7.9 | 136 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 1.211 | 1.203 | 0.7 | 130 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 1.352 | 1.332 | 1.5 | 130 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 1.083 | 1.060 | 2.1 | 133 | 0.00 |
| 46 | TM | 2-Nitroaniline | 0.311 | 0.329 | -5.8 | 137 | 0.00 |
| 47 | TM | Acenaphthylene | 1.640 | 1.636 | 0.2 | 132 | 0.00 |
| 48 | TM | Dimethyl phthalate | 1.199 | 1.224 | -2.1 | 135 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 0.291 | 0.329 | -13.1 | 145 | 0.00 |
| 50 | TMC | Acenaphthene | 1.037 | 1.041 | -0.4 | 131 | 0.00 |
| 51 | TM | 3-Nitroaniline | 0.309 | 0.346 | -12.0 | 148 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 0.164 | 0.180 | -9.8 | 150 | 0.00 |
| 53 | TM | Dibenzofuran | 1.516 | 1.500 | 1.1 | 134 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 0.390 | 0.432 | -10.8 | 141 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 0.215 | 0.227 | -5.6 | 141 | 0.00 |
| 56 | TM | Fluorene | 1.243 | 1.262 | -1.5 | 135 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 0.610 | 0.613 | -0.5 | 134 | 0.00 |
| 58 | TM | Diethylphthalate | 1.181 | 1.188 | -0.6 | 133 | 0.00 |
| 59 | TM | 4-Nitroaniline | 0.317 | 0.356 | -12.3 | 147 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 0.134 | 0.139 | -3.7 | 132 | 0.00 |
| 61 | IR | d10-Phenanthrene | 1.000 | 1.000 | 0.0 | 134 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | 0.000 | 0.000# | 0.0 | 207# | -0.02 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 0.164 | 0.174 | -6.1 | 138 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 0.756 | 0.726 | 4.0 | 131 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 0.546 | 0.561 | -2.7 | 143 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 0.208 | 0.212 | -1.9 | 143 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | 0.000 | 0.000# | 0.0 | 24# | 0.02 |
| 68 | TM | Hexachlorobenzene | 0.214 | 0.232 | -8.4 | 148 | 0.00 |
| 69 | TM | Atrazine | 0.088 | 0.086 | 2.3 | 121 | 0.00 |
| 70 | TCM | Pentachlorophenol | 0.143 | 0.141 | 1.4 | 134 | 0.00 |
| 71 | TM | Phenanthrene | 1.014 | 0.989 | 2.5 | 133 | 0.00 |
| 72 | TM | Anthracene | 1.095 | 1.068 | 2.5 | 136 | 0.00 |
| 73 | TM | Carbazole | 1.045 | 1.141 | -9.2 | 145 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 1.287 | 1.318 | -2.4 | 133 | 0.00 |
| 75 | TCM | Fluoranthene | 1.169 | 1.246 | -6.6 | 139 | 0.00 |
| 76 | IR | d12-Chrysene | 1.000 | 1.000 | 0.0 | 145 | -0.02 |
| 77 | TM | Benzidine | 0.503 | 0.484 | 3.8 | 133 | 0.00 |
| 78 | TM | Pyrene | 1.295 | 1.233 | 4.8 | 140 | 0.00 |

(#) = Out of Range

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\072414\CZ458.D  Vial: 1
Acq On : 24 Jul 2014 9:58 am  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | AvgRF | CCRF | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 0.870 | 0.864 | 0.7 | 147 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 0.671 | 0.651 | 3.0 | 144 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 0.422 | 0.442 | -4.7 | 154 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 1.239 | 1.209 | 2.4 | 144 | -0.02 |
| 83 | TM | Chrysene | 1.177 | 1.144 | 2.8 | 144 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 0.886 | 0.881 | 0.6 | 143 | -0.02 |
| 85 | IR | d12-Perylene | 1.000 | 1.000 | 0.0 | 158 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 1.533 | 1.491 | 2.7 | 157 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 1.094 | 1.083 | 1.0 | 159 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 1.140 | 1.082 | 5.1 | 153 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 1.112 | 1.085 | 2.4 | 159 | -0.02 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 0.958 | 0.954 | 0.4 | 159 | -0.02 |
| 91 | TM | Dibenz(a,h)anthracene | 0.937 | 0.959 | -2.3 | 161 | -0.02 |
| 92 | TM | Benzo(g,h,i)perylene | 0.887 | 0.909 | -2.5 | 165 | -0.03 |

(#) = Out of Range  SPCC's out = 0  CCC's out = 0

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\072414\CZ458.D  Vial: 1
Acq On : 24 Jul 2014 9:58 am  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|---|
| 1 | IR | d4-1,4-Dichlorobenzene | 40.000 | 40.000 | | 0.0 | 116 | 0.00 |
| 2 | TM | Pyridine | 80.000 | 82.760 | | -3.5 | 124 | -0.02 |
| 3 | TM | N-Nitrosodimethylamine | 80.000 | 86.046 | | -7.6 | 122 | -0.03 |
| 4 | S | SURR1,2-FLUOROPHENOL | 80.000 | 89.035 | | -11.3 | 127 | 0.00 |
| 5 | TM | Benzaldehyde | 80.000 | 120.654 | NT | -50.8# | 159 | 0.00 |
| 6 | TM | Aniline | 80.000 | 80.735 | | -0.9 | 124 | 0.00 |
| 7 | S | SURR2,PHENOL-D6 | 80.000 | 89.543 | | -11.9 | 135 | 0.00 |
| 8 | TMC | Phenol | 80.000 | 88.836 | | -11.0 | 125 | 0.00 |
| 9 | TM | bis(2-Clethyl)Ether | 80.000 | 86.340 | | -7.9 | 119 | 0.00 |
| 10 | TM | 2-Chlorophenol | 80.000 | 90.290 | | -12.9 | 134 | 0.00 |
| 11 | TM | 1,3-Diclbenzene | 80.000 | 82.737 | | -3.4 | 124 | 0.00 |
| 12 | TMC | 1,4-Dichlorobenzene | 80.000 | 84.238 | | -5.3 | 129 | 0.00 |
| 13 | TM | 1,2-Diclbenzene | 80.000 | 82.891 | | -3.6 | 123 | 0.00 |
| 14 | TM | Benzyl Alcohol | 80.000 | 91.795 | | -14.7 | 129 | 0.00 |
| 15 | TM | 2,2'-oxybis(1-Chloropropane | 80.000 | 71.710 | | 10.4 | 105 | 0.00 |
| 16 | TM | 2-Methylphenol | 80.000 | 90.838 | | -13.5 | 130 | 0.00 |
| 17 | TM | Acetophenone | 80.000 | 86.347 | | -7.9 | 128 | 0.00 |
| 18 | TMP | N-Nitroso-Di-n-propylamine | 80.000 | 79.227 | | 1.0 | 121 | 0.00 |
| 19 | TM | Hexachloroethane | 80.000 | 81.286 | | -1.6 | 118 | 0.00 |
| 20 | TM | 3+4-Methylphenol | 80.000 | 91.688 | | -14.6 | 132 | 0.00 |
| 21 | T | 1-Methyl-2-pyrrolidinone | 80.000 | 96.776 | NT | -21.0# | 142 | 0.00 |
| 22 | IR | d8-Naphthalene | 40.000 | 40.000 | | 0.0 | 126 | 0.00 |
| 23 | S | SURR4,NITROBENZENE-D5 | 80.000 | 78.687 | | 1.6 | 123 | 0.00 |
| 24 | TM | Nitrobenzene | 80.000 | 75.141 | | 6.1 | 120 | 0.00 |
| 25 | TM | Isophorone | 80.000 | 80.180 | | -0.2 | 128 | 0.00 |
| 26 | TCM | 2-Nitrophenol | 80.000 | 84.478 | | -5.6 | 134 | 0.00 |
| 27 | TM | Benzoic Acid | 80.000 | 95.632 | | -19.5 | 146 | 0.00 |
| 28 | TM | 2,4-Dimethylphenol | 80.000 | 78.812 | | 1.5 | 125 | 0.00 |
| 29 | TM | bis(-2-Chloroethoxy)Methane | 80.000 | 82.430 | | -3.0 | 133 | 0.00 |
| 30 | TCM | 2,4-Dichlorophenol | 80.000 | 79.583 | | 0.5 | 133 | 0.00 |
| 31 | TM | 1,2,4-Trichlorobenzene | 80.000 | 77.010 | | 3.7 | 125 | 0.00 |
| 32 | TM | Naphthalene | 80.000 | 80.452 | | -0.6 | 131 | 0.00 |
| 33 | TM | 4-Chloroaniline | 80.000 | 80.522 | | -0.7 | 127 | 0.00 |
| 34 | TCM | Hexachlorobutadiene | 80.000 | 70.937 | | 11.3 | 116 | 0.00 |
| 35 | TMC | 4-Chloro-3-methylphenol | 80.000 | 89.451 | | -11.8 | 137 | 0.00 |
| 36 | TM | Caprolactam | 80.000 | 93.278 | | -16.6 | 142 | 0.00 |
| 37 | TM | 2-Methylnaphthalene | 80.000 | 80.673 | | -0.8 | 131 | 0.00 |
| 38 | TM | 1-Methylnaphthalene | 80.000 | 79.412 | | 0.7 | 127 | 0.00 |
| 39 | IR | d10-Acenaphthene | 40.000 | 40.000 | | 0.0 | 131 | 0.00 |

(#) = Out of Range

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\072414\CZ458.D  Vial: 1
Acq On : 24 Jul 2014 9:58 am  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 40 | TPM | Hexachlorocyclopentadiene | 80.000 | 73.451 | 8.2 | 115 | 0.00 |
| 41 | TCM | 2,4,6-Trichlorophenol | 80.000 | 81.035 | -1.3 | 132 | 0.00 |
| 42 | TM | 2,4,5-Trichlorophenol | 80.000 | 86.273 | -7.8 | 136 | 0.00 |
| 43 | S | SURR5,2-FLUOROBIPHENYL | 80.000 | 79.443 | 0.7 | 130 | 0.00 |
| 44 | TM | 1,1'-Biphenyl | 80.000 | 78.804 | 1.5 | 130 | 0.00 |
| 45 | TM | 2-Chloronaphthalene | 80.000 | 78.259 | 2.2 | 133 | 0.00 |
| 46 | TM | 2-Nitroaniline | 80.000 | 84.569 | -5.7 | 137 | 0.00 |
| 47 | TM | Acenaphthylene | 80.000 | 79.814 | 0.2 | 132 | 0.00 |
| 48 | TM | Dimethyl phthalate | 80.000 | 81.693 | -2.1 | 135 | 0.00 |
| 49 | TM | 2,6-Dinitrotoluene | 80.000 | 90.661 | -13.3 | 145 | 0.00 |
| 50 | TMC | Acenaphthene | 80.000 | 80.244 | -0.3 | 131 | 0.00 |
| 51 | TM | 3-Nitroaniline | 80.000 | 89.600 | -12.0 | 148 | 0.00 |
| 52 | TPM | 2,4-Dinitrophenol | 80.000 | 87.759 | -9.7 | 150 | 0.00 |
| 53 | TM | Dibenzofuran | 80.000 | 79.193 | 1.0 | 134 | 0.00 |
| 54 | TM | 2,4-Dinitrotoluene | 80.000 | 88.556 | -10.7 | 141 | 0.00 |
| 55 | TMP | 4-Nitrophenol | 80.000 | 84.540 | -5.7 | 141 | 0.00 |
| 56 | TM | Fluorene | 80.000 | 81.193 | -1.5 | 135 | 0.00 |
| 57 | TM | 4-Chlorophenyl-phenylether | 80.000 | 80.373 | -0.5 | 134 | 0.00 |
| 58 | TM | Diethylphthalate | 80.000 | 80.499 | -0.6 | 133 | 0.00 |
| 59 | TM | 4-Nitroaniline | 80.000 | 89.874 | -12.3 | 147 | 0.00 |
| 60 | S | SURR3,2,4,6-TRIBROMOPHENOL | 80.000 | 83.042 | -3.8 | 132 | 0.00 |
| 61 | IR | d10-Phenanthrene | 40.000 | 40.000 | 0.0 | 134 | 0.00 |
| 62 | T | 1-Phenyl-1(4-methyl-phenyl) | -1.000 | 0.000 | 0.0 | 207 | -0.02 |
| 63 | TM | 4,6-Dinitro-2-methylphenol | 80.000 | 84.800 | -6.0 | 138 | 0.00 |
| 64 | TM | 1,2 Diphenylhydrazine | 80.000 | 76.836 | 4.0 | 131 | 0.00 |
| 65 | TCM | N-Nitrosodiphenylamine | 80.000 | 82.161 | -2.7 | 143 | 0.00 |
| 66 | TM | 4-Bromophenyl-phenylether | 80.000 | 81.511 | -1.9 | 143 | 0.00 |
| 67 | T | 1-Phenyl-1(2,4-dimethylphen | -1.000 | 0.000 | 0.0 | 24 | 0.02 |
| 68 | TM | Hexachlorobenzene | 80.000 | 86.781 | -8.5 | 148 | 0.00 |
| 69 | TM | Atrazine | 80.000 | 77.428 | 3.2 | 121 | 0.00 |
| 70 | TCM | Pentachlorophenol | 80.000 | 78.908 | 1.4 | 134 | 0.00 |
| 71 | TM | Phenanthrene | 80.000 | 78.030 | 2.5 | 133 | 0.00 |
| 72 | TM | Anthracene | 80.000 | 78.022 | 2.5 | 136 | 0.00 |
| 73 | TM | Carbazole | 80.000 | 87.320 | -9.1 | 145 | 0.00 |
| 74 | TM | Di-n-butylphthalate | 80.000 | 81.905 | -2.4 | 133 | 0.00 |
| 75 | TCM | Fluoranthene | 80.000 | 85.235 | -6.5 | 139 | 0.00 |
| 76 | IR | d12-Chrysene | 40.000 | 40.000 | 0.0 | 145 | -0.02 |
| 77 | TM | Benzidine | 80.000 | 76.915 | 3.9 | 133 | 0.00 |
| 78 | TM | Pyrene | 80.000 | 76.180 | 4.8 | 140 | 0.00 |

(#) = Out of Range

# Evaluate Continuing Calibration Report

Data File : I:\ACQUDATA\5973A\DATA\072414\CZ458.D  Vial: 1
Acq On : 24 Jul 2014 9:58 am  Operator: Z.Miao
Sample : CCV  Inst : 5973-A
Misc : 80 PPM STD 8270/625  Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : I:\ACQUDATA\5973A\METHODS\82700709.M (RTE Integrator)
Title : 8270 BNA ANALYSIS
Last Update : Thu Jul 10 11:17:30 2014
Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

| | | Compound | Amount | Calc. | %Dev | Area% | Dev(min) |
|---|---|---|---|---|---|---|---|
| 79 | S | SURR6,TERPHENYL-D14 | 80.000 | 79.400 | 0.7 | 147 | 0.00 |
| 80 | TM | Butyl benzyl phthalate | 80.000 | 77.634 | 3.0 | 144 | 0.00 |
| 81 | TM | 3,3'-Dichlorobenzidine | 80.000 | 83.636 | -4.5 | 154 | -0.02 |
| 82 | TM | Benzo(a)anthracene | 80.000 | 78.074 | 2.4 | 144 | -0.02 |
| 83 | TM | Chrysene | 80.000 | 77.780 | 2.8 | 144 | -0.02 |
| 84 | TM | bis(2-Ethylhexyl)phthalate | 80.000 | 79.559 | 0.6 | 143 | -0.02 |
| 85 | IR | d12-Perylene | 40.000 | 40.000 | 0.0 | 158 | -0.02 |
| 86 | TCM | Di-n-octyl phthalate | 80.000 | 77.801 | 2.7 | 157 | -0.02 |
| 87 | TM | Benzo(b)Fluoranthene | 80.000 | 79.161 | 1.0 | 159 | -0.02 |
| 88 | TM | Benzo(k)fluoranthene | 80.000 | 75.879 | 5.2 | 153 | -0.02 |
| 89 | TCM | Benzo(a)pyrene | 80.000 | 78.021 | 2.5 | 159 | -0.02 |
| 90 | TM | Indeno(1,2,3-cd)Pyrene | 80.000 | 79.657 | 0.4 | 159 | -0.02 |
| 91 | TM | Dibenz(a,h)anthracene | 80.000 | 81.832 | -2.3 | 161 | -0.02 |
| 92 | TM | Benzo(g,h,i)perylene | 80.000 | 81.919 | -2.4 | 165 | -0.03 |

# *Preparation Information Benchsheet*

**Prep Run#:** 213575 **Prep WorkFlow:** OrgExtAq(7) **Status:** Prepped
**Team:** Semivoa GCMS/DMURPHY **Prep Method:** EPA 3510C **Prep Date/Time:** 7/22/14 06:39 AM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408515-01 | MB | | 1000mL | 625/SVO | | | | 1.00mL | | 1.0000 mL/71467 | |
| 2 | RQ1408515-01 | MB | | 1000mL | 8270D/SVO | | | | 1.00mL | | 1.0000 mL/71467 | |
| 3 | RQ1408515-02 | LCS | | 1000mL | 625/SVO | | | | 1.00mL | | 1.0000 mL/72016;<br>1.0000 mL/71908;<br>1.0000 mL/71467;<br>1.0000 mL/72491 | |
| 4 | RQ1408515-02 | LCS | | 1000mL | 8270D/SVO | | | | 1.00mL | | 1.0000 mL/72016;<br>1.0000 mL/72491;<br>1.0000 mL/71908;<br>1.0000 mL/71467 | |
| 5 | RQ1408515-03 | DLCS | | 1000mL | 625/SVO | | | | 1.00mL | | 1.0000 mL/71467;<br>1.0000 mL/72491;<br>1.0000 mL/71908;<br>1.0000 mL/72016 | |
| 6 | RQ1408515-03 | DLCS | | 1000mL | 8270D/SVO | | | | 1.00mL | | 1.0000 mL/71467;<br>1.0000 mL/72016;<br>1.0000 mL/71908;<br>1.0000 mL/72491 | |
| 7 | R1405562-001 [redacted] | B-11 | .14 | 1060mL | 8270D/SVO /TCL | 7 | x | x | ~~360.00mL~~ | yellow-opaque | 1.0000 mL/71467 | 8/4 II |
| 8 | R1405562-002 [redacted] | B-11D | .14 | 1060mL | 8270D/SVO | 7 | x | x | 360.00mL | yellow-cloudy | 1.0000 mL/71467 | 8 |
| 9 | R1405586-00[redacted] | 1407200759 200-SB-19 | .02 | 1060mL | 8270D/SVO /BEHP | 7 | x | x | 360.00mL | clear-cloudy | 1.0000 mL/71467 | 8/5/ II SHV |
| 10 | R1405590-00[redacted] | 64G-3Q1M-2X-GS | .01 | 1060mL | 625/SVO /PPU | 7 | x | x | ~~360.00mL~~ | clear-cloudy | 1.0000 mL/71467 | 7/29 II |

1ml. mg 7/23

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | Color Coded BNA Surrogate Solution 10 | Inventory ID | 71467 | Logbook Ref: | | Expires On: | 05/21/2016 | Lot #: | 229244 |
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 71908 | Logbook Ref: | | Expires On: | 10/31/2014 | Lot #: | Lc02739 |
| Name: | OLM/SOM additionals Spike 100ppm | Inventory ID | 72016 | Logbook Ref: | | Expires On: | 09/01/2014 | | |
| Name: | Benzidine LCS Spike 100ppm | Inventory ID | 72491 | Logbook Ref: | | Expires On: | 11/30/2014 | | |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #14 (61350) | 2mL Graduated Vials | (72265) | Sulfuric Acid, 50% H2SO4 | (72556) |
| Dichloromethane (Methylene Chloride) 99.9% MeCl2 | canister (72057) | Sodium Hydroxide 50% NaOH | (66000) | Prepared Sodium Sulfate Na2SO4 | (72600) |

## Preparation Steps

| Step: | Extraction | Step: | Concentration | Step: | Final Volume |
|---|---|---|---|---|---|
| Started: | 7/22/14 06:39 | Started: | 7/22/14 14:50 | Started: | 7/22/14 16:46 |
| Finished: | 7/22/14 14:42 | Finished: | 7/22/14 16:15 | Finished: | 7/22/14 16:46 |
| By: | DMURPHY | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

# *Preparation Information Benchsheet*

**Prep Run#:** 213575
**Team:** Semivoa GCMS/DMURPHY

**Prep WorkFlow:** OrgExtAq(7)
**Prep Method:** EPA 3510C

**Status:** Prepped
**Prep Date/Time:** 7/22/14 06:39 AM

Comments:

Reviewed By: MGPe Date: 7/23/14 Spike Witness: LPRUNOSKE Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

# *Preparation Information Benchsheet*

**Prep Run#:** 213729 **Prep WorkFlow:** OrgExtS(14) **Status:** Prepped
**Team:** Semivoa GCMS/SGOLBERG **Prep Method:** EPA 3541 **Prep Date/Time:** 7/23/14 12:27 PM

| # | Lab Code | Client ID | B# | Amt. Ext. | Method /Test | pH | AE | BN | Final Vol | Sample Desc. (Initial/Final) | SpikeAmt./Inv. ID | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RQ1408573-01 | MB | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216 | |
| 2 | RQ1408573-02 | LCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 3 | RQ1408573-03 | DLCS | | 30.0g | 8270D/SVO | | | | 1.00mL | sand/sulfate | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 4 | R1405586-006 [redacted] | 1407200853 200-SB-19 8'/10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-tan silt with gravel | 1.0000 mL/72216 | 8/5 ☑. 5+V |
| 5 | RQ1408573-04 | R1405586-006 MS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-tan silt with gravel | 1.0000 mL/72216; 1.0000 mL/71908 | |
| 6 | RQ1408573-05 | R1405586-006 DMS | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-tan silt with gravel | 1.0000 mL/71908; 1.0000 mL/72216 | |
| 7 | R1405586-007 | 1407200854 200-SB-19 8'/10' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | light reddish-tan silt with gravel | 1.0000 mL/72216 | |
| 8 | R1405619-001 [redacted] | SW Corner 15' | .01 | 30.0g | 8270D/SVO /PAH | | | | 1.00mL | brown sandy clay with gravel | 1.0000 mL/72216 | 7/25 I. |
| 9 | R1405619-002 | SW Corner 17' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown sandy clay with gravel | 1.0000 mL/72216 | |
| 10 | R1405619-003 | RJ S. Wall 13' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown sandy clay with gravel | 1.0000 mL/72216 | |
| 11 | R1405619-004 | S Wall 12' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown sandy clay with gravel | 1.0000 mL/72216 | |
| 12 | R1405619-005 | S. Wall 14' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown sandy clay with gravel | 1.0000 mL/72216 | |
| 13 | R1405619-006 | S. Wall 18' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown sandy clay with gravel | 1.0000 mL/72216 | |
| 14 | R1405619-007 | S. Wall 20' | .01 | 30.0g | 8270D/SVO | | | | 1.00mL | brown sandy clay with gravel | 1.0000 mL/72216 | |

## Spiking Solutions

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Name: | 8270 LCS Mix1: 100 ug/mL | Inventory ID | 71908 | Logbook Ref: | | Expires On: | 10/31/2014 | Lot #: | Lc02739 |
| Name: | 8270 Soil Surrogate 100-200ppm | Inventory ID | 72216 | Logbook Ref: | 8270 Soil Surrogate | Expires On: | 01/07/2015 | | |

## Preparation Materials

| | | | | | |
|---|---|---|---|---|---|
| Eppendorf Pipette Repeater | EXT #15 (67588) | 2mL Graduated Vials | (72265) | 50:50 Dichloromethane:Acetone | (72668) |
| Prepared Sodium Sulfate Na2SO4 | (72600) | Sand Reagent Grade | SVOA (72239) | | |

## Preparation Steps

| | | | | | |
|---|---|---|---|---|---|
| Step: | Extraction | Step: | Concentration | Step: | Extraction Complete |
| Started: | 7/23/14 12:27 | Started: | 7/23/14 19:00 | Started: | 7/23/14 20:07 |
| Finished: | 7/23/14 18:59 | Finished: | 7/23/14 19:40 | Finished: | 7/23/14 20:07 |
| By: | SGOLBERG | By: | SGOLBERG | By: | SGOLBERG |
| Comments | | Comments | | Comments | |

# *Preparation Information Benchsheet*

**Prep Run#:** 213729
**Team:** Semivoa GCMS/SGOLBERG

**Prep WorkFlow:** OrgExtS(14)
**Prep Method:** EPA 3541

**Status:** Prepped
**Prep Date/Time:** 7/23/14 12:27 PM

Comments:

Reviewed By: MPedro Date: 7/24 Spike Witness: MPEDRO Date:

Chain of Custody

Relinquished By: Date:

Received By: Date:

Extracts Examined
Yes No

LOG BOOK #

10 µL 4000 ppm ISTD to 1.0 mL
#70461

5973-A

7/24/14 #70613

| | | | | | |
|---|---|---|---|---|---|
| | Tune | 50ng DFTPP | Tune D.m | C2451 | N |
| | Tune | ↓ | ↓ | 52 | ~~YT~~ N (on 7/24/14) |
| | ~~CCV~~ | ~~80 ppm~~ | ~~82700709.m~~ | ~~53~~ | ~~Dm 7/24/14~~ |
| | Tune | 50ng DFTPP | Tune D.m | C2453 | N changed liner + septum |
| | Tune | ↓ | ↓ | 54 | N |
| | Tune | | | 55 | N trimmed column |
| | Tune | | | 56 | N |
| | Tune | | | 57 | YT 9:38Am |
| 1 | [redacted] | R@ 85B-01 1BLC | 8270PAH 7/23/14 50ng | 59 | Ym |
| 2 | | -02 US | | 60 | YQ |
| 3 | | -03 USD | | 61 | YQ |
| 4 | | R5619-001 | | 62 | Y |
| 5 | | -002 | | 63 | Y |
| 6 | | -003 | | 64 | Y |
| 7 | | -004 | | 65 | Y |
| 8 | | -005 | | 66 | Y |
| 9 | | -006 | | 67 | Y |
| 10 | | -007 | | 68 | Y |
| 11 | [redacted] | R 5586-006 | 8270BEHP | 69 | Y |
| 12 | | -006MS | 8573-04 | 70 | YQ |
| 13 | | -006MSD | -05 | 71 | NO IS ↓ |
| 14 | | -007 | | 72 | Y |
| 2m 7/24/14 | ~~15~~ | CCV | 80 ppm 82700709.m | 458 | YC |
| 15 | [redacted] | R 5586 -006MSD | 8573-05 | CZ 473 | NO IS ↓ (water in extract) |
| 16 | [redacted] | R 5586 -006MSD | 8573-05 | CZ 474 | Y filtered, 5:10pm |

40373

Zm

| | | |
|---|---|---|
| Analysis: 8270/625 | Analyst: LM | Run Method: 8270010D.m |
| Date: 7/23/14 | Instr. 5973-D | Quant Method: 8270010D.m Beq0616D.m |
| | | LIMS Run#: 403293 |

| Pos. | Sample | Diln. | Stds. ID | File# | OK? | Comments |
|---|---|---|---|---|---|---|
| 1 | Tune 50ng 17PPP | | Tune-D.m | AV201 | Y T | 10:00AM 0613 |
| 2 | CCV 80 ppm | 8270010D.m. | | 02 | Y C | |
| 3 | CCV 80 PPB | Beq0616D.m | | AV203 | Y C | |
| 4 | [redacted] R6140850 8-01 B/N | 7/22/14 Soil 8270REHP | | 04 | Y m | |
| 5 | —02 ul | | | 05 | Y Q | |
| 6 | —03 ul sp | | | 06 | Y Q | |
| 7 | [redacted] R6 8515-01 B/N | 7/22 8270TCL W | | 07 | Y m | |
| 8 | —02 ul | | | 08 | Y Q | |
| 9 | —03 ul sp | | | 09 | Y Q | |
| 10 | [redacted] R 5137 —008 | 8270REHP Soil | | 10 | Y | |
| 11 | —009 | | | 11 | Y | |
| 12 | [redacted] R 5347 —002 | | | 12 | Y | |
| 13 | [redacted] R 5421 —004 | | | 13 | Y | |
| 14 | —004 ml | R6 8505-04 | | 14 | Y Q | |
| 15 | —004 ml sp | —05 | | 15 | Y | |
| 16 | [redacted] R 5541-002 | | | 16 | Y | |
| 17 | [redacted] R 5562-001 | 8270TCL W | | 17 | Y | |
| 18 | —002 | | | 18 | Y | |
| 19 | [redacted] 5586-003 | 8270REHP | | 19 | Y | |
| 20 | [redacted] R 5590-002 | 625 PPL | | 20 | Y | 6:27PM. |

All samples = 1 mL + 10 uL Combined IS/Surr.; 70461

Primary : exp: Secondary : exp:

Primary: exp: Secondary : exp:

Runlog GCEXT r1 12/5/12

Project 200-SB-6 (6104) Notebook No. SAV #7

Continues from Page

T. Kenoy + T. Torrez present. Weather is cool, cloudy and slight rain.
Sample will be taken from ~~Sump~~ ~~Sack~~ CO Barrel # (6104) Soil
T Moore & R. Burrows present 7-31-14

Samples

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 140731/1640 | 8260C | ice, CH4O | (3) 40ml Vials | 040714-3 | ALS |
| 1641 | Hydrazine | ice | (1) 40 ml Amber | 0117501y | WSTF |
| 1642 | Hydrazine | ice | (1) 4 oz Jar | 059299 | TRUE |
| 1643 | NDMA/Bromide | ice | (1) 4 oz Jar | 059299 | SRI |
| 1644 | SVOC/perchlorate | ice | (1) 4 oz Jar | 059299 | ALS |
| 1645 | Dioxins/Furans, Total Metals/Anions | ice | (1) 4 oz Jar | 059299 | ALS |
| 1646 | Hex chrome/total cyanide | ice | 1 4 oz Jar | 059299 | ALS |
| 1647 | Soil pH | ice | 1 4 oz Jar | 059299 | |

| Sample # | Analysis | Preservative | Container | Lot # | Lab |
|---|---|---|---|---|---|
| 140731/1648 | 8260C (Dup) | ICE/CH4O | (3) 40ml vials | 040714-3 | ALS |
| 1649 | " (ms) | " | " | " | " |
| 1650 | Hydrazine (Dup) | ICE | (1) 40ml Amber | 0117501-Y | WSTF |
| 1651 | " (ms) | " | " | " | " |
| 1652 | Hydrazine (Dup) | " | (1) 4oz JAR | 059299 | TRUE |
| 1653 | " (ms) | " | " | " | " |
| 1654 | NDMA/Bromide (Dup) | " | " | " | SRI |
| 1655 | " (ms) | " | " | " | " |
| 1656 | SVOC/perchlorate (Dup) | " | " | " | ALS |
| 1657 | " (ms) | " | " | " | " |
| 1658 | Dioxins/Furans (Dup) | " | " | " | " |
| 1659 | " (ms) | " | " | " | " |
| 1700 | Total metals/Anions Hex chrome/Total cyanide (Dup) | " | " | " | " |
| 1701 | " (ms) | " | " | " | " |
| 1702 | Soil pH (Dup) | " | " | " | " |
| 1703 | " (ms) | " | " | " | " |

Continued on Page

Read and Understood By

Robert Burrows 7-31-14

Signed Date Signed Date

Project 200-SB-7 6072 Notebook No. SAV 2 #1

Continues from Page

~~T. Kovay. T. Torres present. Weather is cool, cloudy and slight rain. Soil Sample will be taken from [illegible]~~

T. Dolfelmage present. Weather is cloudy and cool. Sample taken from per sac # 6072. Soil

Samples

| Sample # | Analysis | Preserv | Cont | Lot # | Lab |
|---|---|---|---|---|---|
| 0804 0805 | 8260C | Ice, CH4O | (3) 40 ml Vial | 040714-3 | ALS |
| 0808 | Hydrazine | ice | (1) 40 ml Amber | 0117501Y | WSTF |
| 0811 | Hydrazine | ice | (1) 4 oz Jar | 059299 | TRUE |
| 0814 | NDMA/Bromacil | ice | (1) 4 oz Jar | 059299 | SRI |
| 0817 | SVOC/perchlorate | ice | (1) 4 oz Jar | 059299 | ALS |
| 0820 | Dioxins/Furans | ice | (1) 4 oz Jar | 059299 | ALS |
| 0823 | Total metals, Arsenic Hex chrome, Total cyanide | ice | (1) 4 oz Jar | 059299 | ALS |
| 0826 | Soil pH | ice | (1) 4 oz Jar | 059299 | |

| Sample # | Analysis | Preservative | Container | Lot # | Lab |
|---|---|---|---|---|---|
| 0804 0806 | 8260C (Dup) | ICE/CH4O | (3) 40 ml Vial | 040714-3 | ALS |
| 0807 | (MS) | " | " | " | " |
| 0809 | Hydrazine (Dup) | ICE | (1) 40 ml Vial | 0117501Y | WSTF |
| 0810 | (MS) | " | " | " | " |
| 0812 | Hydrazine (Dup) | ICE | (1) 4 oz JAR | 059299 | TRUE |
| 0813 | (MS) | " | " | " | " |
| 0815 | NDMA/Bromacil (Dup) | " | " | " | SRI |
| 0816 | (MS) | " | " | " | " |
| 0818 | SVOC/perchlorate (Dup) | " | " | " | " |
| 0819 | (MS) | " | " | " | ALS |
| 0821 | Dioxins/Furans (Dup) | " | " | " | " |
| 0822 | (MS) | " | " | " | " |
| 0824 | Total metals/arsenic Total cyanide/Hex chrome (Dup) | " | " | " | " |
| 0825 | (MS) | " | " | " | " |
| 0827 | Soil PH (Dup) | " | " | " | " |
| 0828 | (MS) | " | " | " | " |

Continued on Page

Read and Understood By

[signature] 8-4-2014

Signed Date Signed Date

Project 200-SB-9 Notebook No. SAV 2 #7

Continues from Page NA

D. Halvorsen and R. Burrows present. Weather is hot and clear with a slight breeze. Drillers decon Rig and BLN core barrel prior to sample. All equipment triple rinsed. Cooler G-4.

Samples Rinsate on BLN core barrel

| Sample # | Analysis | preserv | cont | Lot # | Lab |
|---|---|---|---|---|---|
| 140630/1525 | 8260C | ice, HCL | (3) 40 ml Vial | 0402143 | ALS |
| 1526 | Hydrazine | ice | (1) 40 ml Amber | 0117501Y | WSTF |
| 1527 | NDMA/Bromide | ice | (1) 1 LT Amber | 105812 Z | SRI |
| 1528 | SVOC | ice | (2) 1 LT Amber | " | ALS |
| 1529 | perchlorate | ice | (1) 250 ml poly | 1119034 | ALS |
| 1530 | Dioxins/furans | ice | (2) 1 LT Amber | 105812 Z | |
| 1531 | Total Metals | ice, $HNO_3$ | (1) 500 ml poly | 100713 | ALS |
| 1532 | Hex Chrome | ice | (1) 250 ml poly | 112612 | ALS |
| 1533 | Total cyanide | ice NaOH | (1) 250 ml poly | 103111 | ALS |
| 1534 | Anions | ice | (1) 250 ml poly | 112612 | ALS |

Sample Soil 8-10 ft.

| Sample # | Analysis | Preserv | cont | Lot # | Lab |
|---|---|---|---|---|---|
| 140630/1545 | 8260C | ice, $CH_3OH$ | (3) 40 ml Vial | 0402143 | ALS |
| 1546 | Hydrazine | ice | (1) 40 ml Amber | 0117501Y | WSTF |
| 1547 | NDMA/Bromide | ice | (1) 4 oz Jar | 0059299 | SRI |
| 1548 | SVOC/perchlorate | ice | (1) 4 oz Jar | " | ALS |
| 1549 | Dioxins/Furans | ice | (1) 4 oz Jar | " | |
| 1550 | (Total Metals, Hex chrome, Total cyanide, Anions) | ice | (1) 4 oz Jar | " | ALS |
| 1551 | Soil PH | ice | (1) 4 oz Jar | " | |

Trip Blank

| Sample # | Analysis | Preserve | Cont. | Lot | Lab |
|---|---|---|---|---|---|
| 140630/1500 | 8260C | Ice/HCl | (3) 40 ml vial | | ALS |

Continued on Page NA

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| [signature] | 6-30-14 | DT Wiele | 7/14/14 |

Project 200-SB-10 Notebook No. SAUZ #7

Continues from Page 15

R Burrows & F. Gallegos present. Weather is warm and breezy. Drillers decon Rig and BLN Core barrel prior to Rinsate. Carboy G-2 used. All equipment tripled rinsed prior to use. With DI Water.

Sample Rinsate BLN Core barrel

| Sample # | Analysis | Preservative | Container | Lot # | Lab |
|---|---|---|---|---|---|
| 0628 0630 | 8260c (TB) | ICE/HCl | (3) 40ml vials | 4002003 | ALS |
| 0940 | 8260c | HCl/ICE | (3) | " | ALS |
| 0941 | Hydrazine | ICE | (1) 40ml Amber | 0117501Y | WSTF |
| 0942 | NDMA/Bromacil | ICE | (1) 1L Amber | | SRI |
| 0943 | 8270c | ICE | (2) | 111113-1BLT | ALS |
| 0944 | perchlorate | ICE | (1) 250ml poly | 1126122VV | ALS |
| 0945 | Dioxins/Furans | ICE | (2) 1L Amber | | TBD |
| 0946 | Total metals | HNO3/ICE | (1) 500ml poly | 1007132AAW | ALS |
| 0947 | Total cyanide | NaOH/ICE | (1) 250ml poly | 1031112RR | ALS |
| 0948 | Anions | ICE | (1) | 1126122VV | ALS |

Soil Samples 16-18 Ft

| Sample # | Analysis | Preservative | Container | Lot # | Lab |
|---|---|---|---|---|---|
| 14062810 18 | 8260c | Methanol/ethyl/ICE | (3) 40 ml vials | 1-040714-3 2-110413-3 | ALS |
| 1019 | Hydrazine | ICE | (1) 40 ml vial | 58-400GR | WSTF |
| 1020 | NDMA/Bromacil | ICE | (1) 4oz Jar | " | SRI |
| 1021 | 8270c/perchlorate | ICE | (1) " | ~~111113-1BLT~~ " | ALS |
| 1022 | Dioxins/Furans | ICE | (1) " | " | ALS |
| 1023 | Total Metals/Anions / Total cyanide | ICE | (1) " | " | ALS |
| 1024 | Soil PH | ICE | (1) " | " | ALS |

Continued on Page 16

Read and Understood By

Robert Burrows — Signed — 6-28-14 Date

D T Wiebe — Signed — 6/30/14 Date

Project 200-SB-10 Notebook No. SAV Z #7

Continues from Page 15

Soil Samples 26-28 ft.

| Samples # | Analysis | Preservative | Container | Lot # | LAB |
|---|---|---|---|---|---|
| 140628 1200 | 8260C | Methanol/CH4O/ICE | (3) 40 mil vials | (2) 110413-3 (1) 040714-3 | ALS |
| 1201 | Hydrazine | ICE | (1) | 58-400GR | WSTF |
| 1202 | NDMA/Bromacil | " | (1) 4oz. JAR | " | SRI |
| 1203 | 8270C/perchlorate | " | (1) " | " | ALS |
| 1204 | Dioxins/Furans | " | (1) " | " | " |
| 1205 | {Total Metals/Anions, Total Cyanide} | " | (1) " | " | " |
| 1206 | Soil pH | " | (1) " | " | " |

Soil Samples 36-38 ft.

| Samples # | Analysis | Preservative | Container | Lot # | LAB |
|---|---|---|---|---|---|
| 140628 1505 | 8260C | Methanol/CH4O/ICE | (3) 40 mil vial | (1) 040714-3 (2) 110413-3 | ALS |
| 1506 | Hydrazine | ICE | (1) " | 0117014 | WSTF |
| 1507 | NDMA/Bromacil | " | (1) 4oz JAR | 605 9299 | SRI |
| 1508 | 8270C/perchlorate | " | (1) " | " | ALS |
| 1509 | Dioxins/Furans | " | (1) " | " | " |
| 1510 | {Total Metals/Anions, Total Cyanide} | " | (1) " | " | " |
| 1511 | Soil pH | " | (1) " | " | " |

DW - 2gal

Continued on Page NA

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| Robert Benrowa | 6-28-14 | D T Wiebe | 6/30/14 |

Project 200 - SB - 11 Notebook No. SAV 2 #7

Continues from Page NA

T. Kondy + T. Torres present. Weather is hot and cloudy. Drillers decon the Rig and BLN core barrel prior to sampling. All equipment decon and triple rinsed. Carboy G4

## Sample Rinsate BLN core barrel

| Sample# | Analysis | Preserv | cont. | Lot# | Lab |
|---|---|---|---|---|---|
| 140701 1240 | 8260c (TB) | ice/HCL | (3) 40 ml Vial | 0407143 | ALS |
| 1355 | 8260c | ice, HCL | (3) 40 ml Vial | " | ALS |
| 1356 | Hydrazine | ice | (1) 40 ml Amber | 01175014 | WSTF |
| 1357 | NDMA/Bromacil | ice | (1) 1 LT Amber | 105812 2 | SRI |
| 1358 | SVOC | ice | (2) 1 LT Amber | " | ALS |
| 1359 | perchlorate | ice | (1) 250 ml poly | 1119034 | ALS |
| 1400 | Dioxins/Furans | ice | (2) 1 LT Amber | 105812 2 | |
| 1401 | Total Metals | ice, HNO3 | (1) 500 ml poly | 100713 | ALS |
| 1402 | Total cyanide | ice, NaOH | (1) 250 ml poly | 103111 | ALS |
| 1403 | Anions | ice | (1) 250 ml poly | 112612 | ALS |

## Soil Samples 8-10

| Sample# | Analysis | Preserv | cont. | Lot# | Lab |
|---|---|---|---|---|---|
| 0701 1410 | 8260c | ice, CH4O | (3) 40 ml Vial | 0407143 | ALS |
| 1411 | Hydrazine | ice | (1) 40 ml Vial | 01175014 | WSTF |
| 1412 | NDMA/Bromacil | ice | (1) 40 oz Jar | 0059295 | SRI |
| 1413 | SVOC/perchlorate | ice | (1) 40 oz Jar | " | ALS |
| 1414 | Dioxins/Furans | ice | (1) 40 oz Jar | " | |
| 1415 | (Total metals / Total cyanide / Anions) | ice | (1) 40 oz Jar | " | ALS |
| 1416 | Soil PH | ice | (1) 40 oz Jar | " | |

Continued on Page NA

Read and Understood By

T. Kondy — Signed — 7-1-14 Date

D. Wiehe — Signed — 7/14/14 Date

Project 200-SB-11 Notebook No. SAV 2 #7

Continues from Page NA

Soil Samples 28-29

| Sample # | Analysis | Preserv | cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 140701 1600 | 8260c | Ice, CH3OH | (3) 40 ml Vial | | ALS |
| | " (Dupl) TK | " | " | " | " |
| 1601 | Hydrazine | Ice | (1) 40 ml Amber | 01175 01 | WSTF |
| | " (Dupl) TK | " | " | " | " |
| 1602 | NDMA/Bromacil | Ice | (1) 4 oz Jar | | SRL |
| | " (Dupl) TK | " | " | " | " |
| 1603 | Dioxins/Furans | Ice | (1) 4 oz Jar | | |
| | " (Dupl) TK | " | " | " | " |
| 1604 | (Total Metals/Total cyanide Anions) | Ice | (1) 4 oz Jar | | ALS |
| | | | " | | " |
| | ~~Soil pH~~ " (Dupl) TK | | " | " | " |
| | ~~Do~~ | | | | |
| 1605 | Soil PH | Ice | (1) 4 oz Jar | | |
| | " (Dupl) TK | " | " | " | |
| 1606 | SVOC/Perchlorate | " | " | | |

NOTE: F. Gallegos + D. Halvorsen Present @ 1510 hrs. Weather is Partly Cloudy and Hot. Resumed Sampling for T. Kordy + T. Torrez.

NOTE: NOT Enough Soil was gathered to collect Duplicate samples.

Collected GEO TECH SAMPLE

Continued on Page NA

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| [illegible] | 7-1-14 | D Wiebe | 7/14/14 |

Project 200-SB-12 Notebook No. SAUR #7

Continues from Page N/A

T. Torres present. Samples will be taken from the super sack.
Super sack # ~~2045~~ 11 Coll8 Soil samples.

Samples

| Sample # | Analysis | Preserv. | Cont | Lot # | Lab |
|---|---|---|---|---|---|
| 140812 1350 | 8260C | Ice/$CH_3OH$ | (3) 40ml vials | 0407143 | ALS |
| — 1351 | " (Dup) | " | " | " | " |
| — 1352 | " (M.S) | " | " | " | " |
| — 1353 | $H_2$'s | Ice | (1) 40ml vials | 0117501y | WSTF |
| — 1354 | " (Dup) | " | " | " | " |
| — 1355 | " (M.S) | " | " | " | " |
| — 1356 | $H_2$'s | " | (1) 402 Jar | 059299 | TRE |
| — 1357 | " (Dup) | " | " | " | " |
| — 1358 | " (M.S) | " | " | " | " |
| — 1359 | NDMA/Bromacil | " | " | " | SRI |
| — 1400 | " (Dup) | " | " | " | " |
| — 1401 | " (M.S) | " | " | " | " |
| — 1402 | SVOC/Perchlorate | " | " | " | ALS |
| — 1403 | " (Dup) | " | " | " | " |
| — 1404 | " (M.S.) | " | " | " | " |
| — 1405 | Dioxin/Furans) | " | " | " | " |
| — 1406 | " (Dup) | " | " | " | " |
| — 1407 | " (M.S) | " | " | " | " |
| — 1408 | Total metals/Anions/Total cyanides | " | " | " | " |
| — 1409 | ~~Soil~~ " (Dup) | " | " | " | " |
| — 1410 | " (M.S) | " | " | " | " |
| — 1411 | Soil/pH | " | " | " | " |
| — 1412 | " (Dup) | " | " | " | " |
| — 1413 | " (M.S) | " | " | " | " |

Continued on Page N/A

Read and Understood By

T. [illegible] — Signed; 8.12.14 — Date; Signed; Date

Project 200-SW-14 #6039 SuperSack Notebook No. SAW2 #7

Continues from Page

J. Torres present. The weather is overcast. Samples will be collected from SuperSack #6039.

SAMPLES

| SAMPLE# | ANALYSIS | PRESERV | CONT | LOT# | LAB |
|---|---|---|---|---|---|
| 140812 1310 | 8260C | ICE/CH3OH | (3) 40ml vials | 040714-3 | ALS |
| — 1311 | " (Dup) | " | " | " | " |
| — 1312 | " (M.S.) | " | " | " | " |
| — 1313 | H2S | ICE | (1) 40ml vial | 011750 ly | WSTF |
| — 1314 | " (Dup) | " | " | " | " |
| — 1315 | " (M.S) | " | " | " | ~~TEST~~ WSTF |
| — 1316 | H2S | " | (1) 4oz Jar | 059299 | TRUE |
| — 1317 | " (Dup) | " | " | " | " |
| — 1318 | " (M.S) | " | " | " | " |
| — 1319 | NDMA/Bromacil | " | " | " | SRX |
| — 1320 | " (Dup) | " | " | " | " |
| — 1321 | " (M.S) | " | " | " | " |
| — 1322 | SVOC/Perchlorate | " | " | " | ALS |
| — 1323 | " (Dup) | " | " | " | " |
| — 1324 | " (M.S) | " | " | " | " |
| — 1325 | Dioxins/Furans | " | " | " | " |
| — 1326 | " (Dup) | " | " | " | " |
| — 1327 | " (M.S) | " | " | " | " |
| — 1328 | Total Metals Anions Total Cyanide | " | " | " | " |
| — 1329 | " (Dup) | " | " | " | " |
| — 1330 | " (M.S) | " | " | " | " |
| — 1331 | Soil pH | " | " | " | " |
| — 1332 | " (Dup) | " | " | " | " |
| — 1333 | " (M.S) | " | " | " | |

Continued on Page N/A

Read and Understood By

T. [illegible] 8-12-14

Signed Date Signed Date

Project 200-SS-15 Notebook No. SAV2 #7

Continues from Page 22

P. Burrows, T. Moore present. Weather is hot and cloudy with some wind.
Drillers decon Rig and BKW core barrel prior to sampling.
Canby G4. Tripled Rinsed Equipment before use

## Sample Rinsate

| Sample # | Analysis | Preserv. | cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 140711300 | 8260C (TB) | ice, HCL | (3) 40 ml Vial | 4-001-003 | ALS |
| — 1340 | ~~8260C~~ | ice, HCL | (3) 40 ml Vial | " | ALS |
| — 1341 | Hydrazine | ice | (1) 40 ml Vial | 0117501Y | WSTF |
| — 1342 | NDMA/Biomass | ice | (1) 1 LT Amber | 105812 Z | SRI |
| — 1343 | SVOC | ice | (2) 1 LT Amber | " | ALS |
| — 1344 | perchlorate | ice | (1) 250 ml poly | 1119034 | ALS |
| — 1345 | Dioxins/Furans | ice | (2) 1 LT Amber | 105812-Z | |
| — 1346 | Total Metals | ice, $HNO_3$ | (1) 500 ml poly | 100713-2AAW | ALS |
| — 1347 | Total cyanide | ice, NaOH | (1) 250 ml poly | 112612-2VV | ALS |
| — 1348 | Anions | ice | (1) 250 ml poly | 112612-2UU | ALS |

## Sample Soil 8-10 ft.

| Sample # | Analysis | Preserv. | cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 140711410 | 8260C | ice, $CH_3OH$ | (3) 40 ml Vial | 096214-3 | ALS |
| — 1411 | " (MS) | " | " | " | " |
| — 1412 | Hydrazine | ice | (1) 40 ml Amber | 0117501Y | WSTF |
| — 1413 | " (MS) | " | " | " | " |
| — 1414 | NDMA/Biomass | ice | (1) 4 oz Jar | 00059299 | SRI |
| — 1415 | " (MS) | " | " | " | " |
| — 1416 | SVOC/Perchlorate | ice | (1) 4 oz Jar | 00059299 | ALS |
| — 1417 | " (MS) | " | " | " | " |
| — 1418 | Dioxins/Furans | ice | (1) 4 oz Jar | 00059299 | |
| — 1419 | " (MS) | " | " | " | " |
| — 1420 | Total Metals/Total cyanide Anions | ice | (1) 4 oz Jar | 00059299 | ALS |
| — 1421 | " (MS) | " | " | " | " |
| — 1422 | Soil pH | ice | (1) 4 oz Jar | 00059299 | |
| — 1423 | " (MS) | " | " | " | |

Continued on Page 22

Read and Understood By

Robert Burnard — Signed — 7-11-14 — Date

D Wiebe — Signed — 7/23/14 — Date

Project 200-SB-15 Notebook No. SAVZ# 7

Continues from Page 21

Moore & R Burrows present 7-16-14 Soil Samples 98'-100'

| Sample # | Analysis | Preservative | Containers | Lot # | Lab |
|---|---|---|---|---|---|
| 140716 1200 | 8260c | ICE/CH4O | (3) 40ml vials | 040714-3 | ALS |
| —— 1201 | Hydrazine (WSTF) | ICE | (1) " | 0117501Y | WSTF |
| —— 1202 | NDMA/Bromacil | " | (1) 4oz JAR | 0059299 | SRI |
| —— 1203 | SVOC/Perchlorate | " | (1) " | " | ALS |
| —— 1204 | Dioxins/Furans | " | (1) " | " | ALS |
| —— 1205 | Total Metals / Anions/Total Cyanide | " | (1) " | " | ALS |
| ~~—— ——~~ | ~~Soil pH~~ | ~~"~~ | ~~(1) "~~ | ~~" ——~~ | ~~ALS~~ |
| 140716 1206 | Hydrazine (Truesdail) | Ice | (1) 4oz Jar | " | TRUE |

Soil Samples (Hit Bed Rock)

| Sample # | Analysis | Preservative | Containers | Lot # | Lab |
|---|---|---|---|---|---|
| 140716 | 8260c | CH4O/ICE | (3) 40 ml vials | 040714-3 | ALS |
| —— | Hydrazine (WSTF) | ICE | (1) " | 0117501Y | WSTF |
| —— | NDMA/Bromacil | " | (1) 4oz JAR | 0059299 | SRI |
| —— | SVOC/Perchlorate | " | (1) " | " | ALS |
| —— | Dioxins/Furans | " | (1) " | " | ALS |
| —— | Total Metals / Anions/Total cyanide | " | (1) " | " | ALS |
| —— | Soil pH | " | (1) " | " | ALS |
| —— | Hydrazine (Truesdail) | Ice | (1) 4oz Jar | " | TRUE |

* NOTE: Hydrazine Sample added to List of Samples on 7-16-14. 1-4oz Jar, Lab Truesdale
* NOTE: RETURNED TO WELL TO RETRIEVE SAMPLE BARREL on 7-24-14 TT/FG/AM.

| SAMPLE# | Analysis | PRESERV. | LOT# | CONT | LAB |
|---|---|---|---|---|---|
| 140724 | 8260c | ICE | 040714-3 | (3) 40ml vials | ALS |
| —— | Hz's | " | 0117501Y | (1) 40ml vials | WSTF |
| —— | Hz's | " | 0059299 | (1) 4oz Jar | TRUESDAIL |
| —— | NDMA/Bromacil | " | " | " | ALS |
| —— | SVOC/Perchlorate | " | " | " | " |
| —— | Dioxin/Furans | " | " | " | " |
| —— | Total Metals/ Anions/cyanide | " | " | " | " |
| —— | Soil pH | " | " | " | " |

Continued on Page NA

Read and Understood By

Robert Burrows — Signed — 7-16-14 — Date

D T Wiele — Signed — 7/23/14 — Date

T. Kandy + T. Torrez present. Drillers decon Rig and BLW core barrel prior to sampling. Weather is hot and partly cloudy. Triple rinse equipment prior to sampling. Carboy G4

## Samples BLW CORE Barrel

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 721 1030 | 8260C (TB) | Ice, HCL | (3) 40 ml Vial | 4-002-003 | ALS |
| 721 1250 | 8260C | Ice, HCL | (3) 40 ml Vial | 4-002-003 | ALS |
| 1251 | Hydrazine | Ice | (1) 40 ml Amber | 0117501Y | WSTF |
| 1252 | NDMA/Bromacil | Ice | (1) 1 LT Amber | 105812Z | SRI |
| 1253 | SVOC | Ice | (2) 1 LT Amber | 111113-1BLT | ALS |
| 1254 | perchlorate | Ice | (1) 250 ml poly | 1119034 | |
| 1255 | Dioxins/Furans | Ice | (2) 1 LT Amber | 111113-1BLT | ALS |
| 1256 | Total Metals | Ice, HNO3 | (1) 500 ml poly | 100713 | ALS |
| 1257 | Total Cyanide | Ice, NaOH | (1) 250 ml poly | 103111 | ALS |
| 1258 | Anions | Ice | (1) 250 ml poly | 112612 | ALS |

## Soil Samples 18'-20'

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 722 0800 | 8260C | Ice, CH4O | (3) 40 ml Vial | 040214-3 | ALS |
| 0801 | Hydrazine | Ice | (1) 40 ml Amber | 0117501Y | WSTF |
| 0802 | Hydrazine | Ice | (1) 4 oz Jar | 059299 | TRUE |
| 0803 | NDMA/Bromacil | Ice | (1) 4 oz Jar | 059299 | SRI |
| 0804 | SVOC/perchlorate | Ice | (1) 4 oz Jar | 059299 | ALS |
| 0805 | Dioxins/Furans | Ice | (1) 4 oz Jar | 059299 | ALS |
| 0806 | Total metals/Anions Total cyanide | Ice | (1) 4 oz Jar | 059299 | ALS |
| 0807 | Soil pH | Ice | (1) 4 oz Jar | 059299 | |

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Read and Understood By

T. Kandy — Signed — 7-22-2014 — Date

D. Wiebe — Signed — 7/23/14 — Date

Project 200-SB-16 Notebook No. SAV2 #7

Continues from Page 26

Soil Samples 28'-30'

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 140722 0940 | 8260C | Ice, CH4O | (3) 40 ml Vial | 040714-3 | ALS |
| — 0941 | Hydrazine | Ice | (1) 40 ml Vial | 0117501Y | WSTF |
| — 0942 | Hydrazine | Ice | (1) 4 oz Jar | 059299 | TRUE |
| — 0943 | NDMA/Bromacil | Ice | (1) 4 oz Jar | 059299 | SRI |
| — 0944 | SVOC/perchlorate | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 0945 | Dioxins/Furans | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 0946 | Total Metals/Anions Total cyanide | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 0947 | Soil PH | Ice | (1) 4 oz Jar | 059299 | |

Soil Samples 48'-50'

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 140722 1135 | 8260C | Ice, CH4O | (3) 40 ml Vial | 040714-3 | ALS |
| — 1136 | Hydrazine | Ice | (1) 40 ml Amber | 0117501Y | WSTF |
| — 1137 | Hydrazine | Ice | (1) 4 oz Jar | 059299 | TRUE |
| — 1138 | NDMA/Bromacil | Ice | (1) 4 oz Jar | 059299 | SRI |
| — 1139 | SVOC/Perchlorate | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 1140 | Dioxins/Furans | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 1141 | Total Metals/Anions Total cyanide | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 1142 | Soil PH | Ice | (1) 4 oz Jar | 059299 | |

Soil Sample (58'-60')

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 140723 0750 | 8260C | Ice, CH4O | (3) 40 ml Vial | 040714-3 | ALS |
| — 0751 | Hydrazine | Ice | (1) 40 ml Amber | 0117501Y | WSTF |
| — 0752 | Hydrazine | Ice | (1) 4 oz Jar | 059299 | TRUE |
| — 0753 | NDMA/Bromacil | Ice | (1) 4 oz Jar | 059299 | SRI |
| — 0754 | SVOC/Perchlorate | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 0755 | Dioxins/Furans | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 0756 | Total Metals/Anions Total cyanide | Ice | (1) 4 oz Jar | 059299 | ALS |
| — 0757 | Soil PH | Ice | (1) 4 oz Jar | 059299 | |

Continued on Page

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| [illegible] | 7-23-14 | D Wiebe | 7/23/14 |

Project 200-SB-17 Notebook No. SAVR # 7

Continues from Page

T. Konoy + F Gallegos present. Weather is cool and cloudy. Rig and BLW core barrel decon prior to sampling. Equipment triple rinsed prior to sampling. Carboy G 4

Sample Rinsate BLW core barrel

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 1408020900 | 8260c | ice, HCL | (3) 40 ml Vial | 4-002-003 | ALS |
| — 0901 | Hydrazine | ice | (1) 40 ml Amber | 011750l-y | WSTF |
| — 0902 | NDMA/Bromacil | ice | (1) 1 LT Amber | 105812-2 | SRX |
| — 0903 | SVOC | ice | (2) 1 LT Amber | 111113-1BLT | ALS |
| — 0904 | perchlorate | ice | (1) 250 ml poly | 1119034 | |
| — 0905 | Dioxins/Furans | ice | (2) 1 LT Amber | 111113-1BLT | ALS |
| — 0906 | Total Metals | ice, $HNO_3$ | (1) 500 ml poly | 100713 | ALS |
| — 0907 | Total cyanide | ice, NaOH | (1) 250 ml poly | 103111 | ALS |
| — 0908 | Anions | ice | (1) 250 ml poly | 112612 | ALS |
| 1408020700 | 8260c (TB) | ice, HCL | (3) 40 ml Vial | 4-002-003 | ALS |

Sample's 8'-12'

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 1408020915 | 8260c | ice, CH4O | (3) 40 ml VIAL | 090714-3 | ALS |
| — 0916 | " (Dupl) | " | " | " | " |
| — 0917 | Hydrazine | ice | (1) 40 ml Amber | 017501 Y | WSTF |
| — 0918 | " (Dupl) | " | " | " | " |
| — 0919 | Hydrazine | ice | (1) 4 oz Jar | 059299 | TRUE |
| — 0920 | " (Dupl) | " | " | " | " |
| — 0921 | NDMA/Bromacil | ice | " | " | SRI |
| — 0922 | " (Dupl) | " | " | " | " |
| — 0923 | SVOC / perchlorate | " | " | " | ALS |
| — 0924 | " (Dupl) | " | " | " | " |
| — 0925 | Dioxins/Furans | " | " | " | " |
| — 0926 | " (Dupl) | " | " | " | " |
| — 0927 | Total Metals/Anions Total cyanide | " | " | " | " |
| — 0928 | " (Dupl) | " | " | " | " |
| — 0929 | Soil PH | " | " | " | " |
| — 0930 | " (Dupl) | " | " | " | |

Continued on Page

Read and Understood By

T. Konoy 8-2-14

Signed Date Signed Date

Project 200-SB-17 Notebook No. SAV 2 #7

Continues from Page

I Kenny + F. Moore present 8-3-14

Sample's (48'-50')

| Sample # | Analysis | Preserv | cont | Lot # | Lab |
|---|---|---|---|---|---|
| 803 0843 | 8260C | Ice, CH4O | (3) 40 ml Vial | 040714-3 | ALS |
| — 0844 | Hydrazine | Ice | (1) 40 ml Vial | 0117501Y | WSTF |
| — 0845 | Hydrazine | Ice | (1) 4 oz Jar | 059299 | TRUE |
| — 0846 | NDMA/Bromacil | " | " | " | SRI |
| — 0849 | SVOC/perchlorate | " | " | " | ALS |
| — 0850 | Dioxins/Furans | " | " | " | " |
| — 0851 | Total Metals/Anions<br>Total cyanide | " | " | " | " |
| — 0852 | Soil PH | " | " | " | " |

Sample's (88'-90')

| Sample # | Analysis | Preserv | cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 803 1315 | 8260C | Ice, CH4O | (3) 40 ml Vial | 040714-3 | ALS |
| — 1316 | Hydrazine | Ice | (1) 40 ml Vial | 0117501Y | WSTF |
| — 1317 | Hydrazine | Ice | (1) 4 oz Jar | 059299 | TRUE |
| — 1318 | NDMA/Bromacil | " | " | " | SRI |
| — 1319 | SVOC/perchlorate | " | " | " | ALS |
| — 1320 | Dioxins/Furans | " | " | " | " |
| — 1321 | Total Metals/Anions<br>Total cyanide | " | " | " | " |
| — 1322 | Soil PH | " | " | " | " |

Sample's

| Sample # | Analysis | Preserv | Cont. | Lot # | Lab |
|---|---|---|---|---|---|
| | 8260C | Ice, CH4O | (3) 40 ml VIAL | 040714-3 | ALS |
| | Hydrazine | Ice | (1) 40 ml Vial | 0117501Y | WSTF |
| | Hydrazine | " | (1) 4 oz Jar | 059299 | TRUE |
| | NDMA/Bromacil | " | " | " | SRI |
| | SVOC/perchlorate | " | " | " | ALS |
| | Dioxins/Furans | " | " | " | " |
| | Total Metals/Anions<br>Total Cyanide | " | " | " | " |
| | Soil PH | " | " | " | " |

Continued on Page

Read and Understood By

Signed Date Signed Date

Project 200-SB-18 Notebook No. SAV2 #7

Continues from Page NA

HALVORSEN & T. TORRES PRESENT, DRILLERS DECON THE DRILL RIG & BCN
E BARREL PRIOR TO SAMPLING. ALL EQUIPMENT DECONNED & TRIPLE RINSED.
WEATHER IS PARTY CLOUDY WITH A SOUTHERN BREEZE. CARBOY # G5
URROUDS & F. GALLEGOS TOOK OVER FOR OTHERS @ 1500 FG + RB WANDERY 3:00

RINSATE SAMPLES

| Sample # | Analysis | Preserv | Cont | Lot # | Lab |
|---|---|---|---|---|---|
| 707 1250 | 8260C (TB) | Ice/Hcl | (3) 40ml vials | 4-002-003 | ALS |
| 1400 | " | " | " | " | " |
| 1401 | Hydrazines | Ice | (1) 40ml vials | 011750 01V | WSTF |
| 1402 | NDMA/Bromacil | " | (1) 1LT Amber | 111113-1BLT | SRT |
| 1403 | SVOC | " | (2) 1LT Amber | 111113-1BLT | ALS |
| 1404 | Perchlorate | " | (1) 250ml poly | 112612-2VV | ALS |
| 1405 | Dioxins/Furans | " | (2) 1LT Amber | 111113-1BLT | |
| 1406 | Total Metals | Ice/$HNO_3$ | (1) 500ml poly | 100713-2AAW | ALS |
| 1407 | Total Cyanide | Ice/NaOH | (1) 250ml poly | 112612-2VV | ALS |
| 1408 | Anions | Ice | " | " | ALS |

TT/TK sampled on 7-9-14 Soil Samples 88'-90'

| Sample # | Analysis | Preserv | Lot # | Cont | Lab |
|---|---|---|---|---|---|
| 709 1135 | 8260C | Ice/CH4O | 0407M-3 | (3) 40ml vials | ALS |
| | " (M.S) | " | " | " | " |
| 1136 | Hydrazines | Ice | | (1) 40ml vials | WSTP |
| | " (M.S) | " | | (1) 40 oz Jar | " |
| 1137 | NDMA/~~DMN~~ Bromacil | " | 00059299 | " | SRT |
| | " (M.S) | " | " | " | " |
| 1138 | SVOC/Perchlorate | " | " | " | ALS |
| | " (M.S) | " | " | " | " |
| 1139 | Dioxins/Furans | " | " | " | |
| | " (M.S) | " | " | " | |
| 1140 | (Total Metals/Total Cyanide) | " | " | " | ALS |
| | Anions | " | " | " | " |
| ~~1141~~ | " (M.S) | " | " | " | " |
| 1141 | Soil pH | " | " | " | " |
| | " (M.S) | " | " | " | " |

Continued on Page NA

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| T. [illegible] | 7-9-14 | D Weiler | 7/14/14 |

Tony + F Gallegos present. Weather is hot and cloudy.
Drillers decond rig. and split spoon prior to sampling.
Cowboy GCL.

Sample Rinsate (on Split spoon)

| Sample # | Analysis | Preserv | cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 1810 | 8260C | Ice, HCL | (3) 40 ml Vial | 4-002-003 | ALS |
| 1200 | " (TB) | " | " | " | " |
| 1311 | Hydrazine | Ice | (1) 40 ml Amber | 0117501Y | WSTF |
| 1312 | NDMA/Biomass | Ice | (1) 1 LT Amber | 1058122 | SRI |
| 1313 | SVOC | Ice | (2) 1 LT Amber | 1058122 | ALS |
| 1314 | perchlorate | Ice | (1) 250 ml poly | 111903Y | |
| 1315 | Dioxins/Furans | Ice | (2) 1 LT Amber | 1058122 | ALS |
| 1316 | Total Metals | Ice, HNO3 | (1) 500 ml poly | 100713 | ALS |
| 1317 | Total cyanide | Ice, NaOH | (1) 250 ml poly | 103111 | ALS |
| 1318 | Anions | Ice | (1) 250 ml poly | 112612 | ALS |

Samples not taken with split spoon

Sonder Soil - @ 8 to 10 ft (Done with Barrel)

| Sample # | Analysis | Preserv | cont. | Lot # | Lab |
|---|---|---|---|---|---|
| 20080845 | 8260C | Ice, CH3OH | (3) 40 ml Vial | 040714-3 | ALS |
| 0846 | " (Dup) | " | " | " | " |
| 0847 | Hydrazine | Ice | (1) 40 ml Vial | 0117501Y | WSTF |
| 0848 | " (Dup) | " | " | " | " |
| 0849 | Hydrazine | Ice | (1) 4 oz Jar | 059299 | TRUE |
| 0850 | " (Dup) | " | " | " | " |
| 0851 | NDMA/Biomass | Ice | (1) 4 oz Jar | 059299 | SRI |
| 0852 | " (Dup) | " | " | " | " |
| 0853 | SVOC/Perchlorate | Ice | (1) 4 oz Jar | 059299 | ALS |
| 0854 | " (Dup) | " | " | " | " |
| 0855 | Dioxins/Furans | Ice | (1) 4 oz Jar | 059299 | |
| 0856 | " (Dup) | " | " | " | |
| 0857 | Total Metals, Anions, Total cyanide | Ice | (1) 4 oz Jar | 059299 | ALS |
| 0858 | " (Dup) | " | " | " | " |
| 0859 | Soil pH | Ice | (1) 4 oz Jar | 059299 | |
| 0860 | " (Dup) | " | " | " | |

Continued on Page 25

Read and Understood By

| Signed | Date | Signed | Date |
|---|---|---|---|
| Robert Burnham | 7-20-14 | D Wiebe | 7/23/14 |

# WSTF CHAIN OF CUSTODY RECORD

Date 8/13/14



Laboratory / PO #[redacted] 14EC009B

Return Address for Analytical Reports:
Carlyn Tufts, Carlyn.a.tufts@nasa.gov
NASA/WSTF Environmental Department
12600 NASA Road
Las Cruces, NM 88012

Attn: ☒ Carlyn Tufts

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials as soon as possible

12600 NASA Road; Bldg. 120
Las Cruces, NM 88012
Attn: Patrick Padilla

| Sample No. | Sample Location | # of Containers | Soil | VOC 8260 | SVOC 8270 / Perchlorate | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408121322IDW | 200-SB-14 | 1 | X | | X | | | | | | | |
| 1408121323 IDW | 200-SB-14 | 1 | X | | X | | | | | | | |
| 1408121324 IDW | 200-SB-14 | 1 | X | | X | | | | | | | Matrix Spike |
| 1408121402 IDW | 200-SB-12 | 1 | X | | X | | | | | | | |
| 1408121403 IDW | 200-SB-12 | 1 | X | | X | | | | | | | |
| 1408121404 IDW | 200-SB-12 | 1 | X | | X | | | | | | | Matrix Spike |
| 1408121310 IDW | 200-SB-14 | 3 | X | X | | | | | | | | |
| 1408121311 IDW | 200-SB-14 | 3 | X | X | | | | | | | | |
| 1408121312 IDW | 200-SB-14 | 3 | X | X | | | | | | | | Matrix Spike |
| 1408121350 IDW | 200-SB-12 | 3 | X | X | | | | | | | | |
| 1408121351 IDW | 200-SB-12 | 3 | X | X | | | | | | | | |
| 1408121352 IDW | 200-SB-12 | 3 | X | X | | | | | | | | Matrix Spike |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Patrick Padilla | 8/13/14 1022 | | |
| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 8/13/14



Laboratory / PO # 14ECO09B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (Soil) | Analytes / Method: pH, Soil | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 140812 1331 IDW | 200-SB-14 | 1 | X | X | | | | | | | | |
| 140812 1332 IDW | 200-SB-14 | 1 | X | X | | | | | | | | |
| 140812 1333 IDW | 200-SB-14 | 1 | X | X | | | | | | | | Matrix Spike |
| 140812 1411 IDW | 200-SB-12 | 1 | X | X | | | | | | | | |
| 140812 1412 IDW | 200-SB-12 | 1 | X | X | | | | | | | | |
| 140812 1413 IDW | 200-SB-12 | 1 | X | X | | | | | | | | Matrix Spike |
| | | | | | | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Patricia Padilla | 8/13/14 1035 | | |
| | | | |
| | | | |

# WSTF CHAIN OF CUSTODY RECORD

Date 8/13/14



Laboratory / PO #13ECO59B

Return Address for Analytical Reports:
Carlyn Tufts, Carlyn.a.tufts@nasa.gov
NASA/WSTF Environmental Department
12600 NASA Road
Las Cruces, NM 88012

Attn: ☒ Carlyn Tufts

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials as soon as possible

12600 NASA Road; Bldg. 120
Las Cruces, NM 88012
Attn: Patrick Padilla

| Sample No. | Sample Location | # of Containers | Soil | Total Metals | Hex. Chromium 7199 | Chloride 9056A | Cyanide 9012B | Nitrate/Nitrite 353.2M | Perchlorate 6850 | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408121328 IDW | 200-SB-14 | 1 | X | X | | X | X | X | | | | |
| 1408121329 IDW | 200-SB-14 | 1 | X | X | | X | X | X | | | | |
| 1408121330 IDW | 200-SB-14 | 1 | X | X | | X | X | X | | | | Matrix Spike |
| 1408121408 IDW | 200-SB-12 | 1 | X | X | | X | X | X | | | | |
| 1408121409 IDW | 200-SB-12 | 1 | X | X | | X | X | X | | | | |
| 1408121410 IDW | 200-SB-12 | 1 | X | X | | X | X | X | | | | Matrix Spike |
| | | | | | | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Patrick Padilla | 8/13/14 1023 | | |
| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 8/13/14



Laboratory / PO #[redacted] 14EC011B

Return Address for Analytical Reports:
Carlyn Tufts, Carlyn.a.tufts@nasa.gov
NASA/WSTF Environmental Department
12600 NASA Road
Las Cruces, NM 88012

Attn: ☒ Carlyn Tufts, 575-524-5452

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials as soon as possible

12600 NASA Road; Bldg. 120
Las Cruces, NM 88012
Attn: Patrick Padilla

| Sample No. | Sample Location | # of Containers | Soil | Dioxins/Furans 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408121325 IDW | 200-SB-14 | 1 | X | X | | | | | | | | |
| 1408121326 IDW | 200-SB-14 | 1 | X | X | | | | | | | | |
| 1408121327 IDW | 200-SB-14 | 1 | X | X | | | | | | | | Matrix Spike |
| 1408121405 IDW | 200-SB-12 | 1 | X | X | | | | | | | | |
| 1408121406 IDW | 200-SB-12 | 1 | X | X | | | | | | | | |
| 1408121407 IDW | 200-SB-12 | 1 | X | X | | | | | | | | Matrix Spike |
| | | | | | | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Patrick Padilla | 8/13/14 1022 | | |
| | | | |

Date 8/13/14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO #14ECO12B

Return Address for Analytical Reports:
Carlyn Tufts, Carlyn.a.tufts@nasa.gov
NASA/WSTF Environmental Department
12600 NASA Road
Las Cruces, NM 88012

Attn: ☒ Carlyn Tufts

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials as soon as possible

12600 NASA Road; Bldg. 120
Las Cruces, NM 88012
Attn: Patrick Padilla

| Sample No. | Sample Location | # of Containers | Soil | NDMA and Bromacil 607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408121319 IDW | 200-SB-14 | 1 | X | X | | | | | | | | |
| 1408121320 IDW | 200-SB-14 | 1 | X | X | | | | | | | | |
| 1408121321 IDW | 200-SB-14 | 1 | X | X | | | | | | | | Matrix Spike |
| 1408121359 IDW | 200-SB-12 | 1 | X | X | | | | | | | | |
| 1408121400 IDW | 200-SB-12 | 1 | X | X | | | | | | | | |
| 1408121401 IDW | 200-SB-12 | 1 | X | X | | | | | | | | Matrix Spike |
| | | | | | | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Patrick Padilla | 8/13/14 1024 | | |
| | | | |

Date 8-31-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (A/S) | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408020903 | 200-SB-17 | 2 | A | | X | | | | | | | |
| 1408020700 | " | 3 | A | X | | | | | | | | |
| 1408020900 | " | 3 | A | X | | | | | | | | |
| 1408030843 | 200-SB-17 48'/50' | 3 | S | X | | | | | | | | |
| 1408031315 | " 88'/90' | 3 | S | X | | | | | | | | |
| 1408020915 | " 8'/12' | 3 | S | X | | | | | | | | |
| 1408020916 | " " | 3 | S | X | | | | | | | | |
| 1408020929 | " " | 1 | S | | | X | | | | | | |
| 1408020930 | " " | 1 | S | | | X | | | | | | |
| 1408020923 | " " | 1 | S | | X | | | | | | | |
| 1408020924 | " " | 1 | S | | X | | | | | | | |
| 1408030852 | " 48'/50' | 1 | S | | | X | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 8-31-14 / 1100 HRS | [signature] ACS 8/5/14 | 0935 |
| | | | |
| | | | |

R1405951 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

Date 8-4-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1408031322 | 200-SB-17 88'/90' | 1 | S | | | X | | | | | | |
| 1408030849 | " 48'/50' | 1 | S | | X | | | | | | | |
| 1408031319 | " 88'/90' | 1 | S | | X | | | | | | | |
| 1407311640 | 200-SB-6 | 3 | S | X | | | | | | | | |
| 1407311648 | " | 3 | S | X | | | | | | | | |
| 1407311649 | " | 3 | S | X | | | | | | | | |
| 1408040805 | 200-SB-7 | 3 | S | X | | | | | | | | |
| 1408040806 | " | 3 | S | X | | | | | | | | |
| 1408040807 | " | 3 | S | X | | | | | | | | * Matrix Spike for # 1408040805 |
| ~~1408~~ 1407311647 | 200-SB-6 | 1 | S | | | X | | | | | | |
| 1407311702 | " | 1 | S | | | X | | | | | | |
| 1407311703 | " | 1 | S | | | X | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| John M Trunch | 8-4-14 / 1100 HRS. | ALS | 8/5/14 0935 |
| | | | |
| | | | |

R1405951 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

Date 8-4-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407311644 | 200-SB-6 | 1 | S | | X | | | | | | | |
| 1407311656 | " | 1 | S | | X | | | | | | | |
| 1407311657 | " | 1 | S | | X | | | | | | | |
| 1408040817 | 200-SB-7 | 1 | S | | X | | | | | | | |
| 1408040818 | " | 1 | S | | X | | | | | | | |
| 1408040819 | " | 1 | S | | X | | | | | | | *Matrix Spike For # 1408040817 |
| 1408040826 | " | 1 | S | | | X | | | | | | |
| 1408040827 | " | 1 | S | | | X | | | | | | |
| 1408040828 | " | 1 | S | | | X | | | | | | *Matrix Spike For # 1408040826 |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 8-4-14 / 1100 HRS. | [signature] ARS 8/5/14 0935 | R1405951 |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7/1/14 Red #SMR2



Laboratory / PO #

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120 010005

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: NDMA / Bromacil | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1406281020 | 200-SB-10 (16'-18') | 1 | S | X | | | | | | | | |
| 1406281507 | 200-SB-10 (36'-38') | 1 | S | X | | | | | | | | |
| 1406301526 | 200-SB-9 | 1 | A | X | | | | | | | | |
| ~~140630~~ ME | | | | | | | | | | | | |
| 1406280942 | 200-SB-10 | 1 | A | X | | | | | | | | |
| 1406281202 | 200-SB-10 (26'-28') | 1 | S | X | | | | | | | | |
| 1406361547 | 200-SB-09 | 1 | S | X | | | | | | | | |

Client: Navarro
SRR #53433
Project # 16988.01.10X
Case: 14EC01213
VTSR: 07/02/14
Sample(s) Received: Intact
Temperature: 2.1 °C/ SN#: W01003226

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Nathan Egler | 7/1/14 1313 | [signature] | 7/1/14 1314 |
| FedEX | 7/2/14 1120 | | 7/2/14 1120 |

# WSTF CHAIN OF CUSTODY RECORD

Date 7-7-14

Page 1 of 1

Laboratory / PO # 14EC012B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

010008

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: NDMA/DMN/BROMACIL 607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407011357 | 200-SB-11 | 1 | A | X | | | | | | | | |
| 1407011412 | " 8-10' | 1 | S | X | | | | | | | | |
| 1407011602 | " | 1 | S | X | | | | | | | | |
| | | | | | | | | | | | | |
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| | | | | | | | | | | | | |

Client: Navarro
SRR #53457
Project #16988.01.10X
Case: 14EC012B
VTSR: 07/08/14 0923
Sample(s) Received Intact
Temperature: 2.5 C/ S/N# 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-7-14 / 1100 HRS. | [illegible] | 07/08/14 0923 |
| | | | |
| | | | |

WSTF 381B (03/13)

Date 7-9-14

# WSTF CHAIN OF CUSTODY RECORD

010011

Page 1 of 1

Laboratory / PO # 14EC012B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: NDMA/DMN/BROMACIL 607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407071402 | 200-SB-18 | 1 | A | X | | | | | | | | |
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Client: Navarro
SRR #53479
Project # 16988.01.10X
Case: 14EC012B
VTSR: 07/10/14
Sample(s) Received: Intact
Temperature: 2.6 °C/ SN#: W01003226

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-9-14 / 1100 Hrs. | [signature] | 7/10/14 0900 |
| | | | |
| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-10-14



Laboratory / PO # [redacted] 14EC012B

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓ (575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

010014

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Method / Analytes: NDMA and Bromacil | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407091137 | 200-SB-18 88'/90' | 1 | X | | X | | | | | | | |
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Client: Navarro
SRR #53482
Project # 16988.01.10X
Case: 14EC012B
VTSR: 07/11/14
Sample(s) Received: Intact
Temperature: 2.6 °C/ SN#: W01003226

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-10-14 / 1100 Hrs. | [signature] | 7/11/14 0900 |
| | | | |
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# WSTF CHAIN OF CUSTODY RECORD

Date 7-10-14

Page 1 of 1

Laboratory / PO # 13EC005B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

010017

| Sample No. | Sample Location | # of Containers | Sample Type (A) | Analytes / Method: NDMA/DMN/BROMACIL 607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407101027C | Blm-40-595 | 1 | X | X | | | | | | | | |
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Client: Navarro
SRR #53483
Project # 16988.01.10X
Case: 13EC005B
VTSR: 07/11/14
Sample(s) Received: Intact
Temperature: 2.6 °C/ SN#: W01003226

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-10-14 / 1100 HRS. | [signature] | 7/11/14 0900 |
| | | | |
| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-14-14

010005 Page 1 of 1

Laboratory / PO # 14EC012B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: NDMA/DMN/BROMACIL 607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407111342 | 200-SB-15 | 1 | A | X | | | | | | | | |
| 1407111414 | " 8/10' | 1 | S | X | | | | | | | | |
| 1407111415 | " " | 1 | S | X | | | | | | | | *MATRIX SPIKE FOR #1407111414 |
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Client:Navarro
SRR #53503
Project #16988.01.10X
Case:14EC012B
VTSR: 07/15/14 0830
Sample(s) Received Intact
Temperature: 2.5 C/ S/N# 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| John Minnick | 7-14-14 / 1100 HRS. | [illegible] | 07/15/14 0830 |
| | | | |
| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-17-14

010008

Page 1 of 1

Laboratory / PO # 14EC012B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (S) | Analytes / Method: NDMA/DMN 607 / BROMACIL | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407161202 | 200-SB-15 98/100' | 1 | X | X | | | | | | | | |
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Client:Navarro
SRR #53536
Project #16988.01.10X
Case:14EC012B
VTSR: 07/18/14 0835
Sample(s) Received Intact
Temperature: 2.5°C/ S/N# 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Tom Munch | 7-17-14 / 1100HRS | [illegible] | 7/18/14 0835 |
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| | | | |

WSTF 381B (03/13)

Date 7-21-14

# WSTF CHAIN OF CUSTODY RECORD

010011 Page 1 of 1

Laboratory / PO # 14EC012B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: NDMA/DMN/BROMACIL 1607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407200758 | 200-SB-19 | 1 | A | X | | | | | | | | |
| 1407200851 | " 8/10' | 1 | S | X | | | | | | | | |
| 1407200852 | " " | 1 | S | X | | | | | | | | |

Client:Navarro
SRR #53555
Project #16988.01.10X
Case:14EC012B
VTSR: 07/22/14 0810
Sample(s) Received Intact
Temperature: 2.5°C/ S/N# 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-21-14 / 1100 HRS. | [signature] | 07/22/14 0810 |
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| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-24-14

010014 Page 1 of 1

Laboratory / PO # 14EC012B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: NDMA/DMN/BROMACIL 607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407211252 | 200-SB-16 | 1 | A | X | | | | | | | | |
| 1407220803 | 200-SB-16 18'/20' | 1 | S | X | | | | | | | | |
| 1407220943 | " 28'/30' | 1 | S | X | | | | | | | | |
| 1407221138 | " 48'/50' | 1 | S | X | | | | | | | | |
| 1407230753 | " 58'/60' | 1 | S | X | | | | | | | | |
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Client: Navarro
SRR #53575
Project # 16988.01.10X
Case: 14EC012B
VTSR: 07/25/14
Sample(s) Received: Intact
Temperature: 3.5 °C/ ID#: 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-24-14 / 1100 hrs | [signature] | 7/25/14 0817 |
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WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-25-14

010017 Page 1 of 1

Laboratory / PO # 13EC005B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (A) | Analytes / Method: NaOMA/OMN/BROMACIL 607 | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407221006X | PL-5-715 | 1 | X | X | | | | | | | |
| 1407230951X | PL-5-595 | 1 | X | X | | | | | | | |
| 1407231015X | " | 1 | X | X | | | | | | | |
| 1407240936C | Blm-41-420 | 1 | X | X | | | | | | | |

Client: Navarro
SRR #53576
Project # 16988.01.10X
Case: 13EC005B
VTSR: 07/25/14
Sample(s) Received: Intact
Temperature: 3.5 °C/ ID#: 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-25-14 / 1100 HRS. | [illegible] | 7/25/14 0817 |
| | | | |
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WSTF 381B (03/13)

Date 7-28-14

# WSTF CHAIN OF CUSTODY RECORD

010020

Page 1 of 1

Laboratory / PO # 13EC005B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (A) | Method 607 Analytes NDMA/DMN/BROMACIL | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407241340X | PL-5-795 | 1 | X | X | | | | | | | | |
| 1407241427C | Blm-41-670 | 1 | X | X | | | | | | | | |
| 1407250905C | PL-2-504 | 1 | X | X | | | | | | | | |
| 1407250906C | " | 1 | X | X | | | | | | | | |
| 1407250953A | JP-3-689 | 1 | X | X | | | | | | | | |
| 1407251036X | PL-5-895 | 1 | X | X | | | | | | | | |
| 1407251101X | PL-5-985 | 1 | X | X | | | | | | | | |
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Client: Navarro
SRR #53591
Project # 16988.01.10X
Case: 13EC005B
VTSR: 07/29/14
Sample(s) Received: Intact
Temperature: 2.8 °C/ ID#: 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-28-14 / 1100 HRS | [signature] | 7/29/14 0820 |
| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-30-14

010023 Page 1 of 1

Laboratory / PO # 13EC005B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: NDMA/DMN/BROMACIL 607 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407280940C | 700-E-468 | 1 | X | X | | | | | | | | |
| 140728134 6X | PL-5-985 | 1 | X | X | | | | | | | | |
| 1407291301X | PL-5-495 | 1 | X | X | | | | | | | | |
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Client: Navarro
SRR #53611
Project # 16988.01.10X
Case: 13EC005B
VTSR: 07/31/14
Sample(s) Received: Intact
Temperature: 2.3 °C/ SN #: 010209

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-30-14 / 1100 HRS. | [illegible] | 7/31/14 0830 |
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| | | | |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7/1/14

Page 1 of 2

Laboratory / PO #

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

Analysis Requirements

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: 8260C | UDMH/Biomass 15mL | 8270C/Perchlorate | Dioxins/Furans | Total Metals, Anions + total Cyanide | Soil pH | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 140628 1018 | 200-SB-10 (16'-18') | 3 | S | X | | | | | | | | |
| ~~1020~~ | | 1 | | | | | | | | | | |
| 1021 | | 1 | | | | X | | | | | | |
| 1022 | | 1 | | | | | X | | | | | |
| 1023 | | 1 | | | | | | X | | | | |
| 1024 | | 1 | | | | | | | X | | | |
| 140628 1505 | 200-SB-10 (36'-38') | 3 | S | X | | | | | | | | |
| 1508 | | 1 | | | | X | | | | | | |
| 1509 | | 1 | | | | | X | | | | | |
| 1510 | | 1 | | | | | | X | | | | |
| 1511 | | 1 | | | | | | | X | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] Eglen | 7/1/14 1315 | [signature] | 7/1/14 1310 |
| | | [signature] MS | 7/2/14 1000 |
| | | | |

R1405032 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7/1/14



Laboratory / PO #

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analysis Requirements: Method / Analytes: 8260C | 8270C/Perchlorate | Dioxins/Furans | Total Metals, Anions | Total Cyanide | Soil pH | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1406281200 | 200-SB-10 (26'-28') | 3 | S | X | | | | | | | | | |
| 1203 | | 1 | | | X | | | | | | | | |
| 1204 | | 1 | | | | X | | | | | | | |
| 1205 | | 1 | | | | | X | | | | | | |
| 1206 | | 1 | | | | | | X | | | | | |
| 1406301545 | 200-SB-09 | 3 | S | X | | | | | | | | | |
| 1548 | | 1 | | | X | | | | | | | | |
| 1549 | | 1 | | | | X | | | | | | | |
| 1550 | | 1 | | | | | X | | | | | | |
| 1551 | | 1 | | | | | | X | | | | | |
| | | | | | | | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7/1/14 1315 | [signature] | 7/1/14 1318 |
| | | [signature] pcs | 7/2/14 1002 |

R1405032 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7/1/14



Laboratory / PO #

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

Analysis Requirements

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: 8260C | UDMH/Biomass ISM | 8270C/Perchlorate | Dioxins/Furans | Total Metals, Anions, total Cyanide | Soil pH | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 140628 1018 | 200-SB-10 (16'-18') | 3 | S | X | | | | | | | | |
| ~~1020~~ | | 1 | | | | | | | | | | |
| 1021 | | 1 | | | | X | | | | | | |
| 1022 | | 1 | | | | | X | | | | | |
| 1023 | | 1 | | | | | | X | | | | |
| 1024 | | 1 | | | | | | | X | | | |
| 140628 1505 | 200-SB-10 (36'-38') | 3 | S | X | | | | | | | | |
| 1508 | | 1 | | | | X | | | | | | |
| 1509 | | 1 | | | | | X | | | | | |
| 1510 | | 1 | | | | | | X | | | | |
| 1511 | | 1 | | | | | | | X | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [illegible] Eglen | 7/1/14 1315 | [illegible] | 7/1/14 1310 |
| | | [illegible] MS | 7/2/14 1000 |

WSTF 381B (03/13)

R1405035 5

NASA/WSTF/Navarro
White Sands Test Facility

# WSTF CHAIN OF CUSTODY RECORD

Date 7/1/14



Laboratory / PO #

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: 8260C | 8270C/Perchlorate | Dioxins/Furans | Total Metals, Anions Total Cyanide | Soil pH | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1406281200 | 200-SB-10 (26'-28') | 3 | S | X | | | | | | | | |
| 1203 | | 1 | | | X | | | | | | | |
| 1204 | | 1 | | | | X | | | | | | |
| 1205 | | 1 | | | | | X | | | | | |
| 1206 | | 1 | | | | | | X | | | | |
| 1406301545 | 200-SB-09 | 3 | S | X | | | | | | | | |
| 1548 | | 1 | | | X | | | | | | | |
| 1549 | | 1 | | | | X | | | | | | |
| 1550 | | 1 | | | | | X | | | | | |
| 1551 | | 1 | | | | | | X | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7/1/14 1315 | [signature] | 7/1/14 1318 |
| | | [signature] MCS | 7/2/14 1003 |

R1405035

NASA/WSTF/Navarro
White Sands Test Facility



WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-7-14



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (WATER) | Method / Analytes | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407011359 | 200-SB-11 | 1 | X | | | | | | | X | | |
| 1407011401 | " | 1 | X | | X | | | | | | | |
| 1407011402 | " | 1 | X | | | | | X | | | | |
| 1407011403 | " | 1 | X | | | | X | | X | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-7-14 / 1100 HRS | [signature] ACS | 7/8/14 0920 |
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R1405135 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

Date 7-7-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other_____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407011413 | 200-SB-11 8/10' | 1 | X | | | | | | X | | |
| 1407011606 | " | 1 | X | | | | | | X | | |
| 1407011415 | " 8-10' | 1 | X | X | | X | X | X | | | |
| 1407011604 | " | 1 | X | X | | X | X | X | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-7-14 /1100HRS. | [signature] ARS | 7/8/14 0920 |

R1405135 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-7-14

Page 1 of 1

Laboratory / PO # 14EC011B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road, Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: Dioxin/Furans 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407011400 | 200-SB-11 | 2 | A | X | | | | | | | | |
| 1407011414 | " 8-10' | 1 | S | X | | | | | | | | |
| 1407011603 | " | 1 | S | X | | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-7-14 / 1100 MLS | [signature] ALS | 7/8/14 0920 |
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R1405136 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-7-14



Laboratory / PO # ~~[illegible]~~ 14EC009B

Address shipping questions to:

Attn: ✓Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ~~(COC)~~ | Analytes / Method: VOC | SVOC | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407011240 | 200-SB-11 | 3 | A | X | | | | | | | | |
| 1407011355 | " | 3 | A | X | | | | | | | | |
| 1407011410 | " 8-10' | 3 | S | X | | | | | | | | |
| 1407011600 | " | 3 | S | X | | | | | | | | |
| 1407011358 | " | 2 | A | | X | | | | | | | |
| 1407011416 | " 8-10' | 1 | S | | ~~X~~ | X | | | | | | |
| 1407011605 | " | 1 | S | | ~~X~~ | X | | | | | | |
| 1407011413 | " 8-10' | 1 | S | | X | | | | | | | |
| 1407011606 | " | 1 | S | | X | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-7-14 / 1100HRS | [signature] | 7/8/14 0920 |
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R1405137 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-10-14



Laboratory / PO # [redacted] 14EC009B

Address shipping questions to:

Attn: ✓Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Analytes / Method: VOC | SVOC | pH | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407091135 | 200-SB-18 88'/90' | 3 | X | X | | | | | | | |
| 1407091138 | " | 1 | X | | X | | | | | | |
| 1407091141 | " | 1 | X | | | X | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-10-14 /1100 Hrs. | J Sewell AZS | 7/11/14 0940 |

R1405347 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

Date 7-10-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407091138 | 200-SB-18 88'/90' | 1 | X | | | | | | X | | |
| 1407091140 | " " | 1 | X | X | | X | X | X | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
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| [signature] | 7-10-14 / 1100 Hrs. | [signature] J. Sevard ACS | 7/11/14 0940 |
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R1405348 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-10-14

Page 1 of 1

Laboratory / PO # 14EC011B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (S) | Analytes / Method: Dioxins/Furans 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407091139 | 200-SB-18 88'/90' | 1 | X | X | | | | | | | | |
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R1405350 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-10-14 / 1100 hrs. | J. Sawyer ms | 7/11/14 0940 |
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WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-14-14



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (WATER) | Method / Analytes | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407111346 | 200-SB-15 | 1 | A | | X | | | | | | | |
| 1407111347 | " | 1 | A | | | | | X | | | | |
| 1407111348 | " | 1 | A | | | | X | | X | | | |
| 1407111344 | " | 1 | A | | | | | | | X | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-14-14 / 1100 HRS. | [illegible] | 7/15/14 1050 |
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R1405420 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-14-14



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407111420 | 200-SB-15 8'/10' | 1 | S | X | | X | X | X | | | |
| 1407111421 | " " | 1 | S | X | | X | X | X | | | * Matrix Spike for #1407111420 |
| 1407111416 | " " | 1 | S | | | | | | X | | |
| 1407111417 | | 1 | S | | | | | | X | | * Matrix Spike for #1407111416 |

| Relinquished By | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-14-14 / 1100 HRS | [illegible] | 7/15/14 1050 |

R1405420 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-14-14



Laboratory / PO # [redacted] 14EC009B

Address shipping questions to:

Attn: ✓Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Method / Analytes | VOC | SVOC | pH | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407111300 | 200-SB-15 | 3 | A | | X | | | | | | | (Bubbles) |
| 1407111340 | " | 3 | A | | X | | | | | | | |
| 1407111343 | " | 2 | A | | | X | | | | | | |
| 1407111416 | " 8/10' | 1 | S | | | X | | | | | | |
| 1407111417 | " " | 1 | S | | | X | | | | | | * Matrix Spike for #1407111416 |
| 1407111410 | " " | 3 | S | | X | | | | | | | |
| 1407111411 | " " | 3 | S | | X | | | | | | | * Matrix Spike for #1407111410 |
| 1407111422 | " " | 1 | S | | | | X | | | | | |
| 1407111423 | " " | 1 | S | | | | X | | | | | * Matrix Spike for #1407111422 |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| John Minnick | 7-14-14 / 1100 HRS. | Sergio Tafoya | 7/15/14 1050 |
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R1405421 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-14-14

Page 1 of 1

Laboratory / PO # 14ECO11B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (A, S, W) | Analytes: Dioxins/Furans Method 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407111345 | 200-SB-15 | 2 | A | X | | | | | | | | |
| 1407111418 | " 8'/10' | 1 | S | X | | | | | | | | |
| 1407111419 | " " | 1 | S | X | | | | | | | | * Matrix Spike for # 1407111418 |

R1405422 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-14-14 / 1100 Hrs | [illegible] | 7/15/14 1050 |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-17-14

Page 1 of 1

Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☐ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☐ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (S) | Analytes / Method: VOA 8260 | Analytes / Method: SVOC 8270 | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407161200 | 200-SB-15 98/100' | 3 | X | X | | | | | | | | |
| 1407161203 | " " | 1 | X | | X | | | | | | | |
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R1405541 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-17-14 / 1100HRS | [illegible] | 7/18/14 0925 |
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WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-17-14

Page 1 of 1

Laboratory / PO # 14EC011B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (S) | Analytes / Method: Dioxins/Furans 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407161204 | 200-SB-15 98'/100' | 1 | X | X | | | | | | | | |
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R1405543 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| John Minnick | 7-17-14 1100 HRS | Sergio Tapia | 7/18/14 0925 |
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WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-17-14

Page 1 of 1

Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407161205 | 200-SB-15 98/100' | 1 | X | X | | X | X | X | | | |
| 1407161203 | " " | 1 | X | | | | | | X | | |
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R1405544 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-17-14 / 1100 HRS. | [signature] | 7/18/14 0925 |
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WSTF 381B (03/13)

Date 7-21-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (WATER) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407200800 | 200-SB-19 | 1 | X | | | | | | X | | |
| 1407200802 | " | 1 | X | X | | | | | | | |
| 1407200803 | " | 1 | X | | | | X | | | | |
| 1407200804 | " | 1 | X | | | X | | X | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-21-14 / 1100 HRS | [signature] Scanned AS 7/22/14 1000 | |
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R1405582 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-21-14



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 1407200853 | 200-SB-19 8/10' | 1 | X | | | | | | X | |
| 1407200854 | " " | 1 | X | | | | | | X | |
| 1407200857 | " " | 1 | X | X | | X | X | X | | |
| 1407200858 | " " | 1 | X | X | | X | X | X | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-21-14 / 1100 HRS. | [illegible] RCS 7/22/14 1000 | |
| | | | |
| | | | R1405582 |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-21-14

Page 1 of 1

Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (A/S) | Analysis Requirements: Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407200630 | 200-SB-19 | 3 | A | X | | | | | | | | 3 vials w/ Bubbles. |
| 1407200755 | " | 3 | A | X | | | | | | | | |
| 1407200759 | " | 2 | A | | X | | | | | | | |
| 1407200845 | " 8'/10' | 3 | S | X | | | | | | | | |
| 1407200846 | " " | 3 | S | X | | | | | | | | |
| 1407200853 | " " | 1 | S | | X | | | | | | | |
| 1407200854 | " " | 1 | S | | X | | | | | | | |
| 1407200859 | " " | 1 | S | | | X | | | | | | |
| 1407200900 | " " | 1 | S | | | X | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
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| Lori Minnick | 7-21-14 / 1100 HRS. | [illegible] NAS 7/22/14 1000 | |
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R1405586 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-21-14



Laboratory / PO # 14EC011B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (C) | Analytes / Method: Dioxins/Furans 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407200801 | 200-SB-19 | 2 | A | X | | | | | | | | |
| 1407200855 | " 8/10' | 1 | S | X | | | | | | | | |
| 1407200856 | " " | 1 | S | X | | | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-21-14 / 1100 HRS. | [illegible] 7/22/14 1000 | |
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R1405588 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-22-14



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (WATER) | Analysis Requirements: Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407211256 | 200-SB-16 | 1 | X | X | | | | | | | |
| 1407211254 | " | 1 | X | | | | | | X | | |
| 1407211257 | " | 1 | X | | | | X | | | | |
| 1407211258 | " | 1 | X | | | X | | X | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-22-14 / 1100 HRS. | [illegible] | 7/23/14 0900 |

R1405626 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-22-14



Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 1407220804 | 200-SB-16 18'/20' | 1 | X | | | | | | X | |
| 1407220806 | " " | 1 | X | X | | X | X | X | | |
| 1407220944 | " 28'/30' | 1 | X | | | | | | X | |
| 1407220946 | " " | 1 | X | X | | X | X | X | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-22-14 / 1100HRS | [signature] | 7/23/14 0950 |

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-22-14

Page 1 of 1

Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407211030 | 200-SB-16 | 3 | A | X | | | | | | | | (Bubbles) |
| 1407211250 | " | 3 | A | X | | | | | | | | (Bubbles) |
| 1407211253 | " | 2 | A | | X | | | | | | | |
| 1407220800 | 200-SB-16 18/20' | 3 | S | X | | | | | | | | |
| 1407220804 | " " | 1 | S | | X | | | | | | | |
| 1407220807 | " " | 1 | S | | | X | | | | | | |
| 1407220940 | " 28/30' | 3 | S | X | | | | | | | | |
| 1407220944 | " " | 1 | S | | X | | | | | | | |
| 1407220947 | " " | 1 | S | | | X | | | | | | |
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| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| [signature] | 7-22-14 / 1100 HRS. | [signature] | 7/23/14 0900 |
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R1405630 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-22-14

Page 1 of 1

Laboratory / PO # 14EC011B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (S) | Analytes / Method: DIOXINS/FURANS 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407211255 | 200-SB-16 | 2 | S | X | | | | | | | | |
| 1407220805 | 200-SB-16 18'/20' | 1 | S | X | | | | | | | | |
| 1407220945 | " 28'/30' | 1 | S | X | | | | | | | | |

R1405633 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-22-14 / 1100 HRS | Lenny Lujo | 7/23/14 0900 |

WSTF 381B (03/13)

Date 7-23-14

# WSTF CHAIN OF CUSTODY RECORD

Page 1 of 1

Laboratory / PO # **13ECO59B**

Address shipping questions to:

Attn: ✓ Lori Minnick ☐ Other _____

✓(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ✓ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov _____

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type (SOIL) | Total Metals | Hex. Chromium | Chloride | Cyanide | Nitrate/Nitrite | Perchlorate | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 1407221139 | 200-SB-16 48/50' | 1 | X | | | | | | X | |
| 1407230754 | " 58/60 | 1 | X | | | | | | X | |
| 1407221141 | " 48/50' | 1 | X | X | | X | X | X | | |
| 1407230756 | " 58/60 | 1 | X | X | | X | X | X | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-23-14 / 1100 HRS. | [signature] AES 7/24/14 0925 | |
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R1405661 5

NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

Date 7-23-14

# WSTF CHAIN OF CUSTODY RECORD



Laboratory / PO # 14EC009B

Address shipping questions to:

Attn: ☑ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☑ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: VOA 8260 | SVOA 8270 | pH | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407221135 | 200-SB-16 48'/50' | 3 | S | X | | | | | | | | |
| 1407230750 | " 58'/60' | 3 | S | X | | | | | | | | |
| 1407221139 | " 48'/50' | 1 | S | | X | | | | | | | |
| 1407230754 | " 58'/60' | 1 | S | | X | | | | | | | |
| 1407221142 | " 48'/50' | 1 | S | | | X | | | | | | |
| 1407230757 | " 58'/60' | 1 | S | | | X | | | | | | |

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-23-14 / 1100 HRS. | [signature] ALS 7/24/14 0925 | |

R1405662 5
NASA/WSTF/Navarro
White Sands Test Facility

WSTF 381B (03/13)

# WSTF CHAIN OF CUSTODY RECORD

Date 7-23-14

Page 1 of 1

Laboratory / PO # 14EC011B

Address shipping questions to:

Attn: ☒ Lori Minnick ☐ Other _____

(575) 524-5119 (575) 524-_____

Send Analytical Reports to:

Attn: ☒ Carlyn A. Tufts ☐ Other _____

carlyn.a.tufts@nasa.gov

Analysis Requirements

Special Instructions

Return coolers and reusable packaging materials within 14 days as required in statement of work to:

Return Address:

NASA WSTF Environmental Department

12600 NASA Road; Bldg. 120

Las Cruces, NM 88012

Attn: Lori Minnick

| Sample No. | Sample Location | # of Containers | Sample Type ( ) | Analytes / Method: Dioxins/Furans 8290 | | | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1407221140 | 200-SB-16 48'/50' | 1 | S | X | | | | | | | | |
| 1407230755 | " 58'/60' | 1 | S | X | | | | | | | | |
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R1405663 5
NASA/WSTF/Navarro
White Sands Test Facility

| Relinquished By: | Date/Time: | Accepted By: | Date/Time: |
|---|---|---|---|
| Lori Minnick | 7-23-14 / 1100 HRS. | [illegible] NRS 7/24/14 | 0925 |
| | | | |
| | | | |

WSTF 381B (03/13)

UNITED STATES POSTAL SERVICE

ALBUQUERQUE
NM 870
05 SEP '14
PM 2 L

First-Class Mail
Postage & Fees Paid
USPS
Permit No. G-10

• Sender: Please print your name, address, and ZIP+4 in this box •

National Aeronautics and
Space Administration

Mail Code:
Lyndon B. Johnson Space Center
White Sands Test Facility
Post Office Box 20
Las Cruces, NM 88004-0020

RE-14-102

**SENDER:** *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Hazardous Waste Bureau
Attn: Mr. Dan Comeau
New Mexico Environmental Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505

*COMPLETE THIS SECTION ON DELIVERY*

A. Signature
X ☐ Agent
☐ Addressee

B. Received by (Printed Name) | C. Date of Delivery
9.5.14

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number
*(Transfer from service label)* 7011 3500 0003 2696 9013

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540